FARM AND GARDEN

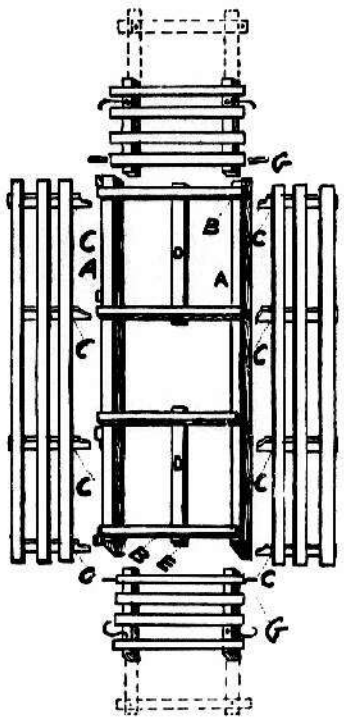
A COMBINATION RACK.

A Hayrack Convertible Into a Hog, Wood or Feed Rack.

The combined hay and hog rack presented in the cut is the arrangement of an Ohio Farmer correspondent, who says:

The sills, AA, of this rack are 2 by 8 and 16 feet in length. The cross benches, BB, are 2 by 4 and of a length to suit the width of the wagon. These are bolted to the sills with half inch bolts 10 inches long. These bolts are found to be somewhat short, but should be countersunk from the underside of the sill and a small nail driven in crosswise through the sill to prevent the bolt from being lost should a nut happen to work loose and drop off. The nuts are on the top side where they can easily be seen.

The corresponding cross benches, CC, on the wings are 3 feet 8 inches in length and made of 2 by 4 stuff These are cut, as shown in the engraving, to slide on over the sills and fit under the



A CONVERTIBLE HAYRACK.

boards DD in the center of the rack. These boards should be 2 by 8 and cut right length to reach, as shown in illustration. Where the wing benches CC intersect these boards they should be beveled, as shown at E, making a stronger and better fit. The side boards or wings are the same length as the sills and should be 1 by 5, and are nailed and bolted to benches CC.

The end rollers, GG, are made of 3 by 4 stuff and fitted into 2 inch holes in the ends of the sills. The rollers should be mortised to receive the end gate or ladder standing, as shown in the cut, and mortised loose enough so the end gates can be removed at will and higher standards erected for haying purposes. The illustration shows end gates for hog rack, and the dotted lines continued out show ladder arrangements for hayrack, which are made separate and changed at will to convert it into a hog rack or hayrack.

As a hog rack, box to haul stove wood, draintile, pumpkins, etc., the wings are erected into the clips shown on side of sills, the bottom floored over, end gates erected into mortises in rollers and hooked to staples in the side boards or wings. This makes a nice large box and a convenient hog rack.

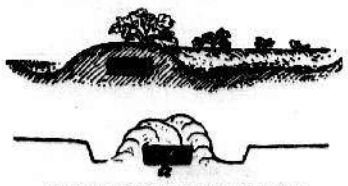
In fall and winter I detach the wings of this rack, and, placing it on the low down wagon, it makes an excellent feed rack.

Manure on Sugar Beet Land.

We have been taught that farm manures should not be applied to land in the spring prior to growing a crop of sugar beets, and that the use of large quantities of nitrogenous fertilizers is antagonistic to high quality. Experiments on the station farm at Geneva, New York, do not support these conclusions. On the station farm, beets grown on land to which was applied in the spring ten cords per acre of barn manure were as a whole richer than those with or without commercial fertilizers, were healthier and in appearance were a more satisfactory crop. Large additions of nitrogen, as nitrate of soda and dried blood, did not appear to depress the proportion of sugar.

Planting Cucumbers, Melons, Etc.

For a number of years my practice has been to plant cucumbers, melons and similar plants on ridges manured in the row. The results are better than with flat culture or manuring in the hill. We plant cucumbers from about



ON RIDGES MANURED IN THE ROW.

the middle of June until through the first week or thereabouts of July. First, furrows are run across the field at five feet apart, and manure is scattered along the furrows (a in the figure); then two more furrows are plowed around the first, forming the ridge over the manure. After leveling down the top the hills are made four feet apart, says a correspondent of Vick's Monthly.

STACK SILAGE.

A Practical Method of Preserving Forage in Arid Regions.

