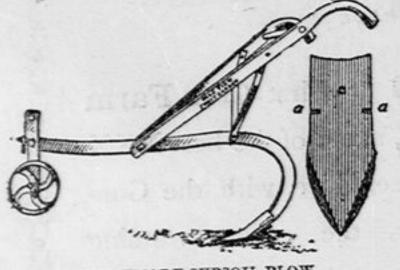
A HOMEMADE SUBSOILER.

An Implement to Follow the Breaking Plow In Clay Subsoil.

A Rural New Yorker correspondent sends to that journal a plan for making an excellent little single horse subsoiler that works to perfection and need not cost more than \$2.50. He worked the implement out thus in his

home shop: I first made a model, this being cut from thin wood, and, as good fortune shape the first trial. The beam and standard are formed of one bar of wrought iron 6 feetlong and five-eighths by 21/4 inches in size, which is strong

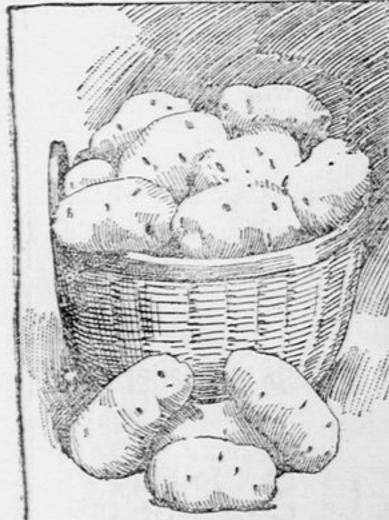


HOMEMADE SUBSOIL PLOW. enough for a draft horse. The share, or point, is of a peculiar shape, and is made of a new, large, steel "bull tongue" cultivator "shovel" three inches wide. The "bull tongue" is cut as shown in the figure, leaving a long, piercing, wedgelike point. The threefourth inch incisions at a a, allow the upper half of the blade to be bent or rolled backward, forming a long, deep groove that clamps very securely around the standard of the plow, where it is firmly bolted. The long, tapering point, when the wheel is adjusted for subsoiling to the desired depth, lies perfectly flat in its course through the soil-the curvature of the upper half of the blade being quite sufficient to lift, "ground mole fashion," the entire bottom of the furrow, while the passage of the standard, through the midst of this upheaval, breaks and pulverizes the hitherto hard, compact subsoil in a very thorough and satisfactory manner. The handles are those of an ordinary cultivator, and the wheel, seven inches in diameter, was purchased from a scrap iron man for 15 cents. There being some quite heavy forging upon the beam in bending it to the desired shape and in cutting the share down to the proper form, it will be necessary to call upon the blacksmith for that part of the operation.

To those unfamiliar with the practice of subsoiling it may be well to say that this implement is planned to follow the breaking plow, tearing up and mellowing the bottom of the furrow to the depth of about eight inches. Thus it will be plain that, if the breaking plow be turning to the depth of eight inches, the subsoiler stirs up another eight inches deeper, leaving the plant or seed bed pulverized to the depth of 16 inches.

'A Potato of Good Yield and Quality. The Joseph potato has received fa-

vorable mention from some of the New England potato growers. American Cultivator illustrates it from an ex-



THE JOSEPH POTATO.

cellent photograph of the potato as raised by a Vermont farmer and says: It is well to notice the size, shape and general appearance of the potato. The color of the skin is a light pink, and the flesh is white. The tuber is invariably free from core. It never has shown an inclination to grow hubbly or unshapely. It yields well, is

quality for a table potato. To Prevent a Cow From Sucking Herself.

of wonderful vigor and is of excellent

I enclose a sketch of a contrivance to prevent cows from sucking themselves. I tried about half a dozen different ways to stop a cow I have from sucking herself, and at last I tried this one, and I



FOR SELF-SUCKING COW.

find it very successful. I went to my ly. On opening a gate the lower bo halter for the cow's head, and a leather hind the front legs, and then I got the rest made of iron .- Arthur Mills Wil- tical Farmer. cooks, in Farmer's Advocate.

BEE PROBLEMS.

Photographing Bees - Their Habits, Especially Their Polyandrous One, to Be Fully Investigated.

