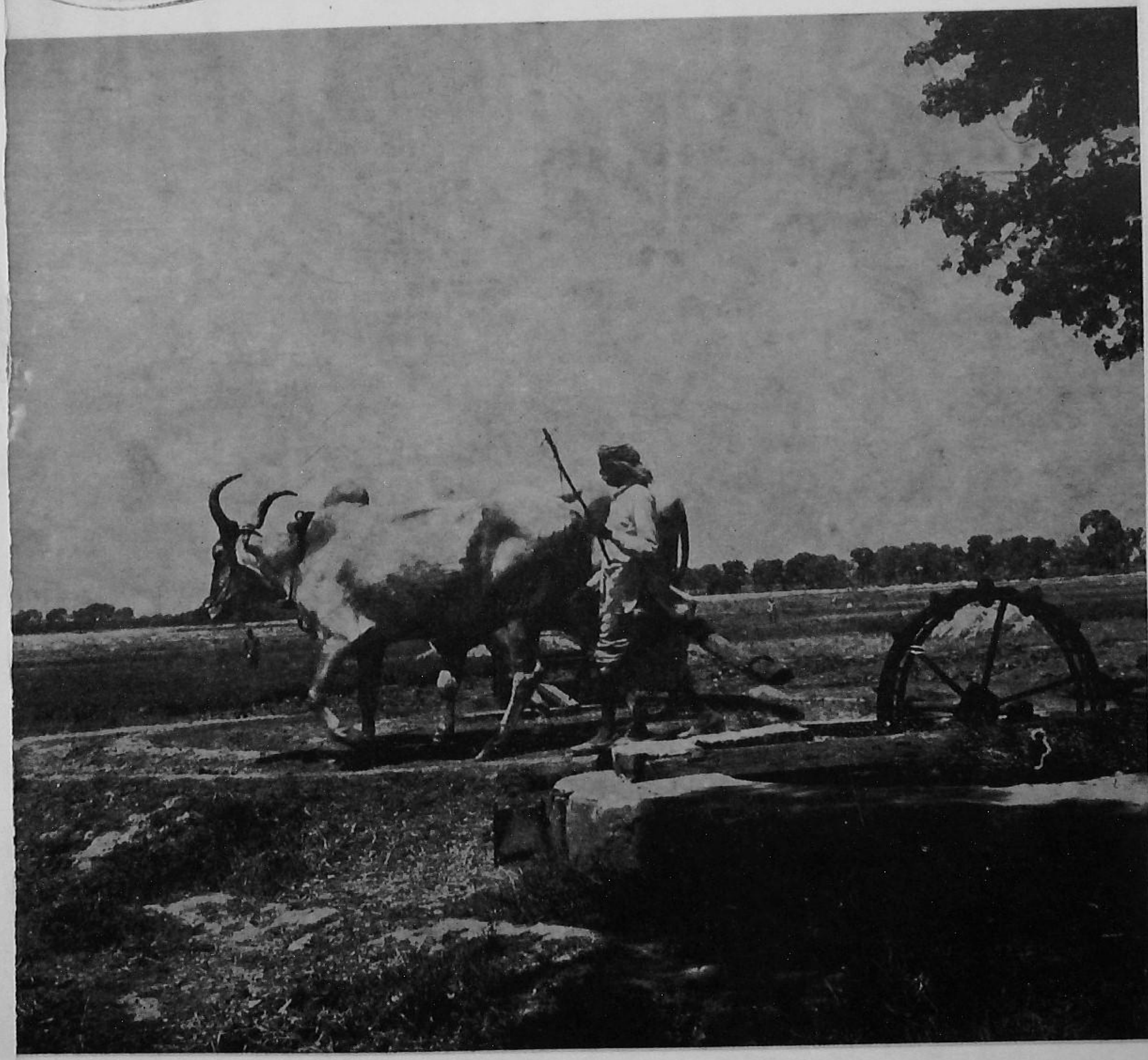
EXTENSION



THE PICTURE ON THE COVER

Farmers don't need to be told that their crops need enough water to yield well. But what many of them have now to learn is when to irrigate the crop and when to stop. From research we learn that a crop gives good yields even with a few irrigations but given in the right time and in the right quantities.

Photo by R. K. Paul

EXTENSION

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Some timely CROP PROTECTION tips

By D. B. REDDY

WHETHER you are busy threshing your *rabi* crops or getting ready for *kharif* sowings, here is a piece of good advice to you: Take steps to protect your crops against pests and diseases right from now !

