

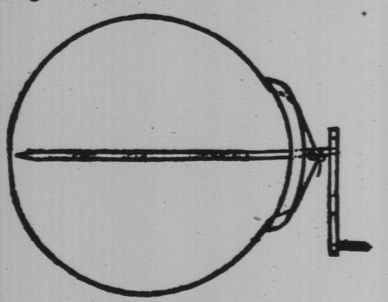


FARM AND GARDEN A CORN SHOCK BINDER.

It Makes a Straight, Compact Shock and Saves Twine.

Take a round hard wood stick—hickory or ash is best—1 1/2 inches in diameter and 4 1/2 feet long and with a drawing knife sharpen one end to a tapering point.

On the other end fasten a stout hard wood crank. Exactly in the center of a piece of wagon felly bore a hole just large enough to permit the round stick



A SHOCK BINDING DEVICE.

to turn freely when inserted. Round off the inner corner at both ends and bore an inch hole diagonally through the felly at each end.

Put the rope through the loop in the loop, drawing the knot up to the loop. Then wrap the rope half way round the stick and fasten with the wire, leaving the ring between the two fastenings.

Now tie a ring about an inch in diameter on one end of a short piece of strong cord and tie the other end through the hole in the felly that comes on the left hand side when the binder is in use.

Now tie a ring about an inch in diameter on one end of a short piece of strong cord and tie the other end through the hole in the felly that comes on the left hand side when the binder is in use.

This may seem a little complicated, but a few hours' practice will enable any one to do the work rapidly. The correspondent who originally described this device, substantially as it is here repeated, in The Farm, Field and Fireside says its principal advantage lies in the quality of the work performed.

Some writers recommend 25 hens and 2 cocks for a pen. It will not work in large flocks with open range.

Some writers recommend 25 hens and 2 cocks for a pen. It will not work in large flocks with open range. A piece of moist flannel is laid upon a plate, and a certain number of seeds are counted out and laid upon the flannel, a second fold of which is placed over them.

Buyer, as shown in a homemade germinator illustrated in a circular of the department of agriculture. A piece of moist flannel is laid upon a plate, and a certain number of seeds are counted out and laid upon the flannel, a second fold of which is placed over them.

Buyer, as shown in a homemade germinator illustrated in a circular of the department of agriculture. A piece of moist flannel is laid upon a plate, and a certain number of seeds are counted out and laid upon the flannel, a second fold of which is placed over them.

Buyer, as shown in a homemade germinator illustrated in a circular of the department of agriculture. A piece of moist flannel is laid upon a plate, and a certain number of seeds are counted out and laid upon the flannel, a second fold of which is placed over them.

WHAT A STRAIN IS.

Meaning of a Term That is Often Used in Poultry Talks.

The poultryman derives pleasure from the business and adds dignity to it by carefully fostering and establishing desirable features and qualities in his favorite breed, making the same prepotent in the blood, thus securing a greater certainty of their being transmitted to the future progeny, and until a flock of fowls can be produced which will show the improved distinguishing features claimed for it in a satisfactory degree at least, sufficiently marked to be recognized by others who might be experienced with the breed or variety sought to be improved, it should not receive merit for being an established strain for the palpable reason that there would be no assurance of its being the same breed which would be improved in that direction by the use of stock from such supposed improved strain or variety.

The following definition fully describes what the meaning of the term "strain" is as applied to certain flocks of thoroughbred fowls—viz: One family bred through many generations by a faithful continuance of its own blood, except when it becomes necessary for the well being of such family or strain to introduce sufficient foreign blood to maintain health and strength, after which breeding it out by drawing it from the strain itself. Thus in a yard of fowls which have been bred strictly in the family or strain a female of blood foreign to the same may be used by breeding her to a male of the original stock selected with a view to making or preserving the characteristics already established as nearly as possible. If the progeny from this mating is satisfactory, two lines of the same family can be started by breeding a male of the one to the pullets of the other, and vice versa, after which select a male of the original stock to mate with the female progeny of the last mating.

In addition to the foregoing, it is to be presumed that the family or strain possesses one or more qualities in greater excellence than other families or strains of the same breed, which may distinguish them from the race in general, or that a greater part of the various individuals of the strain can be recognized by the same. This is the grand object for carefully preserving the same, as otherwise it would operate as a distinction without a difference, a waste of patience and care.

