

THE ELEMENTS.

Agriculture in Our Common Schools—An Appreciative Article on Mr. C. C. James, Boston, Address.

Those who were so fortunate as to hear the most admirable address of Mr. C. C. James, Deputy Minister of Agriculture for Ontario, before the late Farmers' National Congress in Boston, must have been forced to the conclusion that our Canadian cousins have thought and worked on this subject far in advance of the conviction which exists in the United States. The address was indeed a most cogent and convincing argument from beginning to end of the great value to the cause of agriculture, the coming farms and the country, of such a system of education, and we hope ere long to lay before our readers a resume at least of its most salient and important conclusions.

A most comprehensive report on Manual and Practical Instruction in Primary Schools, in Ireland, has lately been issued by the English Parliament, based on the investigations of a Royal Commission appointed by the Lord Lieutenant of Ireland, and with its voluminous appendix furnishes the most exhaustive statement that has yet appeared, of what is being done in the whole world on this question. It would be a grand thing for the knowledge and judgment of the farmers of the United States if a comprehensive summary of this splendid report could be published in every newspaper in the land. In spite of our boasted common school system of education, the schools of England, France, Holland, Sweden, Switzerland, Denmark, Germany and Wurttemberg are far ahead of us in teaching the child, as Aristotle said, "that which he can practice when he comes to be a man."

Many farmers object to the introduction of these studies into our common schools on the ground that no school can teach a child the art of arithmetic, and when he comes to farming. This is true. But it is not contemplated that the art of farming should be taught. Our common schools do not teach the art of arithmetic as applied to the conduct of all the vast business that is carried on about us. But business cannot be carried on without arithmetic, and so we teach the child the foundation principles of the science of arithmetic, and when he comes to a business life he easily learns to put these principles into practice. So with all other studies; it is not the practice, but the underlying science which is taught, and we send the boy or girl to school with the firm trust that they will learn all the more the better practice because of having been taught in their youth the principles which underlie that practice. For instance, the underlying science which is taught, and we send the boy or girl to school with the firm trust that they will learn all the more the better practice because of having been taught in their youth the principles which underlie that practice. For instance, the underlying science which is taught, and we send the boy or girl to school with the firm trust that they will learn all the more the better practice because of having been taught in their youth the principles which underlie that practice.

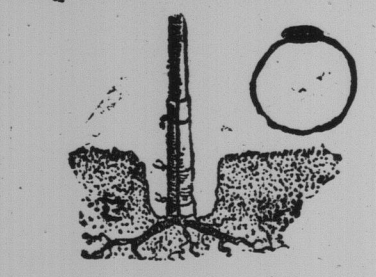
Why should not the farmer's boy be taught the meaning and action of the elements of fertility, of animal economy, of the chemistry of feeding, of the principles which govern the growth of plants, and the physiological adaptation of different farm animals to their true purpose?

There is a great mass of useful knowledge relating to the science of agriculture which should be taught to our boys and girls. Such teaching would prove a thousand times more useful and helpful to them in after life, than much of the knowledge that is now taught. The people of Europe see this, and are giving their children this education. Is not the American farm boy and girl as worthy of this great advantage as those of any other country?—Hoard's Dairyman.

PROTECTING TREES.

Wrap the Lower Part of the Trunk With Tarred Paper.

Much protection against mice and borers can be given young fruit trees by wrapping the lower part of the trunk with tarred paper, as suggested in the illustration. Dig away the earth about the tree so the



PROTECTION FOR TREES.

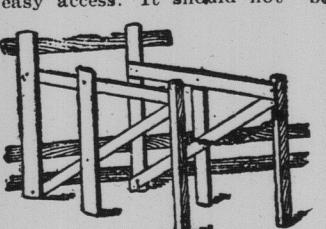
Paper can be put down below the surface. Then fold the paper about the trunk according to the diagram at the right, making the edges join as the edges of a stopper. This prevents the entrance of insects to lay eggs under the bark. When the paper is in place, put back the earth about it and tie the top of the paper closely to the tree.