Just how the problem will be solved

has not yet been decided upon in all

cases, but some of the proposed experi-

ments are interesting in prospect. For instance, in the case of the honey bee it is proposed to construct special observation hives; for although this insect has been serving man for centuries, we are not nearly so intimate with its habits as we might be. The hives will have glass windows, which can be opened on occasion and photographs made of what is going on inside. It is not known just how much honey each tee will collect in the course of a day, nor how long it will be gone on each excursion among the favored me, I secured just the right flowers. Special arrangements will be made for ascertaining this information. From the door of each hive a long tubelike passageway will lead, composed for the most part of glass, but in places of wood and metal. In this tube or front hallway of the hive, there will be a little vestibule or chamber in which the bee can be confined momentarily on his way in or out of the hive. The floor of the vestibule will really be the platform of a very delicate weighing instrument. When a bee starts to leave the hive it will be allowed to walk along the passageway, but when it reaches the exit the insect will find its way obstructed by a little glass door. Immediately another glass door will be slipped behind the honeygatherer and then, as it walks around the little chamber, its weight can be had accurately, the scale being adjusted to the fraction of a gramme. Next a delicate mechanism will drop a spot of paint, ink or other coloring substance on the back of the bee for the purpose of future identification, a record being taken of the released and allowed to proceed in quest of sweets. When it returns a note will be at a lower figure when brought to the made of how long it was absent and factory. when it passes through the vestibule it will again be weighed, the increase being recorded as equivalent to the amount of honey gathered. The different changes which take place in the hatching of be carefully studied; also the curious method by which the bees are enabled to "construct" queen eggs when the regular queen eggs have been destroyed and there is no resident queen to lay others. The reason why bees live under a system of polyandry will also be traced to its

USE AND VALUE OF LUPINES.

origin, if possible.

Some Information Concerning Them as Plants for Green Manuring.

Among nitrate-producing plants suitable for green manuring lupines have long held a prominent place. There are three species of cultivated lupines called blue, yellow and white, after the color of the flower. All are annuals. The lupines soils, where not even rye will grow. They have very long roots which penetrate light soil to the depth of six or eight feet. These plants are all quite hardy, and when properly treated yield a large amount of vegetable matter which is very rich in nitrogen. The growth, however, is entirely worthless for forage, as it contains a bitter, poisonous substance called lupulin. The lupines yield a great amount of large seeds. In Europe the seeds are crushed and macerated in water for a day or two. This washes out the injurious substances, and the residue makes a good food for sheep.

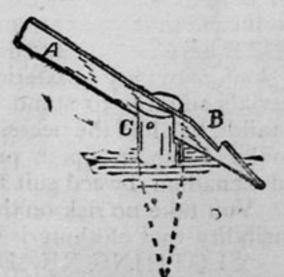
In the United States land is still so plentiful and cheap that lupine soils are not considered worth cultivating except in some localities where early vegetables and stone-fruits are grown for market. On better soils, crimson clover will yield more profit than lupines. Lupines may be sown in spring in the northern, and in fall in the southern States. The seed is usually sown broadcast at the rate of 40 to 60 pounds per acre, and covered in to the depth of three or four inches. The plants when suitably fertilized are vigorous growers, and one plant spreads out till it occupies a square yard or more.

The seed of cultivated lupines is nearly all imported, and costs about ten cents per pound. Like all leguminous plants, the lupines draw upon the free nitrogen of the air for the more costly part of their food and fix this in their tissues, which, when turned under become available for non-nitrogen-gathering plants. Chemical analyses show that one ton of green lupines contains of nitrogen 8 8 pounds; phosphoric acid, 6 pounds; potash, 17.3 pounds. The average growth on weil-fertilized soil is six tons per acre, which at the prices of commercial fertilizer makes the fertilizing value per acro worth about \$20. Of this \$20, \$8 represents the value of the nitrogen taken from the atmosphere, \$1.80 is the value of the contained phosphoric acid, and \$10.20 that of the potash. Both the latter substances smut come from the soil. As the very sandy soils on which lupines are ordinarily grown contain naturally scarcely a trace of either phosphoric acid or potash, both these substances must be supplied in the fertilizer or it will not

pay to grow lupines. A good fertilizer for lupines is acid phosphate 600 to 800 pounds per acre, kainit 800 to 1,200 pounds, or muriate of potash 200 to 300 pounds. Lime and marl are also needed where a permanent improvement of the soil is needed .-Gerald McCarthy, of the North Carolina Experiment Station.

