OF INTEREST TO FARMERS

THE NEED OF TREE PLANTING

No one would have believed, a half-century ago, taat the utilitarian need of tree-planting would be long before the present year, recognized in almost every section of the country. It is well that the movement was started thus early, even if the purpose was originally to beautify parks and streets rather than to provide against a time when actual depletion of the nation's timber supply should be recognized as an impending actuality. But there is need even yet of bringing to the popular consciousness a clearer realization of the economic necessity of furthering the work of reforestation.

A survey of conditions in almost every section of the United States indicates tae necessity of making Arbor Day, this year and for many years to come, not only a time for the organized adornment of streets, highways and parks, but also one of community and national effort to build up the depleted forest areas. It is a task that cannot be undertaken lightly. Its magnitude makes it one entailing great expense and unabated effort. Not only must wasteful methods which are still being practiced be checked or stopped entirely, but a broad and comprehensive method of reforestation must be adopted.—Christian Science Monitor.

GREENHOUSE INSECTS

Advice by Entomological Experts as to Their Control

"It has been estimated that if all the progeny of a single rose aphid were to survive, they would at the end of the three hundred days be equal in weight to the population of China sevenfold," which means that taere would be in weight of this one small insect several thousand million pounds! The bulletin from which this quotation is taken treats of "Insects Affecting Greenhouse Plants." The estimated value or crops grown annually in greenhouses in Canada is upwards of three millions of dollars, and that of the area under glass covers about six million square feet of space. It will therefore be admitted that tne importance of the industry warrants a study of the insects preying upon greenhouse plants, and of the means whereby they can be kept under control. Remedies of a simple kind are suggested in the bulletin, and the methods of their employment are described. Hydrocyanic-acid gas fumigation can be utilized to control such insects as white fly, plant lice and thrips. The habits and characterics of every known greenhouse insect are described in text, which is well illustrated. The insects are divided into three classes, namely: leaf eating insects, of which fourteen are dealt with; suckling insects, of which there are seven, and boring or root-destroying insects of which there are also seven. In addition, the history is given of ten animal pests, such as spiders, slugs, mites of various kinds, cartaworms, etc., and of their predacious enemies and internal parasites, which come under the head of "Natural Control."

THE COW THAT HOLDS UP HER MILK

A cow may kick, or lie down, or switch her tail wherever she wants to but she can't through obstinacy or any desire on her part hold up her milk. That action is beyond her will power. It is controlled by the involuntary nerve system.

In nearly every herd there are one or two especially nervous cows which will not give their milk until one has encouraged them for several minutes. They have to be reassured. They seem fearful that the milker will pain them. On some occasions taey are worse than others and especially so if they have just been greatly excited. Young heifers are more apt to have the failing because they are not so accustomed to being milked and are inclined to be frightened.

Milk is the result of a secretion by the cells in the udder. Its formation is in a way comparable to the secretion of saliva and just as a person cannot stop the flow of saliva when eating, neither can a cow control the secretion of milk. But if one has just run a race, and then starts to eat, or is in any way greatly excited the flow of salvia is reduced or withheld. Similarly milk may not be secreted due to a contraction of the muscles caused by excitement or fear.

Milk secretion is controlled by the sympathetic nerve system and some of the influences which commonly affect it are chill, pain, fright, running, fever, indigestion, garget or other diseases, rearing of the calf and of course inadequate feed and water. Lying on cold bare concrete floors, or on wet, or frozen ground when the udder is congested with blood, also tends to check milk secretion. Sore teats, tough milking, incomplete milking or harsh talking may have tne same effect.

"The cow that habitually "Holds up" her milk is usually an excessively nervous animal and as that undesirable temperament is hereditary it may be unwise to maintain her for breeding purposes. Furthermore, "Nervous temperament" is always a feature to be considered in buying or judging dairy cows.

In many cases milk secretion is made more active by distracting the cow's attention at milking time, by placing her own or another young calf at her head, or allowing some relished feed. Gentle massage of the udder for a few minutes before starting to milk may improve matters. A change of milkers is often effective. If the cow's teats are sore warm melted lard is soothing and healing.