Wood Ashes For Apple Trees. In some recent tests it was found that the foliage was greatly improved in sections of orchards treated with wood ashes, and that the trees were free from disease. The color of the fruit was also improved in some seasons and with some varieties, but during the seasons which favored the perfect development of fruit the color was not heightened. Apparently the use of ashes has a tendency to hasten the perfect ripening of the fruit. Some sections of orchards where wood ashes were used the apples did not keep as long as those which were not treated.

MODEL CATTLE STALL.

Its Investor Regards It Better Than Stanchions for the Purpose.

Mr. J. L. Irwin of Kansas contributes a sketch and description of a cattle stall which he regards as better than stanchions for keeping the animals in place. He says: "A stall consisting of a set of 2x4s, one on each side, is bolted at the ends to the mangers, and at the other to the studding or posts just wide enough apart to give the animal easy access. It should not be



CATTLE STALL.

wide enough to allow the animal to turn around. This stall should be from six to eight feet long. In one of the posts at the end of a chain long enough to easily reach across the stall. This chain should have a ring at the other end. A ring is bolted into the other post to correspond to the stapled end of the chain. After the animal has been driven into the stall, hook the end of the chain into the ring and it is as secure as though stanchioned. The advantage of this model is that it is easier to operate than the stanchion, and it does not require a driver to drive the animal in and then go around to its head. Then it is inexpensive. Besides this, the hair is not rubbed off the neck as with a stanchion, which means much to a man who takes pride in his stock or is raising show animals."—Ohio Farmer.

PLANTING CHESTNUTS.

An Eastern Horticulturist's Success After a Number of Failures.

Three years ago I came into possession of practically an abandoned farm, 150 acres in chestnut and pine with in tillage, with many hillsides and places which could not be cultivated. I wished to get trees growing on these places; how to make them grow from seed was a new thing to me. I had never seen a chestnut, nor could I find anyone who did so. I went to work planting chestnuts in different ways, to see which would succeed. I wrote a contributor to Country Gentleman. I first took a six-foot fork, forced it into the ground two feet deep, and say four inches forward, threw a chestnut under and drew out my fork. I saw that one man was working in this way, and I followed him. I did the lifting of the turf and he threw the chestnuts. The result was that every chestnut grew. I took a six-foot fork, forced it into the ground two feet deep, and say four inches forward, threw a chestnut under and drew out my fork. I saw that one man was working in this way, and I followed him. I did the lifting of the turf and he threw the chestnuts. The result was that every chestnut grew.

Raising the Dairy Calf. To make a good cow from a good calf two things must be guarded against, and they are a lack of food, and a lack of proper growth, and the use of such food as will fatten instead of building up the frame and muscular system. The skin milk calf will usually make a better dairy cow than one that is allowed to suckle the cow, if sufficient pains are taken to give the skin milk calf the right time and of proper temperature, for two reasons; it does not get so fat, and it does not get so fat. It does not feel the change so much when the milk is taken away, and it is made to live upon grass or hay. The latter is, however, in part due to the fact that, as the skin milk is thought of little value for other purposes, its use is generally continued until the calf is three or four months old, when it is well able to eat and digest other food, while when it becomes a cow it cannot feed its mother, feel that it is costing too much, and want to wean it at six weeks old, or sooner.

Powerful Road Engine. Mr. John G. Thornycroft, an English authority on steam engines, recently maintained before the British Association that road steam engines, by a slight alteration of the laws, can be constructed as a whole which they would not injure the roads more than horses do, as they would act like steam rollers. Mr. Thornycroft expressed no doubt of the practicability of his plan and claimed that it would work a revolution in agriculture, as it would allow of the free transmission of lime, manure and heavy timber to points where they might be needed. The only unsettled point in the proposition is a substance of some other material for rubber in the tires, as rubber costs too much. It is believed, however, that this can be done by some different treatment of wood.

FRUIT TREE SEEDLINGS.

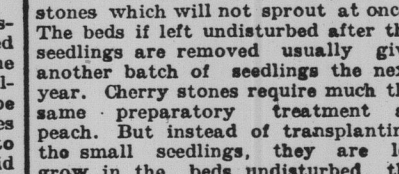
Joseph Maclean, in Practical Farmer, Describes an Approved and Successful Method of Raising Them.