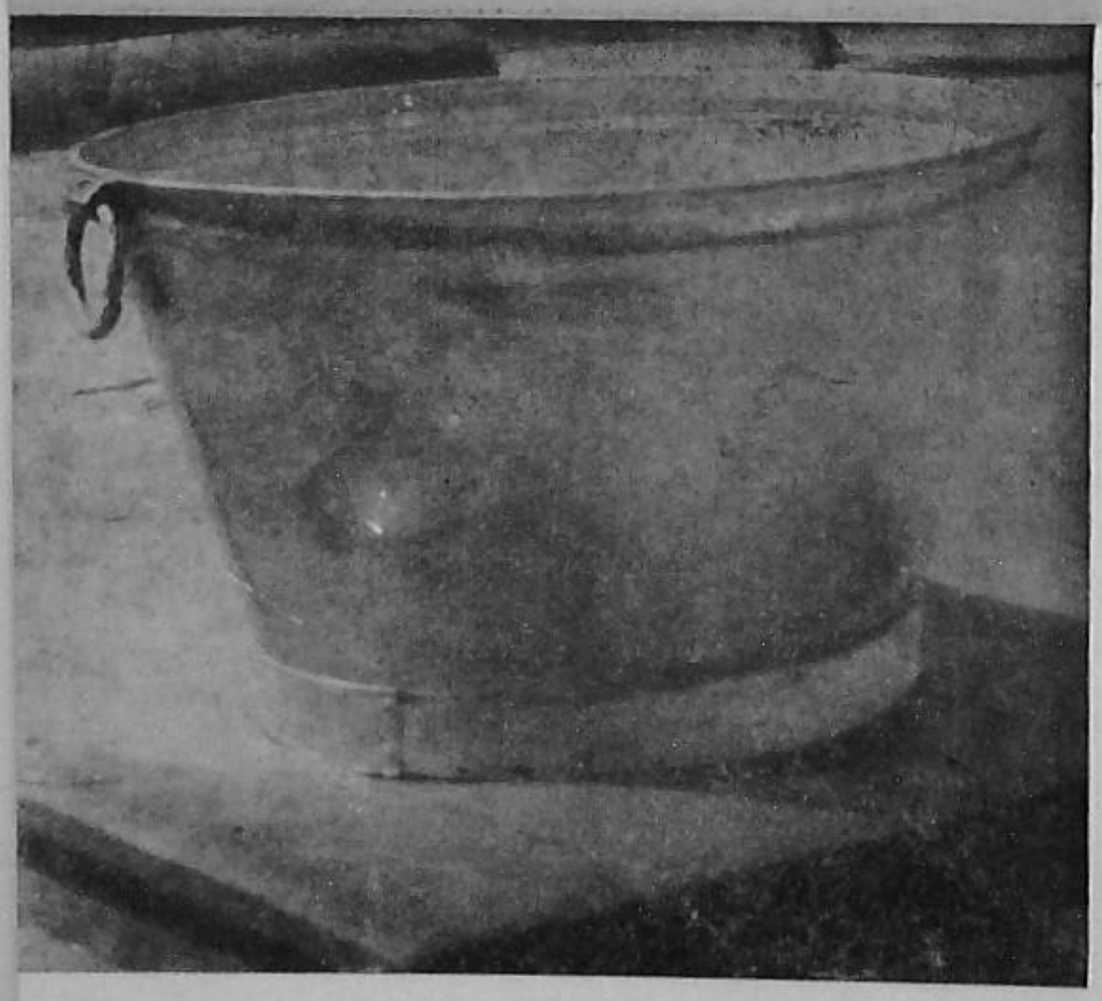
You ensure a healthy crop when you sow good and healthy seed. A seed may look healthy, and yet carry diseases with it. These diseases will affect the germinating seed and the growing seedlings. The diseases from the seed may not only attack the crop, but also spread to the healthy crop in other fields.

Paddy, *jowar*, wheat and barley, all have diseases which the seed can carry to the next crop.

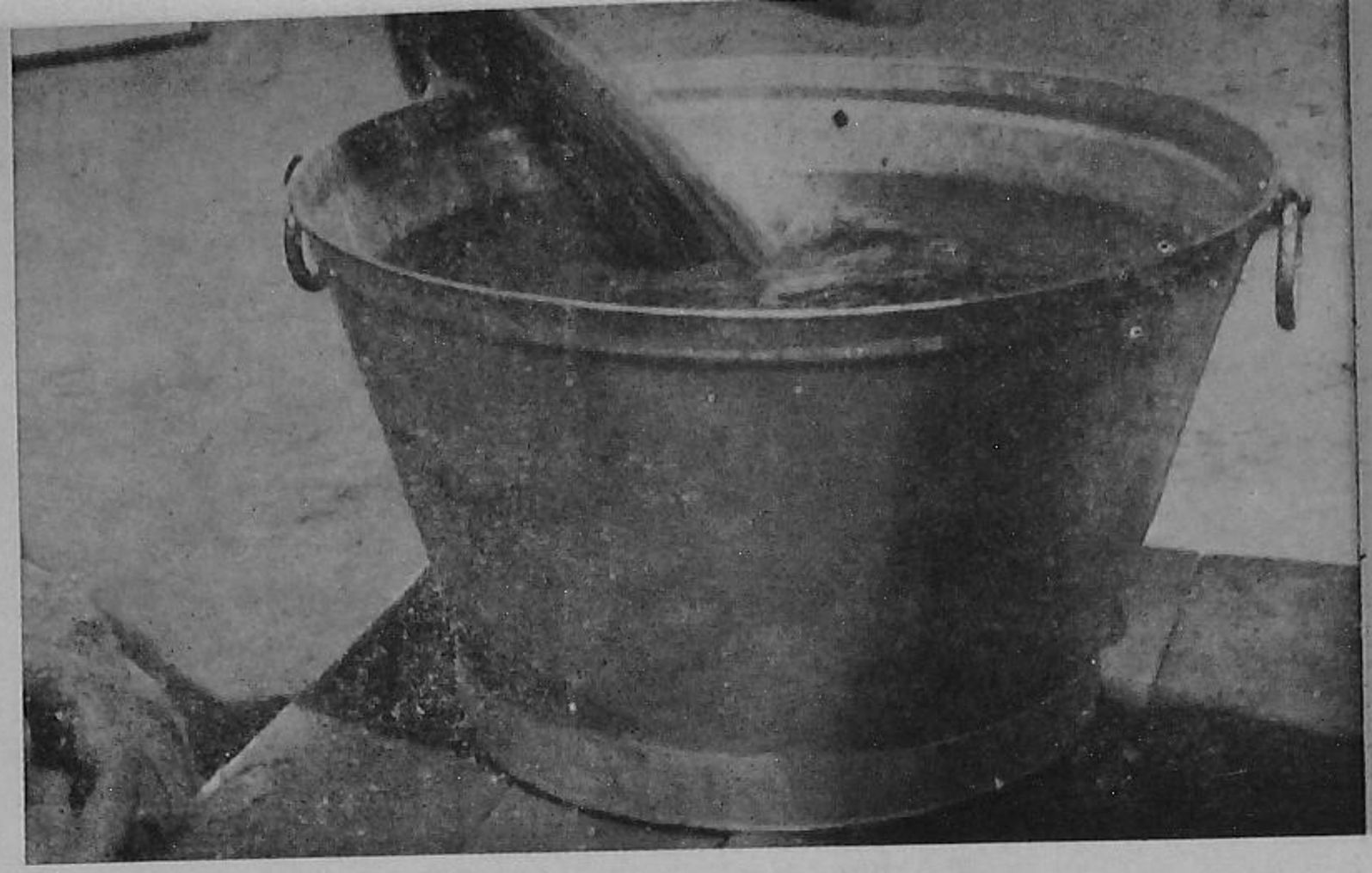
Let us take paddy for an instance. The diseases which the seeds carry are foot rot, brown leaf spot and blast. Similarly, *jowar* seed may carry grain smut disease. This fungus will turn the grain in the ears into a black mass. Wheat and barley suffer from loose smut which, again, is carried by seed.