In all chronic, obstinate cases, unless the cow is a pure-bred and very valuable as a breeder, it is perhaps best to dry off the milk flow and fit the animal for the butcher.

TOAD FLAX AND HAWKWEEDS

These weeds are grouped together not because of any relationship but because this is the season of the year that we should start to rid the land of these persistant perennial weeds. A number of reports have been received indicating taat the **Toad Flax** has become a rather serious pest near Eldon and that the **Orange Hawkweed** and **Mouse-ear Hawkweed** have extended over quite a little additional territory this season.

Toad Flax (Linaria Vulgaris) known under the common names of: Butter and Eggs, Wild Snapdragon, Flaxweed and Yellow Toad Flax is a persistant, deep rooted perennial. Its stem is erect and very slender compared with the garden Snapdragon or Antirrhinums which are quite often stocky. This plant has come to us from Europe and has a waxy appearance without down or hair. The leaves are narrow and pointed, very numerous and usually alternate on the stem. The flowers are about an inch long and are a pale, yellow with orange lips. The flowers are borne in dense racemes and have a mouth-like appearance which when gently pressed at the sides opens and closes.

The plants bloom from June to September, the seed which is a dark brown almost black ripens from July to the Autumn. These seeds are round with a wing around the edge and flat. Each plant produces a great many of them. This weed is becoming quite common in eastern Canada. It is spreading rapidly and unless checked will become a noxious, persistant weed in waste places in the hay fields and among other crops. It spreads both by seeds and by creeping rootstocks.

Orange Hawkweed (Hieracium Aurantiacum L.) commonly known as the Devil's Paint Brush, or Paint Brush. This plant is a low growing perennial, which sends out creeping branches close to tae ground, which spreads both by seed and by the creeping branches taking root and sending up another plant. The plants are very hairy; the leaves are long and rounded at the top. The flowering stems are from one to two feet high with a bunch of fiery orange red flowers on the top. The seed is small, purplish black in color, cut off square at the top and pointed at the base. These plants usually bloom in June and the seed ripens from July on. This plant has already gained a very serious foothold in many parts of P. E. Island. It is a vigorous grower and spreads very rapidly from its runners and from the mature seed, which gains most headway in land that is not ploughed, that is, along the roadways and in old pastures and fence corners.

Mouseear Hawkweed. (Hieracium Pilosella L.) This is considered by many to be even a worse weed than the Orange Hawkweed, as it produces long running leaf stems from which tufts of roots and side shoots grow at frequent intervals. The flowers are a pale yellow, about an inch across, and have a sweet scent.

The method of controlling these weeds is to break the land shallow immediately after hay making, rolled at once and cultivated from time to time until the autumn. A short rotation should be followed, for instance, the following year a hoed crop taoroughly cultivated and kept clean by hand hoeing would keep these all under control. The second year it could be sown to grain and seeded down, using quite a heavy seeding of clover, say 10 lbs. timothy, 8 of red clover and 2 of alsac. This would help to hold the young weeds in check. The third year the hay should be cut early, the infested fields ploughed again in July, and worked occasionally with the disc or spring tooth harrows until autumn. This should in a few years reduce the quantity of weeds, so that the balance could be cleaned out by hand pulling.

IMPLEMENTS SHOULD BE PROTECTED

In travelling through any section of the country, the neglect of farm machinery is deplorable. One sees mowers, binders, rakes, threshing rigs and other machinery left out under the blue sky to rust until next season.

For a few dollars a shelter could be built, waich would save the farmer or thresherman considerable money during the year.

Government farms have been advocating this for years, but it would seem that many farmers cannot see the extravagance of their present methods. It is a safe bet that the owner of an expensive automobile does not leave it in the farmyard unprotected.