There are many readers of The Practical Farmer, aside from those who follow the raising of fruit tree seedlings as a business, to whom a few hints on the raising of fruit seedlings would no doubt be of profit. In this as in many other matters there is more than one way of attaining success, but it may be said that the mode about to be described is that followed by a successful raiser of fruit tree seedlings. Almost everybody is aware that all fruit trees sold in nurseries are budded or grafted on seedling plants, and how to raise these seedlings is what I desire to tell. Taking the peach, to select the seedling, the stones are procured from fresh fruit in the fall, and from that time until sowed, should not be permitted to lie around drying out. Place them in barrels or boxes until late fall and then sow them in a bed, in any convenient place, about two inches apart. Cover with about three inches of soil, and nothing more need be done to them. With the growing season of spring they usually start to grow. In nurseries, as soon as the seedlings are well out of the ground, they are taken up, carefully as possible, and transplanted into rows. A shallow pan of quite thick, muddy water, thick enough that it will adhere to the roots, should be on hand, and into this the seedlings should be placed as fast as lifted from the bed. Set with this mud adhering to the root, and few plants will miss growing. By the time budding time arrives the plants will be of ample size to bud. This is in September in Pennsylvania. If not possible to get the peach stones into the ground in the fall, or very early winter, they may be kept in a box, and sowed in the spring. Fair returns follow this plan, but not as good as when budded out in early fall. With the best of treatment there are usually many stones which will not sprout at once. The beds if left undisturbed until early fall, and then usually give another batch of seedlings the next year. Cherry stones require much the same treatment, but instead of transplanting the small seedlings, they are let grow in the beds undisturbed until the next spring. Two kinds are used, the Mazzard and the Mahaleb cherry, and the latter French. The Mazzard cherry seems preferred by some cherries and it slightly improves the fruit, but it is not as strong a grower as the Mazzard. The plum is treated in precisely the same way, but with French plum seeds. The raiser of this sort by giving the seedlings a good start in the fall, and the seedlings are usually obtained in November, much of it coming from old mills from our country. But there is a French product called French Crab, which usually reaches this country about New Year's, or later, and with French plum seeds. As soon as received, wash the seeds, as it is to be slightly moistened and placed in a cool cave or like place, hardly above freezing. It is kept in a moist state until spring, and then sown in beds or rows as preferred. If not kept quite cool mould is apt to form on the seeds, and this, if unchecked, is apt to destroy the germ of the seed. The raiser of this sort by giving the seedlings a good start in the fall, and the seedlings are usually obtained in November, much of it coming from old mills from our country. But there is a French product called French Crab, which usually reaches this country about New Year's, or later, and with French plum seeds. As soon as received, wash the seeds, as it is to be slightly moistened and placed in a cool cave or like place, hardly above freezing. It is kept in a moist state until spring, and then sown in beds or rows as preferred. If not kept quite cool mould is apt to form on the seeds, and this, if unchecked, is apt to destroy the germ of the seed.

AN OBJECT LESSON.

Immense Lands Made Ready for a Correctly Macadamized Road Near Camden, N.C.

The illustration shows one of the advantages of having good roads. The size of the land that can be handled is very much greater than that possible to be drawn on a common dirt road. Relative to these roads, Prof. J. A. Holmes says in macadamizing, the following general plan has been adopted: Upon the graded and settled earth surface, a macadam road 12 feet wide and about nine inches thick, is constructed. Usually in the center, though in places on one side of the road, an excavation from four to six inches deep is made in the earth's surface, and the bottom is then carefully rolled with a roller. Upon this excavated surface is placed a layer



HAULING A BIG LOAD.

of field stone about four inches thick, and this is then thoroughly rolled. Upon this surface is placed a three-inch layer of stone crushed to from one to two inches in size, and after this has been thoroughly rolled there is placed a third layer of about two inches thick, of finely crushed stone, including screenings, and this latter is in turn thoroughly rolled. The average cost of these roads, including grading and macadamizing, is about \$2,000 per mile.—Farmers' Review.

PARALYZED PIGS.

A Careful Investigator Says Disease Is Due to Improper Feeding.