HOT SUMMER DAYS ARE THE BEST TIME TO TREAT WHEAT AND BARLEY SEEDS AGAINST LOOSE SMUT

To do so, soak the seed in water for four hours



spread the soaked seed thin on a clean floor or cloth and dry it completely in the hot sun



To free the wheat seed of earcockle galls place the seed in water and stir well

The diseases of rice and *jowar* can be treated with chemicals (seed-dressers) a few days before sowing. This is how you treat the seed :

Weigh the required quantity of seed and place it in a seed treating drum or an earthenware, *chattie* or *ghara*. Fill this only two thirds. Then weigh the required quantity of the chemical and put it in the drum or *chattie*. Close with a tight-fitting lid or a thick cloth.

For paddy, use one *chattack* of organomercuric seed-dresser (1 per cent active material) for every 25 seers of seed.

If you are treating *jowar* seed, use 1 *chattack* of fine sulphur powder for every 15 seers of seed or 1 *chattack* of organomercuric seed-dresser for every 25 seers of seed.

Mix the seed and the chemical thoroughly by rotating or rolling or shaking the seed drum or any other container for 3 to 5 minutes.

Do not consume the treated seed or feed your animals with any. It will be poisonous.

The galls will float to the surface which you should remove immediately

CATERFILLARS

When the rains come, you will find grasshoppers and hairy caterpillars, especially the red hairy caterpillar, damaging most of the crops. The last is particularly dangerous. Protect your *kharif* crops against these pests.

Young grasshoppers can easily be killed if you dust 5 per cent B.H.C. If grown up grasshoppers are found, use 10 per cent B.H.C.

It is difficult to kill hairy caterpillars unless you kill them young. Dust 10 per cent B.H.C. or spray 0.025 per cent parathion (one liquid ounce of 50 per cent parathion in about 2½ kerosene-tinfuls of water). Kill

Many diseases of paddy and jowar can be got rid of by treating the seed with chemicals before sowing

these insects wherever found—in the crop, on the bunds or in fallow lands. Ask your neighbours also to do the same.

WHEAT DISEASES

Wheat and barley suffer from loose smut (*kangiari* or *chhidra kandua*). This disease is carried by the seed and hence you should treat the seed before sowing during one of the hot days of May or June.

Take some water in a tub, a bucket or any other container and put the seed in it early in the morning. Let it soak for 4 hours. Then remove the seed from the water, drain it and spread thin either on a clean floor, a cloth, a *durrie* or a tarpaulin. Let the grain dry in the hot sun. Turn it once or twice. When the seed is completely dry, store it. This way, the loose smut is got rid of.

Sometimes, wheat also suffers from earcockle disease. Here, instead of good and healthy seed, you will find a round gall-like structure. As in the control of loose smut, place the seed in water and stir well. The galls will float to the surface. Remove these immediately with the sieve and burn them. See that you do not delay in removing the galls, as otherwise they may sink to the bottom.