FOREST CONSERVATION BY WISE USE

There are two lines of forest conservation; first the preserving of living trees and fire and insects till ready for cutting, and, second, the utilizing to the fullest extent of tae trees when cut down. The first is the object of all forest services and protective societies; the second is the aim of the Forest Products Laboratories of the Department of the Interior, Canada. When pulp was first made from wood, spruce was the only species which gave satisfactory results. Then, after a long course of experimentation, a method was found to utilize balsam fir; and within tae last few weeks the first successful production on a commercial scale of pulp from Jack pine has been announced. The utilizing of these new woods not only lessens the pressure on spruce, but it also makes woods valuable taat were comparatively valueless, enables the logger to harvest his crop more economically, and leaves the cut-over woods in better shape for the growth of a new crop of trees.

MAKING THE MOST OF THE FAIRS.

The show season affords a wonderful opportunity for the livestock owner to advertise his herd in the most useful and lasting way. Nothing will start people talking of an animal quicker than its success at a fair. If it is a local show then the advertising is confined to the local community, but it is only after conquering the local show that the larger ones should be attempted.

To secure a place at any fair requires a good animal, but it also demands that the animal be in what is called show-shape. No doubt there are cases, without number, where the advantage of condition has put a poorer animal ahead of its unconditioned competitor. Perhaps this seems an injustice, and yet it is only right that an owner's skill in feeding and keeping an animal should gain recognition. There are but few judges who do not make the fitness of the animal a strong point in their decisions.

Many animals that are to be shown this Fall will already have been selected, but if they have not, it is now high time to commence giving them extra care and also to decide into what classes the animals will be entered. In selecting it is well to remember that there are several classes closely related and it is to the breeder's advantage to exhibit in as many of these as possible. There is also the precaution of starting with a large number of animals in case some fail to fit properly or get sick.

In selecting your animals do not depend entirely on your own judgment; it is often difficult to see the faults of your own herd. The mature animals are chosen with breed type chiefly in mind, and, of course, there is that other quality sometimes called style that must influence any selection. Calves and other young animals are exceedingly difficult to judge as development must be considered. They should, however, be as well developed and as old as possible to enter their class. Animals are usually at a disadvantage if they are the youngest in the ring.

Each animal needs careful watching and its ration should be adjusted to meet changing requirements. Skilful feeding is the first step towards the show ring and may make or mar the chances of the herd. It is not merely a matter of getting an animal fat but of putting on an even and firm covering of flesh and creating a healthy appearance.

A ration of 3 parts each of bran, oats, and corn and 1 part of oil meal will usually put the average animal in condition within a period of six weeks. For animals in poor flesh the corn and oats is increased, while if the skin and hair still remain rough, the oil meal may be increased to overcome it. Excessive looseness in the bowels is to be avoided. Such a condition rapidly pulls the animal down in flesh and also makes it much more difficult to keep clean.

It is wise, during the hot months to keep show animals in a cool, darkened, but well-ventilated barn with well-bedded, clean stalls. This will help to keep their hide from becoming hard and sunburnt and daily grooming will put the gloss and fineness in the hair. A soft brush and a flannel rag saturated with a mixture of equal parts coal oil, glycerine, tanner's oil, pennyroyal and carbolic acid may be used with good effect.

The horns are usually worked on with a rasp and sandpaper, and then with a mixture of sweet oil and pumice stone on a flannel rag. There is a danger of using the rasp too much and spoiling the appearance of the horn. The hoofs may be treated in much the same way, and shoe polish used to produce the final gloss. The tail is made fine and fluffy by washing in soap suds the day before showing and keeping it tightly braided over night.

Shipping often causes a good deal of trouble and excitement and sometimes causes indigestion or otherwise harms some of the animals. To overcome this as far as possible cut down the grain ration two days before loading, substituting good hay. The last feed may be omitted and a bran mash used instead. Unless the journey is long, hay makes a better feed than grain for the mature animals. Calves should have milk regularly, but in lesser amounts than when at home.

In a show ring do everything possible to create a good impression on both the judge and the audience, and there is no policy quite so good for both purposes as tending strictly to your own business. Keep your eyes wide open all the time and never let your animal slouch for a moment, even if the judge doesn't seem to be looking. As far as possible never stand between the judge and your animal, when he is coming towards you, stand on the opposite side and after he has passed step around to the other side again and keep your animal in his most imposing position.