Every year we receive many inquiries from subscribers wishing to know what is the matter with their shot and brood sows that are paralyzed in their hind quarters. They go down, their general health does not seem to be greatly affected, and we have known brood sows affected in this way when their pigs were in the fact, improper feeding is the cause of many of the ailments of pigs, and often when not suspected. When a brood sow has been fed on a corn diet and been compelled to draw on her own system for the flesh and bone forming materials, and then she is suddenly changed to a diet that requires a flesh forming diet, it is easy to understand why she should break down. When pigs have been fed on a corn diet, having access neither to oats, pasture, lime, nor ashes, it is not strange that when they get to be 100 or 150 pounds weight they break down, for the same reason that hogs fatten in this way to 200 or 300 pounds when they are fed on a corn diet, to stand the hauling of a few miles to market, and break down.

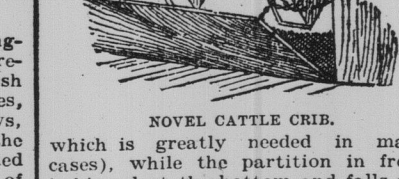
How is this to be remedied? First, the feed should be changed to a corn and hay as well as corn; second, by giving the pigs skim milk, clover pasture, and a partial diet of oats, shorts and bran. The latter cannot be used in large quantities, because it is too bulky, but oats, shorts, and clover hay can be used in all hogs should have before them at all times a mixture of salt and ashes and should have access to the earth in which they can root for their food. As frequently stated, we do not believe in fighting with the Creator of the hog in putting rings in noses that were intended for rooting. If they root up the pasture, let them root. There is something wrong in the way that the hogs are being helped, rather than hindered.

The above is not merely the dictum of the editor of this paper. The subject has been thoroughly tested at the Wisconsin Experiment Station, and it has been proved beyond question that a sole diet of corn, such as a majority of farmers give their hogs, will not produce strong boned hogs, and it is the weak boned hogs or brood sows that have been compelled to make bricks without straw that break down. Now is the time to avoid the difficulty for the future. Give the brood sow the proper material with which to manufacture. A pig factory can not produce healthy pigs without the right kind of material, and this must include bone making material, in which corn is deficient.—Wallace's Farmer.

NEW CATTLE CRIB.

In Old Barns That Are Crowded For Years This Device Is Used.

The cut shows a small device for economizing room in the cattle crib, while still giving all the room needed. The stanchions are brought almost to the edge of the feeding floor (giving more width in the tie-up,



NOVEL CATTLE CRIB.

which is greatly needed in many cases) so that the partition in front is hinged at the bottom and falls out to give space for hay, ensilage, etc., which fed to the stock. If feed boxes are required, they can be made of a shape to set handily in the space before the cattle. At night the partition is shut up, forcing the cattle to step back to the rear of their platform, which insures a clean bed for them for the night. In many old barns that are crowded for room this device will be found very advantageous, a narrow "tie-up" being a source of great convenience in doing the work, and a serious impediment as well to a cleanly carrying on of dairy operations, as with the pigs, how cheap it is very difficult to keep the same clean.—N. Y. Tribune.

FALL HINTS FOR FLOWER LOVERS.

Preparation of the Soil Required for Success With Annuals.

To most successfully grow the summer-flowering annuals, a good deal of the work in the way of preparation of the soil and beds should be attended to in the autumn of the season before. Nearly all the annuals make a far stronger growth and produce much larger and more brilliantly colored bloom, and a great deal more of it, if planted in a rich soil. A few kinds must have very rich soil to give any degree of satisfaction. The labor of enriching beds intended for summer should not be left until spring. Quite often it is difficult to secure manure that is fine enough to incorporate freely with the soil. If such manure is used in the spring, it is dug under the surface of the soil, and very often remains in dry, hard clumps, and the plants are in no way benefited thereby, as they derive no strength therefrom. In fact, it is better to use a good fertilizer, such as bone meal, or a mixture of bone meal and superphosphate, and mix it with the soil, and then thoroughly dig it up as soon as possible, and put a coat of from three inches to five inches on top of the bed, and then thoroughly dig it into the soil. When this has been done, and some such coat on and leave it on top through the winter. The autumn rains will wash the greater part of the strength of the soil down into the soil, and then when spring comes this may be dug in also. The result of this will be a very rich soil, with no hard lumps of coarse manure to hinder the growth of the plants.