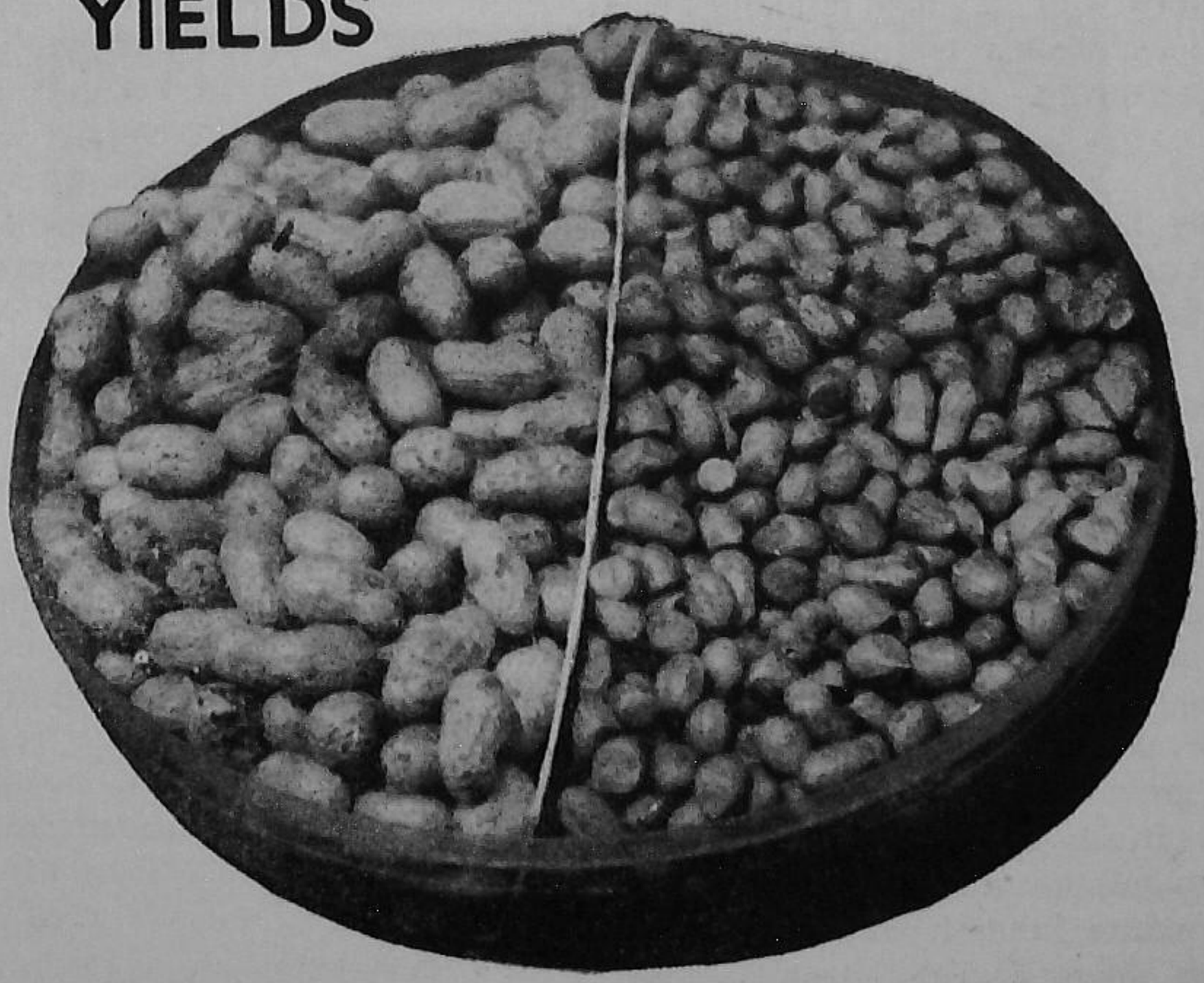
WARNING

When you use organo-mercuric chemicals, B.H.C. and parathion for treating seed, remember that these are poisonous. Handle them and use them with great care.

BETTER PRACTICES FOR BETTER GROUNDNUT YIELDS

WITH groundnut, there is no reason why you should not get good yields. And if you are already getting good harvests, your aim should be still better yields. Improved practices will help you get better and still better groundnut harvests.

The improved practices include better cultivation, adequate manuring, use of better varieties, seed selection, pest and disease control and also better farming plans such as mixed cropping and rotation. If you follow all these, you are sure to get high yields from groundnut.



Groundnut is mostly grown in *kharif*. You can also grow it as a summer crop with profit, if you have irrigation facilities. In Madras, Andhra Pradesh, and in some other states they grow groundnut under irrigation from January-February to March-April. An irrigated crop gives double the yield of what is obtained from a rainfed crop.

SOIL FOR GROUNDNUT

Unlike many other crops, groundnut can be grown on almost all kinds of soils. However, it gives its best when grown in light sandy loams. The soil should be well-drained, loose and friable with enough of calcium (lime) and a moderate amount of organic matter in it. Groundnut grown on lighter soils gives a higher shelling percentage too.

Avoid stiff heavy clay soils for groundnut. Regions with very high rainfall as parts of West Coast are also not quite suitable for groundnut-growing.

ROTATION

Many farmers grow groundnut after groundnut on the same land. This is no good. It brings down not only the yield but also the quality of the nuts, especially when the crop is not manured adequately. Moreover, it helps the spread of pests and diseases.

Rotating groundnut with such crops as paddy, *ragi*, sorghum, *bajra*, cotton and the like have many advantages. For groundnut being a legume, not only raises the fertility of the soil, but also gives a good green manure for the crop you raise later. Cotton or a cereal grown after groundnut yields more than it does in any other system of cropping. In fact, groundnut-cereal rotation is ideal ! Madras, Andhra Pradesh and Maharashtra farmers are doing it with advantage, and others can also follow the rotation with profit.

