

FARM AND GARDEN.

DRAINAGE OF ROADS.

It is of the Utmost Importance to the Preservation of Highways.

With wet or clayey roadways, surface drainage alone is not sufficient. Without underdrainage the crown of such roadways will dry only by slow process of evaporation, during which time the topping becomes more and more rutted by the passing traffic. A subdrain in such soil will not prove efficient for more than about 12 feet on each side; hence, two lines of longitudinal sub-drains are needed on those parts of our country roads that pass through wet places, low-lying lands or clayey soils. They should have an average fall of about one in one hundred; minimum fall, one in one thousand. At short intervals, say from 36 to 100 feet apart, are placed cross drains to discharge the water into the side ditches. These cross drains receive a greater fall, say up to one in thirty. Generally two and one-half to three-inch pipes are sufficient. It is advantageous to bed these tiles in well-drained brick fragments and to cover them with road metal. Be certain that the tiles are correctly laid and that nothing interferes with their free discharge. As said before, unglazed round tiles, about three inches in diameter and, under certain conditions, jointed with loose collars, are most suitable for subdrains. The bottom of the tiles should be laid both to the proper grade and below the frost line, after which the tile trench is filled up to subgrade with clean gravel, small field stones, road metal, or broken bricks. The cross drains are also made of unglazed tiles, with the exception of their outlet sections, which should consist of vitrified culvert pipes. Regular branch pipes should connect the longitudinal and cross tiles. On level reaches the lateral roadway slopes for surface drainage should not be less than one in twenty-four, and side ditches should be provided, if necessary, as previously indicated. Finally, a rapid discharge of the side ditches, if required, through adjacent lands, is of the utmost importance to roadway preservation.—Gen. Rey Stone.

SHAKESPEARE ANSWERED.



"What's in a name?" There isn't much. But what the facts explode. For instance, some call mud-holes such as shown above, a "road."
—Good Roads.

THEY GO TOGETHER.

Better Roads and Wider Tires Are Needed Everywhere.

Farmers have more reason to agitate for good roads than any other class, not even excepting bicyclers. Good roads to the former mean economy in reaching markets; often better markets, because they could be reached at the right time; advantages of social life in the winter and early spring; saving in time and in the wear and breakage of wheeled vehicles, and a general advance in all that pertains to a higher state of civilization.

Bicyclers are doing much to promote good roads. Now is the time for our farmers to make a positive move in cooperation with them.

One improvement must go along with that of better construction and drainage of the roads. The wheels of all vehicles should have wider tires. In France the width of tire is from three to ten inches, with the bulk of four-wheelers six inches. In Germany every wagon for heavy loads must have at least a four-inch tire; Austria requires a tire of 4½ inches wide; Switzerland requires all draft wagons to have a six-inch tire. If we were to build good roads our wagons, as now constructed, would speedily destroy them. They are road-destroyers as certainly as if built for the purpose. Go on and build the roads, and begin at once to reform the wagon wheels.—Western Rural.

Hogs on a Dairy Farm.

The Indiana Farmer says: "A gentleman who grows and fattens 75 to 100 hogs in connection with his creamery, says that in this way he utilizes all the product, except the butter, and makes the business pay him largely. He never has any hog cholera, for he keeps everything clean in connection with his pig feeding, and the milk with bran and meal makes a succulent ration that keeps the pigs very free from feverish conditions, and therefore very healthy. The milk and buttermilk with the bran, meal, etc., makes them grow rapidly, and at eight months he has 175-pound pigs to put on the market. He says by combining the two branches of business he finds it very profitable."

The milking should never be hurried, but the milk be drawn steadily and as it flows.

MARKETING BUTTER.

It Pays to Put It Up in Neat and Attractive Packages.