To what extent this faithful adherence to a certain line of breeding may be carried on so as to perpetuate a strain we cannot assert, but that some breeders do aim at it we are well assured. For example, one breeder has been breeding for a certain color or shape by this method of establishing a strain for several generations back until he has produced good color in penciling, striping and general shape in the greater part of the flock. In fact, the individuals are so much alike in these respects that close observers recognize the same and pronounce them as such a man's stock, thus showing them worthy to be styled as a strain.

On the other hand, there are those who claim and advertise particular strains of fowls which are wholly unworthy of it, and the stock produced from the same, by its irregular breeding, is a veritable catalogue of the claims. Because a man has a flock of fowls which seem to fill his ideas in several sections it is no evidence of a carefully bred strain of fowls, as he may have picked them up from several yards on account of this uniformity, which, if bred together, would fail to produce the characteristics wanted.—Fanciers Gazette.

Long Island Duck Farms. Long Island, N. Y., is famous as a producer of ducks. It contains many duck farms, including the most extensive plants for the purpose in the world. Several of the largest of these

places are situated in Great South bay, near the villages of Moriches, Eastport, Speonk and Westhampton. There are 40 or more duck farms in this section of Suffolk county, and there are raised on them annually between 230,000 and 240,000 ducks. The illustration shows the method of killing and bleeding employed on these farms.

Two or More Cocks. Some writers recommend 25 hens and 2 cocks for a pen. It will not work in large flocks with open range. A piece of moist flannel is laid upon a plate, and a certain number of seeds are counted out and laid upon the flannel, a second fold of which is placed over them.

Buyer, as shown in a homemade germinator illustrated in a circular of the department of agriculture. A piece of moist flannel is laid upon a plate, and a certain number of seeds are counted out and laid upon the flannel, a second fold of which is placed over them.

Buyer, as shown in a homemade germinator illustrated in a circular of the department of agriculture. A piece of moist flannel is laid upon a plate, and a certain number of seeds are counted out and laid upon the flannel, a second fold of which is placed over them.

Buyer, as shown in a homemade germinator illustrated in a circular of the department of agriculture. A piece of moist flannel is laid upon a plate, and a certain number of seeds are counted out and laid upon the flannel, a second fold of which is placed over them.

Buyer, as shown in a homemade germinator illustrated in a circular of the department of agriculture. A piece of moist flannel is laid upon a plate, and a certain number of seeds are counted out and laid upon the flannel, a second fold of which is placed over them.



FRUIT AND FLOWERS THE LILIES.

How to Grow Them in the Garden in Pots and For Winter Bloom.

Lily bulbs should invariably be planted in the fall, and as early as the fall as they can be secured, especially in the western and southern states. All plants are transplanted with least injury during their dormant or resting season, which with the lily is after the plant is through blooming in the autumn.

The lily's dormant period, however, is comparatively brief and it soon begins to put forth new roots preparatory to the next season's growth. By Dec. 1 all lilies which have remained undisturbed in the ground have made most of their root growth for the following year and in the spring can devote all their energy to the production of flowers.

Again, while gladioli, tulips, narcissi, etc., have their vigor and flowering qualities improved by an annual lifting and drying, the lily suffers for even a week's absence from the embrace of Mother Earth, and when exposed to the air rapidly shrivels and deteriorates.

Candidum must be planted or potted in August or early September; Excelsior in September or October; and the others not later than the last of October, except Auratum, the gold banded lily introduced from Japan. Most of the Auratum bulbs are imported, reaching here in November, for winter culture as well as for pot culture and winter forcing, though blooming late. It is one of the loveliest and without question the most popular of the family. Varieties are Album, white; Roseum, white spotted and shaded rose; Rubrum, rose, shaded carmine; and Melampnem, shaded and spotted, rich blood crimson. Plant the bulbs eight to ten inches deep.

Provide thorough drainage, so that water will never stand about the bulbs of lilies. Never allow fresh manure near or in contact with the bulbs. A handful of sand placed around each bulb at time of planting is an excellent safeguard against rot and disease. All lilies, except Candidum, which delights in an open, sunny location, should be partially shaded from the hot midday sun.

Any lily can be made to grow well in a pot or box and will be movable for house or veranda location. Fill with good rich garden loam, with a plentiful mixture of sand, but no manure. Plant the bulbs deeply, so the base is four or five inches below the surface. Water moderately, but thoroughly and set away for the winter in a cool, dark, protected place where the temperature is low, but where there is no danger of freezing.