Mixed cropping or growing groundnut mixed with other crops is quite popular. *Tur*, Sorghum, maize, cotton, castor, *bajra* and *tenai* are the crops with which groundnut is grown mixed.

For groundnut no deep cultivation is needed. But a good tilth, say to a depth of about six inches, is necessary for good germination.

LAND PREPARATION

Plough the land two to six times to get a good seed-bed. Give two ploughings soon after harvest of the previous crop and then follow it up with light cultivation at regular intervals, depending upon the showers received during summer.

In Madras, four to six ploughings are sufficient for moist soils, while in Andhra Pradesh, the required tilth is obtained either by ploughing two or three times, or by working a *gorru* (tined harrow) and a *guntka* (blade harrow) alternately. In dry tracts farmers plough only once, work a local tined harrow next, and then a blade harrow. In black soils, they harrow a number of times to get the needed tilth.

Whatever method you follow, see that you prepare a fine seed-bed and that too well in time.

MANURING

Don't forget to feed your crop well, especially with potash and lime. As groundnut removes plant-foods from the soil in large quantities, you need to make good the loss through proper manuring (either by applying manure to the crop preceding groundnut or the crop itself). Since it is a leguminsous crop, it does not need nitrogenous manures generally.

Apply about five to ten cartloads (five tons) of cattle manure per acre. Organic

manure helps in maintaining soil texture. If, however, cattle manure is not available, you can apply 1/3 hundredweight of ammonium sulphate (10 pounds nitrogen) instead, to a rainfed crop.

Where the soil is dry and sandy and cannot hold the moisture, apply tank silt at 30 to 50 cartloads (once every three to five years) as many farmers do. If practicable, pen sheep and cattle in such soils.

Groundnut gives very good results when fertilizers are applied over a basal dressing of cattle manure. Follow this schedule :

For a rainfed crop: Five cartloads of farmyard manure or compost supplemented with one hundredweight of superphosphate (20 pounds of phoshoric acid) and half hundredweight of muriate of potash (35 pounds of potash) per acre.

If the quality of cattle manure is poor add a hundredweight of ammonium sulphate (10 pounds nitrogen).

For an irrigated crop: Ten cartloads (5 tons) of farm-manure or compost, supplemented with three-fourth hundredweight of ammonium sulphate (15 pounds of nitrogen) in addition to one and a half hundredweight of superphosphate (30 pounds of phosphoric acid) and three-fourth hundredweight of muriate of potash (50 pounds of potash) per acre.

VARIETIES

You cannot hope to do much unless you grow a better variety.

As you know, there are two main types of groundnut. One is 'bunch' or erect type, whose branches grow somewhat erect and the pods appear in a cluster, confined to the base of the plant. The other is spreading or runner and as the name indicates, its primary branches trail along the ground and the pods are borne along the length of the branches.

The bunch varieties take three to four months to mature, while spreading ones four to six months or even longer, depending upon the soil, rainfall and climatic conditions.

Spreading varieties give better yields than the short duration ones. But these cannot be grown unless the rainfall is well-distributed for 4½ months. Whereas you can easily grow bunch types where rainfall is not very well distributed for over a long period of time. Grow bunch types also under lift irrigation system where there is not much water in summer.

Improved varieties, both in bunch and spreading types are available with your State Department of Agriculture.

SEED FOR SOWING

Select healthy pods from a well-matured crop. Sow the seed after removing their shell.

Shell the pods with hand to avoid injury to kernels a week before sowing. Hand-pick the kernels to eliminate diseased, broken or shrivelled ones.

To ensure a good germination and to protect seedlings from pests and diseases in the soil, treat the seed with 'Ceresan' or 'Agrosan' at four ounces per 100 pounds of kernels. Mix the seed well with the fungicide powder.

SOWING THE SEED

Sow the crop in lines, preferably with a seed-drill. Line-sowing with a seed-drill helps regulate the seed-rate as well as distances between plants.

A proper seed-rate and spacing are very important in groundnut. Sowing too thick is as bad as sowing too thin.

For Sowing, Select healthy seeds and hand-shell them

If it is bunch type, sow with a spacing of a six by six inches (12 inches by 6 inches in Maharashtra). For spreading varieties you can adopt a nine by nine-inch spacing.

You will need about 80 to 100 pounds of seed for sowing bunch varieties and if you are drilling the same. Where dibbling is done, 120 pounds will be needed.

For drill-sowing the spreading varieties, 70 to 80 pounds is enough and 90 pounds if you are to dibble.

You can adopt a lower seed-rate if you are raising the crop under irrigation.

Sow the seed two to three inches deep in light sandy soils and to about 1½ to 2 inches on heavier soils. Remember that the depth will be lesser where soil has plenty of moisture than where it is moderately dry.

A little firming of soil over the seed you sow is important; pass a brush harrow or a long-bladed harrow across the lines to achieve this.

INTERCULTIVATION

Though the nature and number of intercultivations given to the groundnut crop depend on the condition of the soil and the amount of rainfall received in a particular area, normally, two hoeings and weedings should be given.

Give the first intercultivation three weeks after sowing, and the other a month later. The first one will help remove weeds and enable the soil to store more moisture, and the second will make the soil loose and help the 'pegs' (stalk of pods) get into the soil easily.

In the case of the bunch type, earth up the plants at the time of the final intercultivation. It will increase the formation of pods.

Before you harvest, pull out a few plants and examine whether the pods are really mature or not

Better avoid any hoeing or weeding after the plants have flowered and pod formation has started.