Whether sales are made to stores or regular customers, it pays to send butter away in as good shape as possible. Some customers prefer their butter in rolls containing one pound. A deft hand of the ladle will readily apportion and shape the proper amount, after some experience, and affix her stamp, which should be uniform and as simple as is consistent with true elegance, as a fern leaf, for example. If the butter maker is inexperienced, or has no scales (with which every housekeeper should be provided), then procure a "butter-cutter," which cuts the butter into rolls or brick-shaped blocks containing one pound, and also affixes a stamp. We believe these cutters can be procured at most stores.

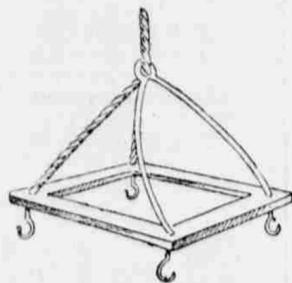
While the nice tact of most women will discern what is proper, and so supply dainty and nice surroundings for their butter when sending away to market, yet we have known some who were careless in this respect, and sent a really fine article away wrapped in any odds and ends of muslin that came to hand. We have even known butter to be sent to "stores" wrapped in pocket handkerchiefs, and the lady who so appalled it thought she was doing the genteel thing, too. In these days of cheapness there is no excuse for any housekeeper, no difference how limited her circumstances may be, not providing herself with at least two or three napkins or towels of linen, which should be set apart for butter alone, and not be made to do duty as a bib for baby, or to polish table ware. If no better can really be afforded, rather than depend upon "fragments" of apparel, save the sacks of thin muslin that dairy salt is sold in; rip apart, hem, laundry nicely, and after wetting in brine, wrap one around each roll. Never wrap butter in paper, unless parchment paper is used.

If your butter is to be sent to a distant market, use wooden buckets or tubs, which should be soaked in brine before the butter is packed in them. If you desire to pack your butter and await a rise in the market use stone jars. Have them perfectly clean, sweet and cold; sprinkle salt lightly in the bottom and on the sides. Be sure that all buttermilk is worked out. Place the butter in the jar, and with the wooden potato masher, previously scalded and rinsed afterward, press evenly and firmly; have a cloth (an inch larger in circumference than the jar) wrung out of cold water, lay it over the butter and press out all the air, cover with an inch of salt, spread evenly, and press the cloth close to the side of the jar. When the next lot is ready to pack, take off the cloth, salt and all, and lay it in a dish to be used again. The cloth and salt are to exclude the air. Proceed in the same manner as before until the jar is within an inch of being full; then cut a cloth that will just cover the butter, press so as to exclude all air bubbles, then cover with brine, strong as can be made. It does not matter if it be thickened with salt. Tie up with another cloth, three or four thicknesses, and cover all with a plate or wooden cover. When wanted to use, remove salt and brine; rinse, and work out into rolls. Butter so prepared will keep almost indefinitely and preserve its flavor.—Mrs. A. C. McPherson, in Ohio Farmer.

A DAIRY CONVENIENCE.

Simple But Excellent Device for Hanging Milk in Wells.

Where ice is not at hand, the custom of hanging milk cans in the well, for coolness, is often practiced. The illustration shows a device for holding four cans securely within the well, with a chance to draw up water between the cans, the curved iron rods affording this



FOR HANGING MILK IN WELLS.

chance. If the well is not large enough for a square frame, a stout hoop can be used, thus economizing space. It is surprising how nicely milk and many other articles can thus be kept in a deep well, even in extraordinary hot weather. It is equally surprising how many families fail to use this simple device, which is so easily made and so very convenient.—Orange Judd Farmer.

Feeding Pea Meal to Hogs.

Pea-meal is rich in protein, which, when peas are fed to hogs, goes to build up the muscles or red meat. The peas should be ground with oats or corn, using two parts of the former to three of the latter for pigs and shoats, and one part peas and four of corn-meal for older animals. To build up the lean meat of the hog to give strong bones, shorts should be fed. Bran, mixed with corn-meal, shorts or some other similar feed, will prove excellent for breeding or stock hogs, but it is too coarse and chaff-like for use in large quantities in hog feeding.—Dakota Field and Farm.