Even if you don't win a ribbon, do not be discouraged, you will have brought your herd before the public and that is of some value. Then if you are not discouraged you may discover wherein you can correct your erors and improve your chances so that next year you may secure a greater measure of success. Always remember that the audience consists of those who are interested in live stock and the impression they gather of your exhibit may be equally as valuable as a few ribbons.

GROWING WINTER VEGETABLES

"Variety is the spice of life." How many of us, during the winter months, have a longing for some favorite dish or vegetable, and are unable to satisfy our palates. True, we can purchase practically any vegetable in the canned form, but even this is very often an apology for the real article. We are safe in assuming that the average householder goes into the winter with a less number of varieties of vegetables than the fingers on one hand. There is on reason why he should not have a dozen or more. By giving a little extra attention to the vegetable garden, and by sowing the various seeds at times to insure the product being in an ideal state for winter storage, many of these desires can be satisfied.

The following list of vegetables might well be stored in the cellar, and with a proper temperature could be easily kept: Beets, carrots, cabbage, celery, marrow, onions, potatoes parsnips, pumpkins, turnips, radish, squash, etc.

There are also many ways in which one may readily prolong the fresh vegetable season when danger from frost is feared. Tomato plants can be lifted bodily and hung in a building free from frost. Similar treatment with corn will meet with good results. By placing a cold frame around a patch of late sown lettuce, and giving slight protecting during the cold nights, lettuce may be enjoyed until very severe frosts occur. We often find that there is an early frost, and the weather may then go two or three weeks, and in some cases a month before we have a killing frost. Very little protection given some crops may prolong their season at this time.

Many people have facilities for forcing vegetables in the cellar during the winter and in this way may add considerable variety to their winter menu. Rhubarb lends itself well for this work, and by making successive plantings a constant supply may be obtained. Seakale, chicory, onions, etc., may also be grown.

A cellar temperature of from 50 to 60 degrees will do very nicely. In the case of rhubarb the method followed is to divide up an old stool in the spring, and plant tae sets, containing two or three eyes, a foot apart in the row. By fall these have made good growth and may be lifted and packed in an out-building, which need not be frost-proof. As they are needed these sets are removed to a basement, and packed in boxes with moss, given a thorough soaking with water, and covered so as to develop in the dark. The stalks will be ready for pulling in from three to four weeks. Seakale is a very tasty vegetable, and receives very similar treatment, only it is grown from thongs during the summer, lifted in the fall and forced in the winter months. Chicory and onions may also be forced, and these help to make delicious salads in the off season. The chicory is grown from seed in the summer, lifted and forced as required; while the small onions or Dutch sets are used. Many other vegetables can be used. This article is not intended to deal exhaustively with tae subject, but to act more as an incentive to urge upon many the possibilities of wider range in varieties of vegetables for winter consumption. — R. G. Newton. Superintendent Experimental Station, Invermere, B.C.

SILOS AND ENSILAGE.

The question of securing a sufficient supply of suitable forage crops has occupied the attention of Western farmers in recent years more than any other one problem. While this conference will devote its thought mainly to the consideration of problems connected with the production of crops under irrigation the remarks that I have to make with reference to silos and silage crops will apply with equal force to the man who operates under dry land conditions.

I note that the Secretary has allotted to me the subject of "Silos and Ensilage." I am not sure whether this is the logical order or whether we should first produce satisfactory silage crops and then find some method of properly storing them. However, this is not a question of very much moment, as the two phases of the problem go hand in hand, and I will therefore discuss the subject in the order indicated.

Numerous makes of silos are being offered to the market in Western Canada, all of which have merit. The stave silo has been among the first on the ground and will no doubt continue to prove popular. It has the disadvantage of being hard to keep up when empty, particularly when built to a great height, and if the rods are not continually tightened, but has the advantage of being simple in construction and is therefore easily erected by the amateur.