Holding Gate Open.

The accompanying diagram shows an excellent method of holding open a gate



FOR HOLDING GATE OPEN.

in a wind. A is a piece of inch board sented are the hard and soft maple, the four feet long, notched at B and slanting black walnut Scotch pine, larch, birch at the lower end. C is a bolt through and elm. Observation has shown that the the stake and on this the stay works f. e- trees planted five feet apart throve better harnessmaker, and got him to make a slides tp the slant and lodges in the the authorities believe this is ample proof notch until liberated. This is a good that the trees for the common shade and strap, six feet long, to go around just be- thing; I have tried it myself - Jar es natural increased growth should be

PIG FORM.

dian Packing Company.

The term "bacon type" has a significance which hog-raisers are gradually coming to recognize, for when the buyer comes round "form ' is one of the characteristics he looks for. Fig. 1 represents the form or type that approaches the packer's fancy, although the specimens represented do not satisfy the breeder's eye as well as the blocks in Fig. 2. The two lots were selected from among four double-deck carloads at the Canadian Packing Co.'s yards in London, Ont., by the manager of that concern, as typifying pigs of the bacon form, and those too short, thick and fat for that purpose. We were not able to learn much about the history of the two lots, but we were told that those represented in Fig. 1 are grade Yorkshires that were fed and

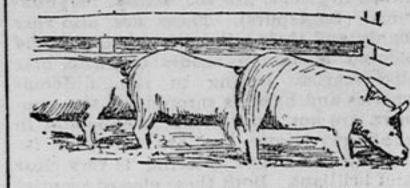


FIG. 1.—TYPICAL BACON PIGS. shipped by Messrs. White Bros. of St. Mary's, says The Farmer's Advocate. They were fed in large runs on skim milk and buttermilk from St. Mary's Creamery, together with shorts, corn and oat chop. They are about 7 months old, and weigh about 180 pounds each. While

they do not appear to represent rapid and

economical thrivers, they carry the de-

sired class of meat to suit the English market, for which they are destined. The pigs shown in Fig. 2 have the appearance of possessing Poland-China, Essex, and possibly some Berkshire blood, color and shape of the spot of this color- and look more like American corn-feds ing substance. The insect will then be than what Canadian bacon-curers desire to handle; in fact, such pigs are bought

There is, however, a worse feature than fatness in many of the pigs received at the factories at the present time. We were taken through the rooms where the boxes are packed to be shipped, and drones and workers among the bees will shown the cured sides just out of the cold curing chambers, and the proportion of soft sides among those examined was alarmingly large. The fat and flesh on



13. 3 .- HOGS TOO FAT AND SHORT FOR BACON

the edge of a firm side feels almost as firm to the touch as if frozen, while a soft side has a mushy, greasy feel, not much firmer than when newly killed. There were all degrees of this condition to be seen, which, of course, have to be thrive upon the most sandy and barren graded and sent forward under three different brands. Mr. Ginge, the manager for the company, showed us the record of shipments since last March, which showed that fully one-third of all the bacon shipped since then has been graded "soft." The cause of this condition is evidently not well understood by pig feeders, who doubtless could prevent such a loss if they really knew how, and were paid the better price a firm quality would werrant. While several experiments have been conducted, there is still need of repeated and very thorough investigation in this direction.

THE MOST PROFITABLE HOG.

Experiments Which Seem to Indicate the Pig to Breed for Profit.