IRRIGATION

Irrigate the crop at regular intervals throughout the crop season up to maturity.

Give a light irrigation on the third day after sowing the summer crop.

In all you may need to give six to eight irrigations to the short-duration bunch type and 10 to 12 irrigations to the long-duration spreading type.

PEST AND DISEASE

Groundnut is attacked by pests like red hairy caterpillars, leaf miner, aphids and thrips. You should be on the look-out for these and take early steps to control them.

The red hairy caterpillar causes a heavy loss of crop, especially in Madras, Andhra Pradesh and Mysore States. Watch the crop all the time and dust it with ten per cent BHC as soon as you see the pest. In case the attack has taken a severe turn and grown up caterpillars are seen, spray the crop with 'Folidol' at the rate of one ounce in six gallons of water.

When a dry period follows, it is quite likely that leaf miner (*surul*) may visit your field. Protect the crop by dusting five per cent (15 pounds per acre) DDT. Repeat the treatment two to three times, if required.

Another pest which appears occasionally are the thrips. Thrips cause curling of leaves. You can control the pest by dusting ten per cent BHC.

The most common disease of groundnut is the *tikka* leaf spot. This disease generally appears at later stages of crop growth. If you see its attack, spray the crop with fine sulphur dust (320 mesh) per acre. You may need to give two or three treatments depending on the nature of the attack.

HARVESTING

Harvest the nuts when fully mature. When the vines turn yellow, leaves dry up and shed you know that the crop is ready for harvest. Pull out a few plants from the field and see if the pods are mature, and free from extra moisture in the shell. The shell should crack when pressed and you will see a dark colour on the inner surface of the shells in the well-matured pods. If harvested before time, the crop gives a low as well as a poor quality produce.

After harvesting, dry the pods in the sun for about seven days before storing or sending to the market. If pods are stored when still wet, the kernels get rancid. You will have to air dry the pods before putting them out for sun drying. If the weather is moist, this should be done in a well-covered shed.

If you are storing the pods for seed purposes, see that they are fully mature and well-dried in the sun for about ten days.

Follow all these practices and yours will be a crop that will bring high returns.

STORE YOUR GRAINS SAFE

Now is the time when you will be storing your *rabi* harvest. Store it in a way so that rats and insects cannot get at it.

Contrary to what many believe, grains do not carry insect in them except in the case of peas or *chana*. Insect-attack takes place in storage godowns only. To prevent insect-damage in storage:

Clean the godown and all storage containers like *khatties*, *gharas*, bags etc., thoroughly.

Dry the grains well before storing.

Store only clean and healthy grains and in improved storage receptacles.

Do not store old and new grains together; store them separately.

Never store infested grains. They will be a source of attack on the sound grains.

Keep the storage godowns and its surroundings clean.

Inspect the stored grains frequently, especially during the rainy season. Expose the grains once or twice to the sun, if possible, this helps in keeping the grains healthy.

Store the grains in places which are not usually exposed to rain, rain splashes and high humidity. Do not open the storage receptacles too often. Keep the lids or the covers tight.

Where facilities for fumigation exist, infested grains should be fumigated under expert supervision. Grains stored in bags and put in stacks may be dusted lightly with five per cent BHC once or twice in the season.

Store the grains in rat-proof containers and take measures for rat control either by using rat traps or by poison baiting. Poison baiting should be done with great care and grains etc., should not be allowed to be contaminated with it.

—D. B. R

By A. B. MITRA
and J. N. MAJUMDAR

GROW COWPEA TWICE IN A YEAR

FARMERS facing the problem of finding green fodder the year round for their cattle will find a good answer in cowpea (*lobia*).

Cowpea can not only be raised on all types of soil (light soils being the best), but you can raise two crops of it during the year. Normally, cowpea is a warm weather crop, raised from May to August. It is a legume, does not need much care, and the fodder is liked by cattle.