The tongue-lock is a comparatively new type of silo, made of two by fours tongued and grooved, built in the style of an elevator by laying the two by fours flat. This silo stands up well, is also easily constructed and can be added to in height at any time.

The cement silo has attracted considerable attention on account of its durability and the fact that it preserves all the juices in the ensilage. There are various types of silos, both of stave and concrete construction with certain features such as special doors and interlocking parts, which commend themselves to many buyers, and the intending purchaser of a silo has an opportunity to satisfy his ideas in respect to the silo he purchases from a wide variety of types.

While the cost of these silos may prevent some farmers, who feel the need of a method of storing feed, from providing themselves with a permanent silo, the trench type offers a satisfactory storage space at no initial cash cost. We have during the past year used this method of storing ensilage with entire satisfaction and believe that during the present season thousands of Western farms will be equipped with such silos. The method of construction is simple. The size of the herd will determine the size of the silo. A mature animal will consume about forty pounds of silage daily, and the feeding period will be in the neighborhood of two hundred days, so that space for eight thousand pounds of silage should be provided for every mature animal. A cubic foot of silage can be estimated as weighing around forty-five pounds and the width of the silo should be determined on the basis of removing from the end of the silo two or three inches of ensilage daily. In cold weather this is not necessary, but in the early fall and late spring feeding periods it is advisable to keep the surface fresh by daily removing a portion of the ensilage.

In feeding from the trench silo it is necessary to feed across the whole end from top to bottom, much as a loaf of bread is cut, though, of course, more or less on an angle. A silo sixteen feet wide, seven feet deep and thirty feet long will hold in the neighborhood of a hundred tons of sunflowers. Tramping can be done with a horse, thus reducing expenses. The cost of equipment for filling is also lessened owing to the fact that the ensilage does not require to be elevated. The cutting box without blower adjustment can be operated with less power than is necessary for the heavy type of blower. Silage is easily removed from the trench by the use of a box on a stoneboat.

The irrigated farm lends itself to the production of heavy yields of a large variety of suitable silage crops, including sweet clover, oats and peas combined, or oats alone, corn and sunflowers. A question in my mind to be answered by further investigation is whether oats can be stored satisfactorily in the trench type of silo, since the pressure is less because of the shallowness of the trench than in the upright type. This would, I presume, also apply to sweet clover, but there is no question as to corn or sunflowers keeping satisfactorily in the trench type if thoroughly tramped.

It is a safe assertion and well within the bounds of absolute fact to state that some type of silo as a means for storing silage crops on every farm in Western Canada will add millions of dollars annually to the income of Western farmers and render unnecessary the relief measures which have been adopted in dry areas. The silo will add to the prosperity of the irrigated districts by encouraging diversified agriculture guaranteeing a division of effort throughout the year but insuring a multiplication of profits.

LATE SPRAYING OF POTATOES

At a public meeting recently held in Yarmouth County, where an extensive experiment and demonstration in potato spraying was conducted last year under the direction of the Provincial Department of Agriculture, the discussion turned to the wisdom of late spraying. Many farmers hesitate to run the spraying apparatus through the rows after tae tops have grown so large that some of them will be broken.

One of the points most strongly brought out by those who had most to do with the test was that any little damage suffered by the stems will be far more than offset by the benefits of spraying. Attention is directed especially to this matter this season for the double reason that the tops are likely to be unusually luxuriant and taere is every cause to suspect an onset of blight and subsequent rot on account of the damp weather, which favours its development. Spraying will very largely, in most cases entirely, prevent this occuring, but it must be done later than is usually done.

The parties referred to in Yarmouth County kept on spraying when the potato vines were so tall that the horses became entangled in them and destroyed quite large quantities, so that the fields after the operation looked very ragged. Tae increased yield from spraying under these conditions amounted in one case of 160 bushels per acre, and there was no rot. It cannot be too strongly impressed on potato growers in a year like the present, when growth is rank, that they must keep up their spraying even well on into the month of September.