If a person who knows anything at all breeding, just as they were, thrifting and weighing in the neighborhood of within their conditions. A few conclusions may be drawn from the following facts taken from observations of feeding 80 head of hogs which were just finished. These hogs were nearer of the same age than size, and ranged from the long. big-boned bacon hog to the short, fineboned chunk, according to the care or carelessness of the farmer who raised

First, as to point of gain: The com-Best five, weight at beginning of test, 596 pounds; gain 416 pounds-70 per

Poorest five, weight at beginning of test, 579 pounds; gain 235 pounds-30

This was for a period of 42 days, and from observations made from week to week, this difference of gain from a little over one pound to practically two pounds a day was largely due to the breeding. A short, small-boned chunk will make good gains for a few week and then stop. It will be fat and ready for market while a well-bred rangy hog will fatten and continue to grow and make good gains for a much longer period. Then as to the demand of the market: the threerib shoulder is now one of the most profitable cuts that is made for export trade. Hogs from which these cuts are made must be large and muscular, long and rangy. The short, small-boned chunk will not answer the purpose. The bacon hog is also of the latter description and brings the best price -- the markets. Well-pred rangy hogs make the most profitable gains, ar the most ready sale and bring the best price on the market.

Experimental Farm Forestry. The plantation at the Experimental flourishing, some of the trees being 20 feet high. The principal varieties reprethan those planted ten feet apart, and superior to the hard.

THE SHEEP INDUSTRY.

A Contrast From Selections by the Cana- More Thoroughbreds Imported Into Canada This Summer Than for Many

Years-A Genuine Revival. Not for many years have so large a number of sheep of the different breeds been imported to Canada as have been brought cut this summer, says The Lon-

don Farmer's Advocate. This may safely be regarded as an indication of the existence of an active demand for this class of stock. Indeed, it is well known by those in touch with the business that so heavy have been the drafts upon Canadian purebred flocks in the last two or three years that they have been reduced in numbers to a lower point than has been touched in the last thirty years; and the importation of fresh blood on a larger scale than usual has been felt to be a necessity if we would maintain the standard of our stock and hold the markets which the high-class character of our sheep has won for us. It is gratifying to know that so many Canadian breeders have the courage and the enterprise to assume the risk of importing on so large a scale; and we are glad to learn that commendable care has been exercised in the selections made for importation this year, and that a larger proportion of high-class stock than usual has been brought over. The magnificent display of sheep of all the principal breeds at the leading exhibitions in



LINCOLN RAM LAUGHTON, 235 GUINEAS

Winner of first and champion prize, R.A. S.E. Show, Maidstone, 1809. The property of Messrs. S.E. Dean & Sons, Dowsby Hall, Bourne, Lines.

Canada amply demonstrates that we have a country admirably adapted to the production of this class of stock in the highest degree of perfection, and that we bave practical shepherds not a few who are well qualified by training and experience to bring them out in the pink of condition and in robust health and vigor. The splendid record made by our flockmasters in winning honors at the great international exhibitions in which they have competed, notably at the Columbian in 1893, with Canadian bred and fitted sheep in their own hands, and those of others to whom they had sold, furnishes abundant evidence of the high-class character of our sheep, the undoubted skill of our shepherds, and the suitability of our climate, our soil, and our stock foods for the growth and development of sheep and the production of mutton and wool of the very best quality. In view of these facts, it is unaccount. able that so few sheep, comparatively,

are found on Canadian farms, that by a very large proportion of our farmers they are entirely neglected, and that the aggregate number of sheep in the Dominion has been steadily decreasing for the last 15 years. We are confident this fact is not due to any general disability affecting the industry. We believe it is absolutely safe to say that in no other country are sheep liable to so few diseases or disadvantages of any kind. The climate is as near an ideal one for the successful raising of this class of stock as can be found anywhere in the world, All the principal mutton breeds do well with us. There is no class of farm stock the raising and care of which requires so little labor or expense as this inoffensive and unpretentious money-maker. Sheep will live in summer largely upon pickings in the lanes and byplaces of the about hog feeding was given a chance farm, and will eat many of the weeds between a hog that would gain 23 which infest the pastures, and thus help pounds in six weeks and one that would to clean the farm and keep it clean. No gain 90 pounds in the same time on the stock is so little affected by protracted same feed, he would not be long in drouths-they prefer a short nibble, and choosing. During the past ten months thrive better in a dry season than in a the Kansas Experimental Station, says wet one when feed is over-flush. The J. G. Harvey, has fed 190 hogs that were | neece of wool-a volunteer crop, which bought of the famers in the vicinity of never fails-which no other farm stock Manhattan without regard to breed or yields, and which is perennial during the life of the animal, amply pays for its winter's keep even when liberally fed, 100 to 125 pounds. This class of hogs is and anywhere from 50 to 100 per cent. used because these experiments are for of an annual increase from the ewes may the highest benefit to the farmers, and reasonably be expected, and with a little by taking the stock they raise we stay | care and good management, may be realized. We doubt if any other investment in farming will pay as liberal dividends as those semi-annually declared by a well-bred and well-cared-for flock of sheep. There is generally a good steady in Fig. 1, and are used by crossing over demand for mutton sheep or lambs in the meat market at all seasons of the year, at good paying prices, considering the cost of production; while the demand for breeding stock for improving and replenishing the flocks on the farms and parisons are between hogs fed the same in the range territories of Canada and the in every respect. The best and poorest United States is such as to make it defive out of 20 have the following showing: | cidedly profitable to cater to that trade, and Canadian farmers are peculiarly well