The grazing problems of the southwest and how to meet them is the subject of a new report (bulletin 16) in the grass and forage investigations of the national department of agriculture. In addition to the methods of improving the range by cultivating the surface of the ground, raising native grasses etc., the cultivation of the ranker and bulkier forage crops is advised. But the practice of making good hay from alfalfa, cowpeas, Johnson grass, the sorghums and other coarse or succulent plants is often attended with much difficulty, and the product varies in quality and value according to treatment. Successful haymaking requires considerable experience, besides taking time and a large force of laborers, so that the expense of preparing a cured crop often amounts to very nearly its feeding value. The fact that it requires a number of men will sometimes prevent cattle owners from trying to put up any hay. The cost of building a silo precludes its use by the majority of farmers and stock owners, especially in the more sparsely settled districts and in the arid and semiarid portions of the southwest, where lumber and labor are high priced. Fodder and hay are very desirable, but they must be cheap and easily prepared, else they will not be used.

These facts lead Assistant Agrostologist J. G. Smith, author of the report mentioned, to the consideration of stack or open air silage, which finds a very wide use in hot countries among stock farmers and men whose means do not permit them to purchase silage cutters and build silos. The theory of making silage is to pack the green forage into a compact mass, thus preventing the entrance of air into the material. The green mass undergoes a sufficient fermentation to partially cook and preserve it. In building a silo the walls are made as nearly airtight as is possible, for, where fermentation is carried too far, silage becomes moldy and indigestible.

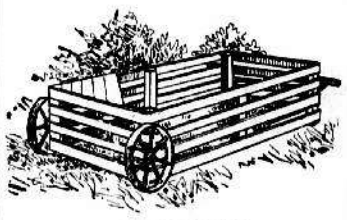
Where air has free access during fermentation the process will be carried too far, but where the amount of air is limited the fermentation is only carried to a certain point and the palatability of the food is improved. It has been found that a silo and fodder cutting machine to chaff the stems into small pieces is entirely unnecessary in dry climates. Instead the green grass or green fodder is raked and stacked as soon as cut. Then, when the pile has been carried up as high as convenient, weights are put on the top and the sides are trimmed down perpendicular with a hay knife. This method produces a sweet silage, which has very nearly the same feeding value as silage prepared at greater cost in built silos.

It has been found that by applying the pressure at the right time one may readily control the fermentation and produce either sour or sweet silage, as desired. Thus, if the fermentation is not allowed to proceed above 130 degrees F., if the stacks are weighted when this temperature is reached, sour silage is produced. If the fermentation is allowed to go on until the temperature rises to between 150 degrees and 165 degrees F. before the stacks are weighted, the mass will often become highly carbonized, appearing dark brown or almost as black as charcoal, but the silage is sweet and relished by cattle. Sour silage is considered more satisfactory for dairy purposes than sweet silage.

The possibility of preserving large quantities of the coarser forage plants by this method will undoubtedly prove valuable for extensive districts in the arid grazing regions. It will not, however, be adaptable to humid climates.

One Way to Put Pigs Out to Grass.

While among the farmers in Wisconsin we ran across a novel device—a movable pigpen, which many of our readers who keep in a pen pigs which



A MOVABLE PIGPEN.

they want to put out to grass will find very useful, says a Farm and Fireside writer. The illustration will show how it is made. A pair of old wheels of any kind will answer. One corner is roofed over and floored for a sleeping pen or shelter during a storm. A trough is also permanently attached to the opposite corner.

The pen can be readily shifted from place to place each day, thus giving the pigs a fresh place and new grass continually.

One Thing and Another.

The Nebraska state board of agriculture estimates that the original winter wheat area was 1,000,000, or 200,000 acres over last year. Of this less than 50,000 acres remain, and possibly 25,000 acres will produce a fair crop. The spring wheat area, 1,500,000 acres, is 800,000 acres over last year's. There will be 8,000,000 acres of corn put in, or 1,000,000 over last year.

Irrigation water does the most good when placed close to the stem of the plant or trunk of the tree and allowed to soak downward, according to California station tests.

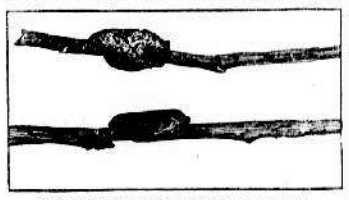
Seedsmen offer soy bean seeds at $2.50 to $5 per bushel. This makes the cost far too great to justify growing soy beans as a general crop, according to W. C. Latta of Purdue university, who advises farmers to try soy beans in a small way as a special crop and then grow their own seed if the crop gives promise of being valuable.