Kindred best adapted for winter blooming are Harsitii, Candidum, Longiflorum and the Lancifolium. The treatment is the same as for pot or box culture, except regarding the time of removal from the dark cellar or frame. Liliun harsitii potted in August and brought to heat and light by the middle of October will bloom at or before Christmas. If brought in from Norway at intervals of two or three weeks, the blooming season can be extended to Easter and afterward. The other lilies require from two to four weeks more of growth than Harsitii before blossoming.

The foregoing instructions and illustration are selected from an interesting article in Texas Farm and Ranch on lilies and their culture.

Flowering the Freesia. To have freesias in flower as soon as possible, The Florists' Exchange recommends to plant the bulbs in flats as soon as received. Give a good watering and place them under the bench in a cool greenhouse, cover with a cloth or several layers of newspaper and keep covered until they start into growth; then place the flats in a good light, as near the glass as possible, and keep the house moderately cool.

When to Plant Hardy Perennials, Etc. Hardy perennials, such as phlox, digitalis, hollyhock, columbine, etc., should, as a rule, be planted in September. The same is true of most bulbous plants, including the crocus, hyacinths, lilies, tulips, etc. The gladioli are usually set in spring.

SEEDING GRAIN.

Broadcasting Versus Drilling—Advantages and Disadvantages.

"Many old farmers believe that with modern improvements in cultivating implements, the grain drill for seeding grain is not much if any improvement over the old fashioned practice of broadcasting the seed and harrowing it in," says The American Cultivator, in introduction to a comparison, as follows, between broadcasting and drilling.

The drill distributes the seed more evenly than can be done by hand sowing, but the grains are left in lines closely crowding each other, and between two ridges which when beaten down by rains or melting snows cover the seed an inch too deeply.

When the drill was first introduced, it was reckoned an advantage that its tubes made some impression on the clods which the cultivation at that period usually left on the surface.

But the clods prevented the wheels of the drill from sinking so deeply in the soil and thus kept the points of distributing tubes near the surface. Where the grainfield is prepared with the disk harrow or the spring tooth cultivating harrow the soil is mellowed much deeper than it should be. To sow the grain on the surface of a mellow seed bed and then merely run a smoothing harrow over it to press it into the soil, leaves the grain in better condition for growing than to cover it as deeply as the drill is sure to do.

Winter grain is to some extent protected from heating out by the ridges which the drill leaves on each side of the rows of grain. But if the land is heavy and the soil is frozen under the grain rows, these hollows often fill with water in winter, and this entirely destroys the plant, for its root, held tight by the frost, the expansion of the water in freezing snaps the leaf growth just at the surface of the ground, making it impossible for it to sprout again. Spring grain is not subject to this injury, and therefore for spring grain drill seeding has advantages over broadcasting, especially if there is a fertilizer attachment whereby mineral fertilizers may be distributed in close contact with the seed.

Wherever a drill is used to put in winter grain the seed bed should be made firm by repeated rolling so that the drill tubes will not penetrate deeply. Then, after the grain comes up, the surface should be rolled and then harrowed with a 40 tooth drag, which will roughen the surface. This rolling and dragging of wheat is not a check check seed growth and make the plants taller, spreading horizontally over the roots and thus partly protecting the soil from sudden changes of freezing and thawing.

It is not covered more than an inch deep to make this treatment successful. If covered deeper than this, the breaking down of the ridges beside the grain will put so much soil above it that it will be entirely smothered.

Fail Plowing to Kill the Tomato. An insect pest of the tomato, which frequently does great damage to the early market crop, is the tomato worm; it is also known as the "corn worm" in the north and the "worm" in the south, says E. B. Voorhes in a bulletin on the tomato. This worm bores into the ripening tomato and is thus difficult to deal with directly. The caterpillar that matures in corn is responsible for early October worms under ground and changes to a pupa, passing the winter in this condition. If the ground remains undisturbed, the moth appears in early spring and lays its eggs upon such plants as it can find.

Of three common conditions of barnyard manure, half rotted manure is the most valuable and well rotted manure the least, because of their relative amounts of nitrates. Manure should be kept packed away from the air as tightly as possible. If rotted, it should be plowed under just before planting; otherwise, several months before that time.

The more litter used in manure the greater liability to loss of nitrogen. The use of bedding material, free from decomposable organic matter is a means of protection against loss of nitrogen.