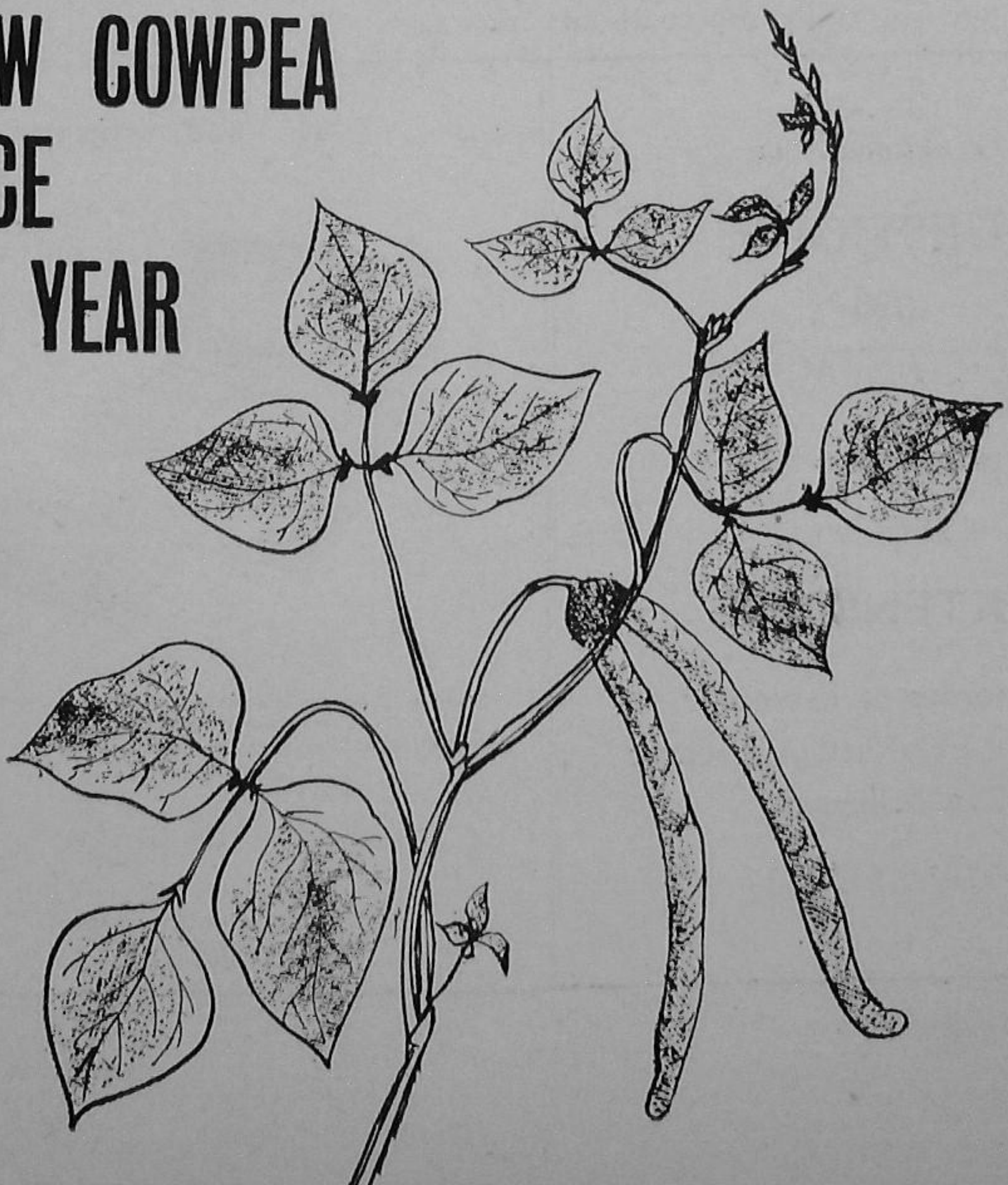
You can grow cowpea in a light soil or clay or loam. You can't get the best yield from a very rich soil, however.

Cowpea is of two types ; The Dwarf Bushy type with small erect pods grows very quick and yields more fodder than the spreading type.

HOW TO GROW

Prepare your land by ploughing three or four times in May and apply 150 maunds of farmyard manure and 20 pounds of phosphoric acid (as superphosphate) during land preparation.

Sow 10 to 12 seers of seed per acre in early June when the rains start. Sow the seed in lines three feet apart and with a



spacing of six to eight inches in-between the seeds in the line.

If you have only a small plot of land for cowpea, better dibble the seeds in mid-May at a distance of three feet each way. This way you will need only about three seers of seed per acre.

Irrigate once or at the most twice till the rains come.

The flush of the crop will come up by the end of June. It will not require any inter-culture.

During July-August, hairy caterpillars may attack the crop and eat away the leaves. Watch for these caterpillers and control them by dusting 10 per cent BHC at 14 pounds per acre as soon as you notice the pest.

Harvest the first crop by the first week of August, and you can easily expect about 250 maunds of green fodder to an acre. If you want to feed the fodder to your animals green, harvest as and when needed. You can have three to four cuttings of cowpea in six to eight weeks.

To raise the second crop of cowpea, give only two ploughings after the first harvest.

No manuring would be needed for this crop.

Sow the seeds in the second week of August in lines as you did for the first crop. Allow the crop to grow till the third week of October when you will be able to harvest about 150 maunds of green fodder per acre.

If you find it more convenient to harvest the entire crop at a time, you can make a good silage out of it and feed your animals during the following summer when fodder gets scarce.

NOW THE BAKHAR IS ALL STEEL

By D. N. KHERDEKAR

WHY *bakhar*, a wooden harrow with a steel blade, is so popular in the Deccan is due to one very good reason. It is a multipurpose implement. You can use it as a cultivator, harrow, leveller and sometimes even as a seed-drill.

In fact in the black cotton soils, it is more popular than even a country plough.

Now to make this useful implement popular in other states also, particularly in the north and east India, these *bakhars* are being made in all steel. Such a *bakhar* costs Rs. 45.