First prize pen of same flock, Royal Show, Maidstone, 1899. Bred and exhibited by Mr. R. W. Hudson, Great Marlow, Bucks, imported by Mr. Robert Miller, Brougcreasing trade in this line which is bound

to come our way. Many United States flockmasters look to Canada for rams for the improvement of their flocks, knowing from experience that sheep bred and raised in our climatic conditions possess the requsite stamina and quality to improve the stock they are brought into contact with, and they will continue to come here for fresh blood. The Ameri- be rigged up in a few minutes, and can young meat in all lines.

from outside sources, while kindred industries have been boomed by Government agencies and aided by special favors at the public expense, yet it is also true. as we have intimated, that sheep are being neglected by a very large proportion of our farmers, we believe to their own direct loss. There are few farms in the Dominion on which a small flock could not be profitably maintained. The expense of starting a flock on a small scale is very moderate, and may soon be repaid by the sale of surples stock, while by retaining the best of the young females and purchasing, at intervals of two years, a new ram, which may often be sold at the end of his term of service for nearly if not quite the original cost, a flock can in a very few years be built up and maintained to the profit and satisfaction of the owner. We know many tarmers who find their little flock of good



SOUTHDOWN SHEARLING EWES. First at the show of the R.A.S.E., and first and champion at the show of the Royal Counties Agricultural Society. Bred

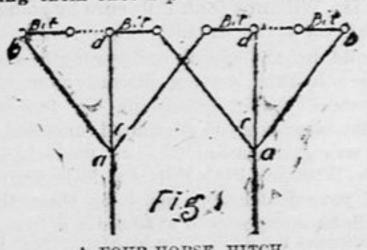
by and the property of Earl Bathurst,

Cirencester Park, Gloucestershire. grade sheep the most profitable asset on their farms; and from our extended experience and observation, we feel safe in counselling the keeping of more sheep by the farmers of Canada, believing, as we do, that this is a field in which our people can continue to excel. The best season in all the year to buy sheep for a foundation flock, or to replenish, is in the early autumn, when the lambs have been weaned and the ewes are generally in good condition. If deferred to a later period breeders will, as a rule, have sold what they intended to dispose of, and have reduced their flocks to the number they aim to keep, through the winter, and will then only sell for tempting prices, if they consent to sell at all. Those who buy early generally get the best selections. The sheep pens at the fairs this fall will be of more than ordinary interest, as the indications are that the number and quality of exhibits will exceed that of any year in the past, and we anticipate an unusual amount of business in that department both at the exhibitions and afterwards.

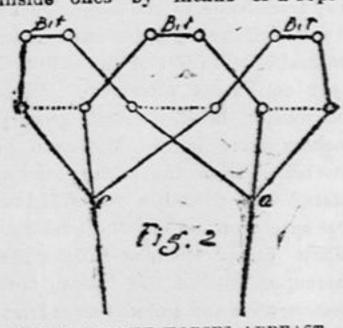
NOTES ON DRIVING.

A Four-Horse and a Three-Horse Hitch Described and Illustrated.