Agricultural Benefits. The Ohio station has come to the conclusion that for its latitude wheat sown as soon as possible after the 30th of September stands the best chance of escaping the attacks of the Hessian fly.

If properly cared for, the fodder crop sweet corn is as much better for stock as is the grain for eating as compared with ordinary field corn, remarks an exchange.

Onions intended to be kept for late sales should be harvested with the tops united, says Roy Hagland of St. Paul. They are much less liable to rot.



FARM AND GARDEN FOREST TREE PLANTING.

An Effort to Promote It Among Farmers and Landowners.

The division of forestry of the United States department of agriculture through a recent circular offers practical and personal assistance to farmers and others in establishing forest plantations, wood lots, shelter belts and wind breaks. Applications for the conditions of such assistance should be made to Gifford Pinchot, forester, Washington, D. C.

The design of this undertaking is to aid farmers and other landowners in the treeless region of the west and wherever it is desirable to establish forest plantations. In the very interesting explanatory circular, No. 22, Mr. Pinchot touches upon various aspects of forestry. Tree culture in regions formerly treeless, he says, is dependent largely upon agriculture.

Wherever large areas of land have been brought under cultivation the growing of trees is yearly becoming more successful. Nearly every state of the plains region has, among many failures, some admirable examples of plantations of

all ages, from 1 to 25 or more years, which have been in every way successful. The success of these plantations, when compared with the more numerous failures, proves the great need for practical experience, combined with wide and accurate knowledge, in growing forest trees in the west.

The forest plantation at the Agricultural college, Brookings, S. D., of which an interior view is given in the first cut, illustrates what may be accomplished in a few years on the open prairies of that state. This is a mixed plantation, 12 years old, of birch, black cherry, green ash and white elm.

The second cut shows a typical view of a young forest plantation two years after planting. The plot on the left is a mixed planting of box elder, oak, white elm, green ash and black locust. The plot on the right is set to Russian mulberry, oak, white elm, black locust, honey locust, green ash and box elder. This plantation is at Logan, Utah.

It is not responsible to suppose that forest culture can be made a direct source of great financial profit in the arid regions, but if it cannot bring in important sums it can save the farmer very considerable expenditures by supplying material which he would otherwise have to buy. The indirect value, too, of well established groves, wood lots, shelter belts and wind breaks in the protection which they afford is of the first importance. Such plantations, in addition to being of direct use for fuel, fence posts and material for many miscellaneous farm uses, are invaluable in providing protection for crops, orchards, stock and farm buildings.

One of the most important indirect services of forest plantations, and one rarely taken into consideration, is the increased market value of a well wooded farm on the prairie lands of the west over one without timber. Conservative estimates made on the ground indicate that the farms of eastern and central Kansas and Nebraska that have well developed plantations of forest trees upon them, either in the form of wood lots, shelter belts or wind breaks, are worth more per acre than farms without them.

In nearly the whole of the broad prairie belt extending from the wooded regions to longitude 100 degrees west and reaching from North Dakota to Texas trees may be grown with varying success. In the western border of the wooded area nearly all the species may be grown which are indigenous to the adjacent woodlands. Farther west the range in selection becomes more and more restricted until the western limit

of successful tree culture on nonirrigated lands is reached. Many of the worst farms in humid regions may be brought back to their original fertility by growing forest trees upon them for a series of years, and very many of them contain land better suited to the production of wood than to any other purpose. Such land should never have been cleared. It is fortunate that throughout the regions once wooded without farm lands well usually revert to their previous condition if protected from fire and stock.

TYPICAL TWO-YEAR-OLD PLANTATION. Of successful tree culture on nonirrigated lands is reached. Many of the worst farms in humid regions may be brought back to their original fertility by growing forest trees upon them for a series of years, and very many of them contain land better suited to the production of wood than to any other purpose.

Of successful tree culture on nonirrigated lands is reached. Many of the worst farms in humid regions may be brought back to their original fertility by growing forest trees upon them for a series of years, and very many of them contain land better suited to the production of wood than to any other purpose.

Of successful tree culture on nonirrigated lands is reached. Many of the worst farms in humid regions may be brought back to their original fertility by growing forest trees upon them for a series of years, and very many of them contain land better suited to the production of wood than to any other purpose.

BOVINE TUBERCULOSIS.

Present Status of Knowledge Concerning the Disease.

The Ohio experiment station has made special study of bovine tuberculosis and states that the present status of knowledge concerning the disease may be summarized as follows: 1. The disease is caused by the growth within the animal tissues of a vegetable organism, Bacillus tuberculosis.