It is now time gladiolus bulbs are dug and given a thorough drying before being stored for winter. Unless you have a building in which to dry them where there is no danger of freezing, they should not be left in the ground after the middle of October. When dug they should be placed in a dry place, exposed to the winds, and be thoroughly dried. When there is danger of freezing, place them in a cool, dry place for a few days, and then put them in a warm enough that they will not be frozen. Do not be too risky about leaving them out, as an unexpected frost might come some night and the whole collection be lost. Should one wish to increase the collection, save the small bulbs that are found around the base of the old bulbs. These, if planted next spring, will grow to blooming size, and will give a fine display of flowers as the bulb from which they are taken.

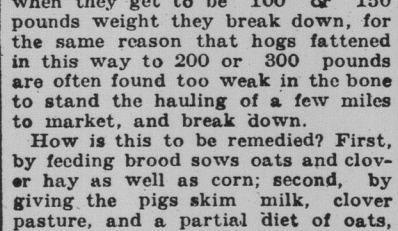
Do not dig the dahlias immediately after the frost has killed them, but leave them in the ground for a few days to ripen up. When handling dahlias, roots, great care should be exercised so as not to break the tubers from the main stalk or stem. These tubers do not, as many people think, the "eyes" of the tuber. The bud is at the end of the neck, attached to the skin and if this neck becomes twisted or cracked, it will cause a slow, poor growth, and if the tuber is entirely severed, it is rendered useless. It is rather difficult to dig the dahlias, but if they are allowed to be very damp they are sure to rot. A good way to keep them in small quantities is to cover them with dried soil or sand. Dahlias will not stand the least bit of frost.

If it is the intention to plant any spring-flowering bulbs, such as crocus, tulips or hyacinths, do not put them in the ground until the ground is frozen. The more roots the bulbs can make in the fall, the larger and more beautiful will be the bloom the following spring. And when you have your bulbs planted, cover your bed with a coat of good stable manure to a thickness of from four inches to six inches. The rain will wash the strength down into the soil, and it is astonishing by the difference it will cause in the size and beauty of the bloom. This coat should be renewed early in the spring. If you have had a bed of dianthus that has "spread itself" this season, do not dig it up, but leave it in the ground, and the plants will come through the winter, and the next year give an earlier and better bloom than ever. The time of their usefulness will be ended.

The evergreens, flowering shrubs, rose bushes and perennials should have a coat of manure to act as a protection against the winter, and be dug into the soil in the spring.—London Farmer's Advocate.

A HEAVY FENCE.

The illustration shows a panel of a fence that can be moved with great ease. The boards of each panel



EASILY MOVED FENCE.

overlap, at one end, the next panel. A gradually curving corner should be made with this fence, since the weight of a slight opening would be left.

RATIONAL RATINGS FOR CALVES.

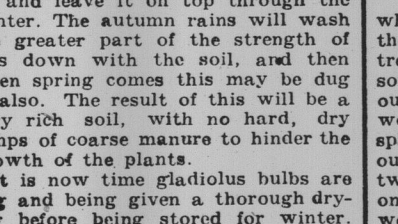
Do not spoil the calf. Remember that the dairy cow begins with the calf and is easiest spoiled while young. To feed a calf on all kinds of fat-forming foods is to create in her a tendency to make beef, and she will hold to that tendency. Better give her food that will develop bone and muscle rather than food that will make her blocky. We frequently see dairy papers urging dairymen to feed their calves on skim milk, first removing the fat and putting it back in the form of oil meal. But the calf does not need it. As the skim milk will not continue to satisfy the calf, it may be added with a good deal of water, and the calf will develop the frame of the cow, and become a waste of money.