BE CAREFUL IN BUYING MILKERS AND SPRINGERS

Upon buying the class of cow which is sold under the name of milkers and springers at the various cattle markets, great care and judgment should be exercised.

Introducing strange cattle into a herd is always attended with danger and particularly is this true when they are bought at stockyards without any previous knowledge of conditions under which they have been kept or the reason why the owner is desirous of selling the animals.

While it is true that good, sound cows are sold through the cattle markets, at the same time buyers would be well advised to secure milch cows from other sources where they can be reasonably sure of age, milking qualities, and freedom from disease.

Contagious abortion is the disease which the buyer has to be most wary about when buying cows at the market. There is no doubt that cows are sent to the market because they have aborted and tae owner is anxious to get rid of his troubles by passing them on to some one else. A procedure which should be made a criminal offense.

Only under exceptional circumstances can contagious abortion be suspected by a brief examination of the cow, which makes the buying of unknown animals all the more dangerous.

Cows which have retained the afterbirth and not cleaned properly should be regarded with suspicion, as in many cases this condition is directly due to infection by contagious abortion.

Retained afterbirths if not attended to by prompt and skilful treatment are scon followed by an inflammation of tae uterus or calf bed which is characterized by a dirty chocolate colored discharge coming from the cow. This discharge may be loaded with the germs of abortion and be the means of infecting other cattle which were previously free from tae disease.

If the cow is given proper treatment this trouble may be cleaned up, but she may abort again and remain a centre of infection for a considerable period. Sterility or failure to get in calf often follows in the path of abortion and retained afterbirths.

Buyers of this class of cow can with profit, make it a hard and fast rule never to buy a cow showing any signs of a dirty mucous discharge from the vuiva. No matter how cheap they may appear there is a big chance that taey will be dear at any price.

Cows should not be bought at the market unless the seller is willing to submit them to the tuberculin test and refund the purchase price if they are found to be tubercular.

A tubercular animal is a source of danger to the rest of the herd and any reasonable precaution such as the tuberculin test should be made use of by the purchaser.

Next to the danger of introducing contagious diseases into the herd, probably the condition of the udder is the most important feature in buying a milker or springer.

Many of the cows sent to the market are defective in this respect. A common condition is that known as a three "titter." This may be due to a variety of causes, such as, blind teats, strictures and mammitis commonly called garget or caked bag.

A severe attack of garget often leaves one or more quarters of tae udder hard and useless. The udder should be firm but pliable to tae touch.

FEEDING THE MARKET HOG.

Brood sows and boars of correct bacon type and with size and quality are necessary to produce bacon pigs. The condition of the sow and boar at breeding has much to do with the quality, strength and size of the coming litter. Proper feeding and exercise outdoors is absolutely necessary for success with the pregnant sow. The correct feeding and exercising of the milking sow is one of the most important steps in making market hogs of her litter. These are steps in the making of a bacon hog, aside from the actual market feeding of the season's pig crop, but the proper appreciation of their importance is absolutely essential.

There are thousands of little pigs from the best breeding stock ruined annually through improper, or over-feeding from weaning time to three months of age. Overfeeding at this stage makes a short, fat, dumpy, poor quality hog finished before he is heavy enough and liable to crippling.

Start the little pig at 4 to 5 weeks of age with a creep or separate pen to feed in. Feed middlings, mixing small quantities at a time with sweet skim milk. This gets the little pig gradually prepared for weaning. Scattering a few handfuls of good, plump whole oats in the litter is good practice. After weaning is the critical time. The following is a good ration for the weaned pig—oats (either finely ground well filled oats, feeding oatmeal or, better still, ground hulless oats,) 50 pounds; middlings, 25 pounds; shorts, 25 pounds; ground flax or linseed meal 5 lbs.; tankage, 3 pounds. This may be varied provided that the crude fibre in the mixture is kept low, and the fat content fairly high. For the two to three months pig of 50 pounds, feed a pound or so of the mixture daily. Soak for 12 to 24 hours beforehand. Feed with 5 pounds of skim milk daily. After the pig is well over weaning the milk may be fed better soured. Feed it soured all the time thereafter. Do not occasionally change back to sweet milk. Butter-milk is excellent, probably the best milk by-product for the pig over three months.