FARM AND GARDEN

THE TENT CATERPILLAR.

Easily Destroyed In Its Several Stages of Existence.

The orchardist who suffers severely from the apple tree tent caterpillar must be condemned as careless. The caterpillars may be quite readily located and destroyed while in the eggs; the tents are conspicuous and quickly burn-



EGG MASSES OF TENT CATERPILLAR.

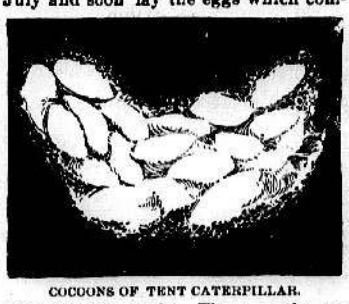
ed; the young caterpillars yield speedily to arsenicals and the white cocoons plainly show themselves for destruction. The caterpillars in a nest of ordinary size will consume 2,500 apple leaves in a week, and, as they feed for five or six weeks, those from two or three nests may almost completely strip a tree of its foliage and greatly lower its vitality. They seem to prefer the taste of wild cherry, and this tree was probably their original food plant. All such trees should be carefully watched, as they are liable to be starting points for the invasion of nearby orchards. Next to the wild cherry the caterpillars seek the apple, but they also do considerable damage upon cherry, plum and peach.

From late July until the following spring the insects will be found in the egg. These eggs are laid in peculiar rings or bands—"thimbles" or "caterpillar belts," some call them—about the smaller twigs. They are covered with a thick layer of glue, which makes a glistening protection from the weather. These bands are large enough to be plainly seen and can be easily removed and burned when pruning the trees. The little caterpillars form in the eggs in the summer, but do not hatch until the middle or last of the following April. They soon begin the construction of the well known nests. These are usually placed in some crotch of twigs near the abandoned egg band and are formed by the threads of silk which the caterpillars spin. As the larvæ grow and the nest becomes too small another sheet of threads is spun, so that the tent is really a succession of nests, one outside the other. These white or yellowish masses of silk are easily destroyed by burning on the tree or by cutting off the twig and crushing the nest. This should be done in the evening or just before a storm, when the caterpillars have sought shelter.

The caterpillars feed until late in May. Their body color is black, but a prominent white stripe extends the full length of the back.

There are also numerous shorter irregular white lines and a row of oval pale blue spots upon each side, while the entire body is thinly covered with long yellowish hairs. The caterpillars, especially when young, can easily be killed by two or three sprayings with some arsenical poison. Birds feeding upon these caterpillars are yellow billed and black billed cuckoos, the black capped chickadee, Baltimore oriole, red eyed and warbling vireos, wren, chipping sparrow, yellow warbler and crow.

The larvæ crawl down the trunks of the trees in late May, when they are mature, and are nearly two inches long. They spin their cocoons on the trunks of trees, where they are protected by the rough bark; in the grass under the trees, about fences, eaves, window casings and the sides of outbuildings. When in such masses as shown in the figure, there is no excuse for not discovering and destroying the cocoons. From these cocoons the reddish brown moths emerge in late June and early July and soon lay the eggs which com-



COCOONS OF TENT CATERPILLAR.

plete the life cycle. These moths are quite large and are easily distinguishable from all but a few closely related species by the two oblique, nearly parallel, bands of white crossing the wings.

The foregoing points are reproduced from an outline, with illustrations, of the life story of the tent caterpillar given by the Geneva (N. Y.) station in bulletin 152, which concludes with these recommendations: Protect and encourage birds, destroy egg bands and cocoons and reward children for collecting them, burn out or crush the nests while the caterpillars are in them, spray the trees with paris green, london purple, green arsenite or arsenite of lime and last, but not least, see that wild cherry trees, crab apple trees and neglected apple trees along roadsides are kept free from the pests or cut down.

It appears from the experience of one New Jersey tomato grower, reported by Director Voorhees, that from every dollar's worth of nitrate of soda applied to the land there was a return of $53.50, from sulphate of ammonia a return of $44.26 for every dollar expended and from dried blood a return of $22.55 for every dollar expended. Similar results were obtained in the case of muskmelons, beet, forage crops and potatoes, showing the superiority of nitrate of soda.

THE BROOD FRAME.