AGRICULTURAL HINTS.

FOR BERRY GROWERS.

Hints on the Propagation of Strawberries and Black Raspberries.

It is not always best to invest too much money in new things. Nowadays, hundreds of new varieties of fruits are being propagated and introduced through the catalogues, describing the characteristics and good qualities of each in such a way that would excite one's curiosity and tempt them to invest. No doubt, though, some of the newer varieties are better than the old ones. But if you desire to try something new, don't "go in too steep;" buy just a few and try them, and if they prove satisfactory, you can make more of the same by propagating them yourself, just the same as the nurserymen. It is possible to produce 500 to 1,000 strawberry plants from one healthy

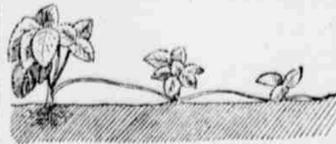


FIG. 1.

plant in one season. The plant is put in a very rich bed, deeply trenched and enriched the year previously with all the manure that can be mixed thereon. The plant then set, work the soil about it frequently, but not deep. Remove all the runners that appear at first. As the plant gains strength, permit the runners to remain, and draw them out in all directions from the parent plant, laying a small stone over each where the leaves appear. (See Fig. 1.) When rooted, separate them, set them from four to six feet apart each way, and treat them in the same manner as just described above for the parent plant. Continue this course, watering in time of drought with diluted liquid manure. Soil so rich as that is not desirable for producing fruit, but is just the thing for growing more plants.

Propagating the black raspberry is also easy to perform. If we observe closely the plants in the woods and learn the nature of self-propagation we would be more benefited therefrom. We observe the blackcap, with its long canes drooping the tips to the rich loose ground, where they coil and assume a snakish appearance and send out rootlets into the rich soil, thus forming a new plant. The natural mode of self-propagation is almost unknown in a great many places nowadays, since the woods are being cleared out, as the winds have full sway, swinging the plants to and fro, forbidding them fixing their tips in the ground. Natural conditions have been changed to some extent, and now nature has to be as-

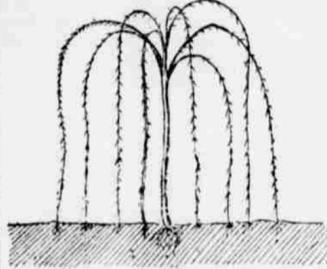


FIG. 2.

isted somewhat to fill the deficiency. Just after the fruit has been gathered is the time to commence "tipping" your plants. Cultivate the soil very finely and dig little holes two to three inches deep, and bend the tip ends of the canes into them perpendicularly, not slantingly, and cover with dirt to hold them in place. (See Fig. 2.) By following this method attentively it is possible to make above a hundred plants from a vigorous plant in a season.

The red raspberry and blackberry are propagated from the roots sprouting up. It is quite an item to the farmer and fruit grower to understand propagation; they may just have only one plant of a rare variety and increase it to many the same season, thus getting a start very cheaply, even if they do pay a big price for the first one.—S. C. Vaughn, in Farm and Fireside.

DAIRY SUGGESTIONS.

Always strain the milk as soon as it is drawn.

Churning at too high a temperature, or too long, will produce greasy butter, in which the grain is injured.

It is the attention paid to seemingly insignificant things in dairying that make or mar the profits.

Large cows need more feed than smaller ones, and a cow in the flush of milk needs more than when dry.

If you fear mottles in butter never ship it until it has been tested. Work out the streaks if any are in it.

It is essential in dairying that the food of the cows be uniform, and the supply should be arranged to have it so.—Rural World.

A Plan Worth Considering.

The North Carolina experiment station advocates a plan for buying and selling cows at prices based upon their milk yield. The rule is to pay \$12 per gallon for the milk given per day when rich enough to show 3½ per cent. of fat. To this price add or subtract a dollar for every one-fourth of one per cent. of fat, which the test shows the milk to be above or below 3½ per cent.