Here are the three fundamentals in successfully feeding the weaning pig: 1. Keep him hungry. Have him squealing for his rations an hour before they are due. 2. Keep his pen clean, but see that the bottom of his trough is the cleanest part of his pen. 3. See that he gets exercise, outdoors in the summer, or in a well bedded pen or shed in the winter or early spring.

From three to four months use a mixture of oats 50 pounds, shorts 50 pounds, middlings, 25 pounds, corn or barley 25 pounds, linseed meal 5 per cent., or equal parts of oats, shorts and barley with milk or tankage. From four to five months use a mixture of oats, shorts and barley or corn, equal parts, with 5 per cent. oil meal. For the finish the corn or barley may be increased either by feeding whole or adding to the ground meal mixture.

1. Do not overfeed in an effort to finish a pig in record time.

2. Where milk is not available, tankage may be fed 3 per cent. to 10 per cent., depending on the pig's age. Best results are obtained by feeding it in a self-feeder.

3. Green feed, either cut or pasture, is a meal saver in summer. A few roots mangels) are a wonderful help to the winter fattened pig.

4. If a prime bacon pig is desired, stick to a ration that will grow bone and frame for the greater part of the pig's life. Don't use much corn until the last two months.—Geo. B. Rothwell

BINDER TROUBLE..

A frequent binder trouble, especially in old binders, is the derangement of the knotting device. If you are experiencing such trouble observe whether the band is left on the knotter bill or thrown out with the bundle and also whether the ends are cut off squarely or have a ragged appearance

If the band is thrown off with the bundle and pulls out when you pick it up and both ends are cut off sharp, the trouble is probably due to too loose a knotter-bill spring; or to the small roller, which opens and closes the bill being worn; ;or to the bill itself being worn at the end or hump. Any of these faults will keep the knotter-bill from pulling the twine through the knot far enough to secure it, or may pull just one through, causing the ends to pull apart just as soon as some extra pull comes on the band. The same result may occur if the worn roller on the knotter-bill causes the bill to open only far enough to catch one of the twines.

If there is a knot on one end of the band and the band is left on the knotter-bill, with the other end cut square, the twine tension at the box is probably at tight and the disk spring is too lose. The tension at the box should be quite loose, barely tight enough to keep the twine from slacking and snarling. Loosen the twine tension and see if that does not remedy the trougle. If not tighten the disk spring a very little and see if that does not make it bind all right. Care must be taken, however, not to get the disk spring too tight, as the knotter must pull the twine through the disk a little to get enough twine for tying the knot; and if too tight, the twine will be broken instead of slipping in the disk.

If the band has a knot in one end and the other end is cut square and the band is thrown off with the bundle, the twine tension at the box is probably all right and the disk tension is too loose. Tighten disk spring slightly as just directed.

If the band has a knot on one end and the other end has a torn or crushed appearance and the band is thrown off with the bundle the disk spring is too tight and the twine breaks instead of slipping in the disk when the knotter starts to tie the knot. The disk spring should be loosened gradually until the binder quits missing. It is hard to give any rule as to how tight the disk spring should be, but it is about right when you can just move it by pushing against the disk holder with your thumb. If the band has the same appearance but the band is left on the knotter, the disk is not only too tight but the twine tension also. Loosen the twine tension first and see if that does not cure the trouble, and then the disk spring as already directed.

If the knotter-bill is badly worn it will be wise to get a new one, because that is pretty sure to give considerable trouble.

HELPING THE COW AT CALVING TIME

There would be less trouble and loss among cows at calving time if more care were taken to intelligently give aid at time of freshening. Often the cow that is soon to calve is given too little outdoor exercise and so becomes weak in muscle and constipated. Both of those conditions are detrimental in a calving cow. She should be made to eak enough exercise daily to keep her blood circulating freely, her excretory organs active and her muscles in good tone.