Many and various are the methods of driving horses with the three and four horse lines. The arrangement shown in Fig. 1 is the only true way to drive four horses abreast with two lines, and after using them once a person will not want



A FOUR-HORSE HITCH. to try any other way, as it gives a direct line on three of the horses' bits. Use the ordinary lines (c d) for the two inside horses, and long run straps to connect the outside horses, as from a to b in illustration. Fasten the outside horse to the inside ones by means of a rope or



DRIVING THREE HORSES ABREAST. strap, or these may be fastened together

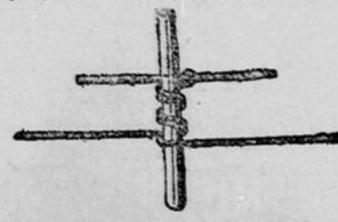
in hame rings with halter straps, as the horses work best. The correct way for using three horses

with two lines is shown in Fig. 2. The lines proper should be used on the outside horses. The run straps are the same as the withers of the middle horse and passing through the hame rings and fastening into the bits (a to b), as in Fig. 2 .-R. A. Osborn, in Farm and Home.

Nitrogenous Weeds. The common chickwood and pigweed, that start up in gardens in midsummer and make remarkable growth within a short time, are both weeds that rank situated for taking advantage of the in- very high in nitrogenous compounds. Not even second-growth clover will furn- 10 bars soap ish as much nutrition for their bulk. 3 boxes shoe blacking10 Hogs and cows are extremely fond of both, and will cat them greedily. They are excellent not only for breeding sows, 6 knives and forks............ but for hogs that are being fed grain and 6 cups and 6 aucers......... need more succulency in their ration.

Emergency Power.

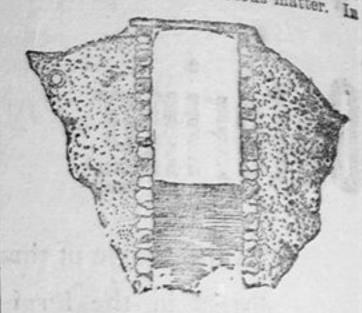
On a farm, a cheap improvised power sometimes comes very handy. The accom-



EMERGENCY POWER.

cans are fast becoming a mutton-eating be used to stretch wire, pull stumps, people, and it is hard to understand why move buildings, etc. In fact, there is no ple. for there is certainly no more whole- that being controlled by the length of Bedroom Sets, Springs, Mattrasses, some meat that can be placed upon our the lever. Make your rape or chain the same cannot be said of our own pec- limit to the power that can be developed, tables. Lamb is rapidly growing in favor to the object to be drawn and anchor the Farm planted 11 years ago is now as an article of diet, and brings highly other end fast, leaving it slack enough remunerative prices, considering its cost so that you can make a half twist in the of production, and gives quick returns to centre, forming a loop, put the lever the producer and we may look for a through the loop, and the standard close steady increase in this trade, in sympa- up against the lever and coil the repe thy with the prevailing preference for around the standard by travelling around. In heavy work, such as pulling While it is true that the quality of our stumps, moving buildings, etc., it takes best breeding flocks has been well main- three to work it, one at each end of the tained, thanks to the skill and pluck of lever and one to hold the standard Skelton of Niagara-on-the-Lake, in Pracplanted close. For purposes of shade it have nobly held the fort through times one end of the lever down against the OPPOSITE THE HAS DEED THE HAS been shown that the soft maple is of appropriate without adventitions and

Keeping Out Surface Water, Where wells are are dug on sloping ground there is always liability that surface water may find its way into the well and carry in deleterious matter. In



TO KEEP OUT SURFACE WATER. such cases it is twise to leave the soil re. moved from the well when it is being dug in the form of a mound about the top, as suggested in the cut, and to make matters still safer, to lay a tile drain around from the upper side to an outlet on the lower side, laying the tile all the way about the proposed opening, before digging is begun. This will keep the well absolutely free from surface water. which, as suggested, is, in many cases, a positive source of danger .- Orange Judd Farmer.



If it was only health, we might let it cling. But it is a cough. One cold no sooner passes off before another comes. But it's the same old cough all the time. And it's the same old story,

too. There is first the cold then the cough, then pneumonia or consumption with the long sickness, and life trembling in the balance.

loosens the grasp of your cough. The congestion of the throat and lungs is removed; all inflammation is subdued; the parts are put perfectly at rest and the cough drops away. It has no diseased tissues on which to hang.

Dr. Ayer's Cherry Pectoral Plaster

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draws out inflammation of the lungs.

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