2. The bacterium of bovine tuberculosis has not been specifically differentiated from that producing tuberculosis in the human subject. 3. Tuberculosis is produced in the lower animals by inoculation with tuberculous material from human subjects.

4. Tuberculosis has been produced in man by inoculation with the tuberculous material from cattle. 5. The development of tuberculosis in human subjects has followed in so many cases upon the use of the meat or milk of tuberculous cattle that there is no room to doubt that the disease is transmitted from cattle to man in this manner.

6. That tuberculosis is a germ disease, caused as surely by contagion or infection as are smallpox and measles, is confirmed not only by the innumerable cases in which it has spread through herds from single infected animals, but also by the fact that many herds of cattle remain exempt from it, and this fact demonstrates the possibility of entire eradication of the disease. 7. In view of the experience of other states, it would seem that the rational method of extirpating bovine tuberculosis lies not in the wholesale and immediate testing of all the cattle of the state and the slaughter of all reacting animals, but in such municipal action as will control the sale of both milk and meat within municipal limits.

Buying Cows. When we were buying cows occasionally, says the Boston Cultivator, it was not much satisfaction to us to have the one who wanted to sell a cow tell us she gave so many quarts a day "in the best of the season." We had handled cows and milk for years and in selling milk would have been willing to have obtained considerably less in the flush time if we could have got more in the worst of the season.

We had owned two cows standing side by side in the barn and running in the same pasture, one of which gave 18 to 20 quarts at her best, while the other never exceeded 14 quarts a day. The 18 quart cow received the most grain, but shrank to 12 quarts as soon as the other did to six quarts before the other did to eight, while she went dry nearly a month earlier and did not keep in as good flesh. We think if the milk had been weighed every day the 14 quart cow would have had the best record for the year.

A test made three or four months after calving and another two months later gave a much better idea of the quality of the cow than a test made when she is fresh, but the weighing of the milk for the year tells the whole story. Six thousand pounds of milk, or nearly 5,000 quarts, is a good record. It is an average of about nine quarts a day for 11 months, and a cow which gives 20 quarts or more when fresh ought to reach very near that.

Many times when they do not it is not the fault of the cow. The drying up of pastures and no green food ready to give to her; an unwillingness to feed any grain in summer, with the idea that it is not needed, and but little in winter, because she does not give enough to pay for it; no shade in summer to protect from the heat and a too well ventilated barn, which does not protect from the cold in winter; irregular hours of feeding and milking and a lack of proper care generally may reduce a 6,000 pound a year cow to two-thirds of that amount daily.

The man who exchanged cows with the old Quaker got one which would give more milk than that that he should have swapped pastures instead of cows, and perhaps there were some other points in his treatment which he could have changed to his advantage and that of the cow.

Dairy Fodder. Professor Voorhes of the New Jersey experiment station tells Rural readers that he finds no difficulty in getting cows to eat as much as 100 pounds per day of oats and peas, barley and peas, crimson clover, etc. Cows are fed immediately after milking at 6 o'clock, again at noon and the remainder immediately after milking at eight. The harvesting and feeding of the oats and peas begin just as soon as the peas are coming into bloom and the oats are beginning to run into head, and they remain in a good succulent condition from a week to ten days after this period, the time depending upon the season. If dry, they mature more rapidly; if wet, more slowly. The same is true in the case of rye and barley, the harvesting beginning just as they are coming in head, though with these crops the maturity is more rapid than in the case of oats. The morning feed of the cows is given immediately after cutting, and enough is cut to feed through the day; hence the noon and night feedings are a little willy, but no attempt is made to wilt the morning feeding.

Water and Butter-milk. Very few butter makers and fewer consumers are aware that much butter is on the market which has been churned and worked without the use of water to wash out the buttermilk. There is one factory in Colorado that is following this plan, and its butter is meeting with good sales and at top prices. The flavor is fine, and the keeping qualities are much better, so far as it has been able to observe.—Live Stock.

Very few butter makers and fewer consumers are aware that much butter is on the market which has been churned and worked without the use of water to wash out the buttermilk. There is one factory in Colorado that is following this plan, and its butter is meeting with good sales and at top prices.

Very few butter makers and fewer consumers are aware that much butter is on the market which has been churned and worked without the use of water to wash out the buttermilk. There is one factory in Colorado that is following this plan, and its butter is meeting with good sales and at top prices.