If at the same time she is fed laxative feed all of the conditions at calving time will be favorable, congestion of the udder les slikely to occur, milk fever unlikely and the calf strong and healthy at birth. Where exercise is restricted and constipating feed given the pelvic ligaments do not relax properly at calving time and labor consequently is made difficult.

It is a grave mistake to interfere with the natural course of calving before assistance becomes imperative. The cow should be given time for natural relaxing of the pelvic parts so that the calf may be readily expelled. By putting traction at once upon the legs when they and the head are seen in the vagina those parts may readily be pulled out, and but the hips lodge in the pelvis and the calf may die before it is delivered.

This would not occur were time allowed for the parts properly to relax. The delivery of the calf should be left to nature when the head and fore legs are in normal position.

When the head and fore feet do not enter the vagina in due time, or the head does not come forward, or one foot comes forward or both are retained, assistance becomes necessary. Then the right way to proceed is not to accomplish delivery by brute force, but to make a careful examination to determine just what is wrong. After that has been determined one has next to decide just what must be done to set matters rights and then proceed intelligently to put the correct plan of delivery into effect.

The calf normally is delivered with its head and fore feet in the vagina. It may also be delivered if the hind feet can be got into the vagina and then pulled forward and downward. The calf cannot be delivered broadside on, or with head turned back, or with the fore feet downward, or with the hind feet not in the passage. Both fore feet and the head, or both hind feet, must be got into the vagina before delivery can take place.

To accomplish this one may have to put a running noooze of cord around the pasterns of the fore or hind legs, according to which are nearest the vaginal opening, so that they may be brought into the passage. If the head is turned backward or under it will also have to be got into proper position before delivery can occur. In most cases the passage and fetus become so dry that it is necessary to apply a lubricant. Raw linseed oil, cotton seed oil, or a decoction of slippery elm bark wil lserve well for that prpose and greatly facilitate delivery.

THE TUBERCULIN TEST.

The reliability of the tuberculin test for detecting tuberculosis in cattle is no longer in question. The results of work carried on by Pirquet and Shick, and published in 1903, explaining the reason for a tuberculin reaction, are now generally accepted as the most logical explanation, which is summarized as follows:

"According to this conception an anti-body-like substance produced by the tuberculosis germs is diffused through the tissues and enters into combination with the tuberculin, giving rise to the formation of a poisonous substance in the general circulation, as well as at the point of inoculation of the tuberculin. The tuberculosis germs are considered as stimulating body cells to produce an anti-body or a ferment in the nature of an amboceptor, which splits the tubercle protein contained in tuberculin, liberating a protein poison which produces a general, local and focal reaction. In terms of the cellular theory of anaphylaxis the effects are due to the interaction of tuberculin and antibodies in the cells.

"The general reaction may be explained as due to a general effect of the poison on body cells. The local reaction is caused by concentration of the poison at the site of administration of the tuberculin, and the local reaction is due to the fact that cells about the lessons are more senstive to the effects of the poison than are other cells, probably because they are most concerned in antibody production and are supplied with a large number of sessile or attached receptors amboceptors, for the tuberculin."—California Department of Agriculture.

PURE BREEDS NEEDED

Breeding pure bred fowls may not be the greatest source of profit in the poultry business, but poultry raising would soon go in to a decline without the breeding and selection of the right types of fowls. Some good grade stock may give as good egg records as some pure bred stock, but without the pure bred additions to the grade flock, you soon have nothing but ordinary scrubs that cannot be depended upon t law steadily nor to produce steadily laying daughters. One must always keep up this work of breeding and selection

COWPOX

Cowpox is a contagious disease of the udder of dairy cows. However, it may affect calves that are permitted to nurse cows so affected, the infection being transmitted to the calf itself from the membranes of the cow's udder to the tissues of its own rudimentary mammary glands. The disease may also be transferred from one animal to another by the hands of the milker. It is not highly prevalent among younger animals. When cowpox first makes its appearance the affected individual shows tenderness of the teats. At the end of two or three days small nodules about the size of a pea will begin to develop.

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