THE ROMAN ROADS.

Some of Them Are Still in Use and Call for No Repairs.

The Roman road was built for eternity. When the roadbed had been prepared by excavation it was carefully refilled, regardless of expense, with layers of sand, stones and cement. The surface was so solidly dressed that the wear and tear was reduced to a minimum. Investigations with regard to the preparation of the roadbeds were made years ago by Bergier on Roman roads that are still in use in France, and with the following results: In one road the excavation down to hardpan was three feet deep. This trench was filled up first with a layer of sand and cement an inch thick; then came a foot layer of flatish stones and cement; then a foot layer of small traveled stones and cement. These last two layers were so hard and firmly knit together that tools could break off fragments only with great difficulty. The next layer consisted of a foot of cement and sand, covered with a top-dressing of gravel. In another road in France the foot layer of cement and sand changed places with the layer of cement and traveled stones. A third road in France was examined at a point where it had been raised 20 feet above the level of the surrounding country, and a vertical section revealed a structure of five layers. First came the great fill of 16½ feet; on top of this fill they placed first a foot layer of flatish stones and cement, then a foot layer of flatish stones without mortar of any kind, then a half-foot layer of firmly-packed dirt, then a half-foot layer of small gravel in hard cement, and, lastly, a half-foot layer of cement and large gravel.

Paved roads were exceptional. An example of paved roads is the Via Appia, whose pavement consists of a hard kind of stone, such as is used for millstones. The stones of this pavement are carefully hewn and fitted together so precisely that the road often appears to be solid rock, and has proved to be so indestructible that after 2,000 years of continuous use it is still a magnificent road. Ordinarily, however, the top dressing of the road consisted of gravel and hard cement, and when, in the countless inscriptions such and such a governor is said to have restored a given road, reference is made to this top dressing of gravel and cement. The width of the military road was usually 60 feet; the raised center being 20 feet wide, with side tracks each of the width of 20 feet. In some roads the raised center was paved, while the side tracks were dressed with gravel and cement.

The viae privatae and the feeders of the military roads were usually dirt roads. They were much narrower than the military roads; sometimes they had a width of only ten feet, and, indeed, the feeders of the Via Appia were only two feet wide, but paved. The width of the Roman roads, all told, varied, therefore, from two to 120 feet.—N. Y. Independent.

MAKE IT AN ISSUE.

The Bad Roads Question in Township and County Politics.

Discussing the bad roads question in the light of a local campaign issue, the Los Angeles (Cal.) Times makes the pertinent question:

"By way of a starter in this matter, how would it do this fall to make candidates for supervisors take a cast-iron pledge to favor a comprehensive system of road improvement that will put an end to the present extravagant method of tinkering roads, and give us the beginning of a first-class system of public highways? Our present method, or rather lack of method, of constructing roads is extravagant and ridiculous, and would have excited the derision of those early road builders 2,000 years or more ago, whose work still remains in good preservation on the continent of Europe. The American idea of a country road appears to be to level off the soil, and wherever there is a hole filling it with loose dirt—and then filling it again. It needs as much science to construct a first-class road that will last as it does to put up a building, yet it is taken for granted that the first man you meet on the street can build a road. Consequently it is no wonder that the roads of this country cost every five years almost as much as the courthouse, and then we have nothing to show for it."

THE FARMER'S BIGGEST TAX.



We prove by soggy, sorry facts, The truth of what we say: The mud on the wheel is the biggest tax That the farmer has to pay.
—L. A. W. Bulletin.

There is a great difference in dairy salt; test samples before buying in large quantities.

SANCTUARY FOR ELEPHANTS.

Somaliand Would Make a Good One. Set Apart at Once.