One That Can Be Built by a Novice With Ordinary Tools.

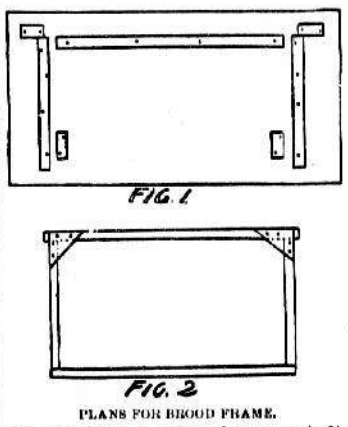
Having been working the past winter to design a hive that would come within the scope of those persons possessed of ordinary skill and tools, a writer in The Country Gentleman gives a description of that part which will cause a novice most trouble—viz, the brood frame:

Take a board of suitable size and nail on some cleats, as indicated in Fig. 1. Make a miter box the width of the frame, say, seven-eighths or one inch. Nail a piece in the bottom of one end for a stop. From this stop measure off the length of the top rail, and saw down at right angles. For the bottom rail you can set in a loose piece about an inch thick, which will avoid two saw gashes coming too close together.

For the end posts make another gash at the right distance from the stop.

For the brace pieces you will need another box about an inch and a quarter. Nail in bottom of this a stop sawed at an angle of 45 degrees, and from a corner of this saw a gash of 45 degrees. Now, if you take a piece an inch and a quarter wide and three-eighths of an inch thick, saw it off at an angle of 45 degrees, shove it into the box to the stop, and saw it off; then turn it over, saw again, and so on, you will get the corner pieces.

As to construction, you lay the top piece in its place on the board, and the side pieces in their places and nail on the corner pieces; then nail the top to ends and turn over and nail on bottom.



PLANS FOR BROOD FRAME.

and you have a strong frame, as indicated in Fig. 2, that will space itself in the hive and stay there. One frame will need braces on both sides to keep it the proper distance from the side of the hive.

As regards size authorities differ. I made mine 18 inches long because that was the length of four honey boxes, and 9 inches deep, because that was the depth of the hive.

The Potato Stalk Beetle.

The potato stalk beetle, according to the observations of Professors Faville and Parrot of the Kansas station, is a small insect with a snout, which in late May or early June deposits an egg in a slit made in the stem of the host plant. The larvæ hatched from this egg tunnels the stalk of the plant, and where the latter is infested with a number of grubs it is likely to wilt and die. The grubs spin cocoons and beetles are developed during the summer, but these remain in the stalk till early the next spring. They can therefore be destroyed by pulling up, drying and burning the potato plants.

But the stalk beetles like the ground cherry even better than the potato, and they also find congenial quarters in horse and bull nettles, jimson weed and cockle bur. It is necessary, then, to cut these weeds down in their early stages, when they will dry up, thus causing the beetles to perish, or to pull them up and burn them in the late summer.

Important Exports.

Some of the most important gains made in our exports for the fiscal year of 1898 occurred among the meat products. Shipments of bacon increased from 500,399,448 pounds, valued at $34,187,147, in 1897 to 650,108,933 pounds, valued at $46,380,918, in 1898. The export price of bacon averaged 7.1 cents for 1898 as against 6.8 cents for the year preceding.

In the exportation of lard 1898 witnessed an increase nearly as marked as in that of bacon. The amount of American lard sent abroad was larger by 141,028,405 pounds than in 1897, and its total value $10,584,187 greater. In the average yearly export price per pound there was an advance from 5.1 to 5.6 cents.

Another meat product that exhibited a considerable increase for 1898 was pickled pork.

American hams were also marketed abroad in greatly increased quantities.

News and Notes.

It is said that the United States will have 40,000 square feet of floor space for its agricultural exhibit at the Paris exposition, properly grouped under four general divisions, animal products, vegetable food products, vegetable products not foods, illustrations of the science and practice of agriculture.

Clover, oats and barley have been successfully grown in the Klondike.

Under favorable conditions two or three cuttings may be made in a single season from a field of rape grown as a primary crop.

A German agricultural journal states that a plantation of "flat peas" affords excellent "standing mast" for pigs, and its flowers are much frequented by bees, the honey from this source being exceptionally fine.

Some experiments of the New Hampshire station indicate that formaline treatment of seed potatoes is an effective remedy for scab. Formaline possesses the advantage over corrosive sublimate of being less poisonous and more easily applied.

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