One of the mistakes about good farming that most of us have to learn is to avoid waste. We pay taxes on land that we do not farm, we only half cultivate our fields and so waste both land and labor; we leave a large percentage of the crop in the field; we waste time and capital in raising inferior animals; we waste energy in trying to do more than one man can do right; we waste money in buying what we should raise ourselves; we waste opportunities to improve our condition by staying away from institutions and fairs and by neglecting to read papers; we waste—in a thousand ways, say, then we are ready to cry "farming don't pay." And it is no wonder.—Montana Fruit Grower.

ABOUT CUTTING WOOD.

A Successful Wood Splitter Tells How to Get Dead Trees to Split With Ease and Certainty.

Every farmer who plans to do a large season's work cannot overlook the importance of having this year's supply of fuel on hand and ready for use not later than April 1, says Orange Judd Farmer. With some 10 is not a very hard task, for in many localities where timber is scarce coal is largely used for heating and oil for cooking purposes. During the past ten years a number of different kinds of trees have been dying, and the farmer who owns ten acres of hard wood timber finds that the good trees accumulate in spite of the fact that the quantity of fuel is larger each year as the quality deteriorates. Some farmers were wise and sold the varieties that were subject to decay and avoided a loss from this source. Others, however, were not so wise, and they would be able to use the diseased trees for fuel before they became worthless. Here is



METHOD OF SPLITTING STOVE WOOD.

where they made a mistake. And this is why we see so many old dead trees in the woods. There are in some cases so rotten under the outside close to the bark, the top wood, that it requires some skill to split a block into stove wood without breaking a good many sticks in two. The illustration shows how one successful wood cutter does the work and seems to be very simple. At a, the block is split through the center, making two halves. The lines running from the outside to the heart are where it should be again split to make slabs like B. The cross marks on end of slab b tell their story. In splitting off the outside slabs from b, always strike far enough toward the heart to get a section of sound timber with it. If you fail to do this it will break like c, and much of the block will be wasted.

Best Butter Producing Cattle.

For breeds for butter I would recommend the Jersey. Guernsey or Devon. Phenomenal cows are found in all breeds. Locations may have but little to do with a choice of breed. The Jersey has more milk than the Jersey, and the Guernsey requires better keeping than the Jersey. My experience, covering a period of 20 years, gives me a preference for the Jersey, not particularly the thoroughbred, but the high grade, the second or third-cross with other breeds, that is, using any good cow for a dam, crossing with thoroughbred Jersey, then crossing the progeny again with the thoroughbred Jersey. The first cross makes a half-bred, the second three-quarters, the third seven-eighths, the fourth fifteen-sixteenths Jersey cow. I once had that for milk and butter was the best cow I ever knew. With the modern warm barns we need not raise the question of hardiness. Our cows are not expected to be subjected to the cold in winter. It is no economy to permit this, but the reverse, with the hardest breeds. I tie with chains and have wintered cows that did not leave the stable from November till May. I kept one individual cow for years and could see no ill effect. I breed them every day. Though tied with chains, they can lie down on either side and turn and lick themselves at pleasure.—H. H. Childs, in American Agriculturist.

The Importance of Grading.

Good roads add materially to the value of any country. A recent visit in the rural sections convinces us that the two important factors in the improvement of roads are the cutting down of grades and a thorough drainage to prevent the damage done to roads by streams of water flowing from the shoulders. It is a waste of money simply to repair the surface of the road while permitting high grades to continue, preventing the transport of economies loads of wood or farm produce. The practice should also be condemned of overing bowlders and rocks in the roadway with earth in the fall. They should be removed by blasting or by the use of the crowbar, thus, remedying the cause of the danger for all.—American Cultivator.

The Steam Plow in Manitoba.

An interesting trial has just been completed in Manitoba under the direction of the Canadian Pacific Railway with a view of further determining the possibilities of plowing by steam. According to a report of The Winnipeg Free Press the machine moved forward at a careful, timed speed of a little over 10 miles per hour and dragged after it a gang of ten plows which turned over a width of earth to a depth of ten inches. A roller followed the gang of plows to which it was attached, the plowed ground was then made smooth and fine and a perfect seed bed was created without any further operation of back setting. This rate of speed was considered equal to plowing 18 acres of land in a day of ten hours.

Wastefulness Is a Crime.

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