A correspondent writes urging the need of immediate action, if the African elephant is to be saved from speedy extinction. "I desire to call attention," he says, "to the opportunity which our protectorate over Somaliand gives us for constituting a portion of that country a sanctuary for the remaining herds of those animals—an opportunity so favorable in all respects that it seems only necessary to state the case to insure the adoption of this measure.

"Of late years Somaliand has been traversed by numerous parties of sportsmen, and the herds of elephants which a few years ago inhabited the mountain range behind Berbera have been driven out. This took place in the belt of country, the hunting in which is now reserved for the use of officers of the Aden garrison. These herds, or the remnants of them, have taken refuge more than a hundred miles further to the west, in the country of the Gadabursi, to the south of Zeila.

"This large tract has been recently added to the Aden reserve, which therefore now again contains elephants. My suggestion is that the shooting of elephants should be prohibited within the whole of the reserve. Great advantages are granted to the officers of the Aden garrison, which I should be the last to grudge them, and it is a small concession to ask them to make in return—that, within certain specified limits, they should abstain altogether from killing elephants. I do not for a moment believe that these gentlemen, who are good sportsmen, would oppose this measure. Even if the privilege were nominally retained for them, it would not be of long duration. The experience of the past would be repeated. It is not that the animals are exterminated; the essential fact to be remembered is that a single shot fired at one member of the herd is enough to make a whole band abandon that part of the country.

"This belt of country is particularly favorable for the constitution of such a sanctuary. It is comparatively near home, and therefore likely to be under constant observation. I saw tracks of elephants on the 15th day from leaving London. The close supervision by the assistant residents, who are able and experienced administrators, stationed on the coast, would be comparatively easy, owing to the fact that numerous parties of sportsmen traverse the region in question every year, and would, of course, report. They are also kept informed by native caravans, who visit the coast for purposes of trade, and who, owing to the wise and just treatment which they have received, are our fast friends. The Somalis are unarmed, except with spears, and therefore have not the power, even if they had the will, to go behind the restriction. They decline to eat the flesh of elephants; therefore an elephant killed is a ton of meat wasted, which is a thing abhorrent to us all. The region in question, which is mountainous, with fairly abundant forests and river beds bordered with dense jungle, is peculiarly attractive to elephants.

"Let me deal with possible objections. I have heard it urged that the officers at Aden would make so little use of the right that there is no purpose in restricting them. I do not think they would make this claim for themselves. On the contrary, I have reason to expect the heartiest cooperation from the authorities at Aden. It is obvious that a sanctuary in which the favored few are allowed to go on killing elephants is no sanctuary at all. It has been said that restriction for this area would be useless, as the Abyssinians, who have guns, raid it in search of ivory; but to this I reply—first, that such raids should be prevented, and, secondly, if the elephants were thus harassed, they would find a refuge in the eastern part of the reserve, which they frequented less than ten years ago, and which is out of reach of the Abyssinian frontier.

"A memorandum embodying these considerations has been forwarded to the India office. It has, I believe, been favorably entertained by the secretary of state, and forwarded to the government of Bombay, under whose political supervision Somaliand lies. My purpose in writing to you is to invite an expression of opinion from naturalists, sportsmen, and, not least, from those interested in the future of Africa. The question of once more utilizing the African elephant, as was certainly done in Ptolemaic times, may be one for subsequent consideration. The preservation of the race from extinction is urgent. Two or three years hence it may be too late so far as Somaliand is concerned."—London Times.

Two Thousand an Hour.

"Standing on the boulevard the other night at Eighty-sixth street, New York, watching a throng of bicyclists," said a west sider, "I counted those going north between the hours of 8:40 and 9:10. There were 547 men and 78 women, 623 altogether. I did not undertake to count those going south at the same time, but I should say that at a modern calculation there were at least half as many more, making the total number passing that point in 30 minutes about 1,000. The currents vary in strength later there would be fewer going and more going down; but in the part of the pleasant evenings a total of 2,000 an hour would be a reasonable estimate."—N. Y. Sun.