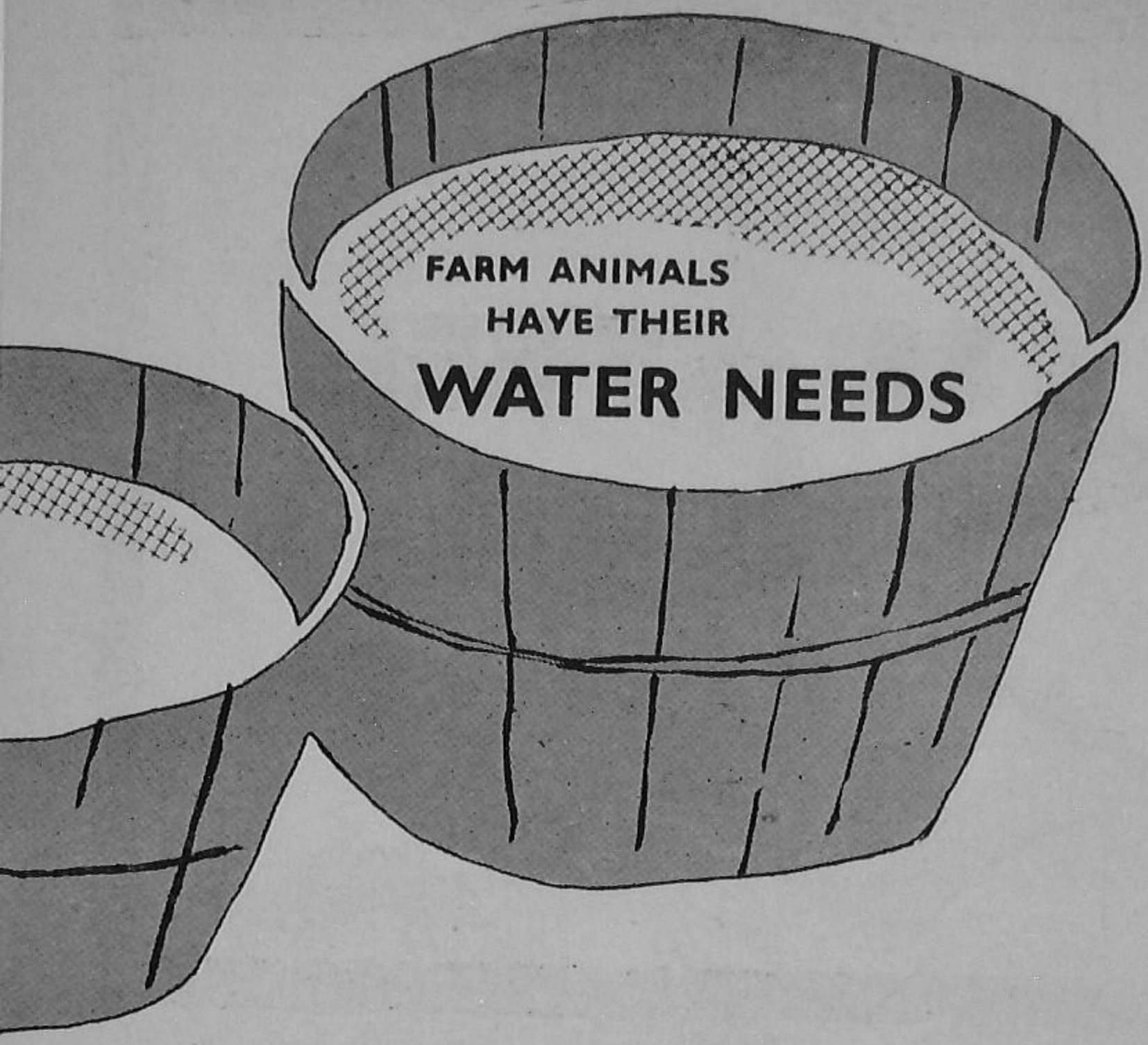
An all-steel *bakhar* has two advantages. One : it is more durable and two: it is cheap.

The body of a steel *bakhar* is made of a steel plate bent in a 'U' form. To this, a beam and a handle are attached.

Two steel tines are bolted on to the body to hold the ends of the *bakhar* blade. The angle that the tines make can be adjusted by means of three holes provided in the body.

You will find this *bakhar* very useful in preparing a seed-bed. In case the soil is of heavy type, you can add a weight to the implement or you can stand on it and work it.

With a pair of bullocks a *bakhar* with a 24-inch long blade, covers about 2 to 2½ acres in one working day of eight hours. You can easily take out the blade and get it sharpened by a village blacksmith.



THIS summer, as in every summer, make it a point to see that your farm animals get enough of clean water to drink. Animals which don't get enough water suffer badly. You can't get good work out of such animals.

Cows in milk and young growing cattle require the largest amount of drinking water. Each of such animals needs something like 50 to 75 seers of water a day depending on the size, the nature of food, the temperature and the quantity of milk given. Usually, a cow drinks four to five and a half pounds of water (including the water in her feed) for each pound of milk she gives. She may drink as much as 80 per cent more in the hot weather !

Cows need to be watered twice a day. But now in hot weather they would need it thrice a day. Provide enough clean water for your cows within their easy reach so that they can drink any time they like.

If you own a few sheep or goats, remember that each of them needs 1½ to 2½ seers of water a day depending on the season and the type of feed. During summer, when they live on dry feed, they need more water. Goats in milk need also more, depending on the quantity of milk they give. During summer

three waterings from the troughs would be enough to keep your goats in health. Make clean water available in earthern pots at all times in the pens. The water in such a pot will keep cool during summer.

A camel is known as the ship in the desert. No doubt he can do without water

for quite a number of days at a stretch, but he too can not keep on working on a short water supply without breaking down. Different types of camels differ in their capacity to withstand thirst. Camels used to frequent supply of water do not stand long thirsty periods. So do not forget to provide enough drinking water for your camels. Camels are usually taken to water twice in hot weather. In the desert areas of Rajasthan camels often go without drink for two to three days. In Bikaner where camels are fed with *bhoosa*, they are given water daily. In summer give water to your camels twice a day—both morning and evening.

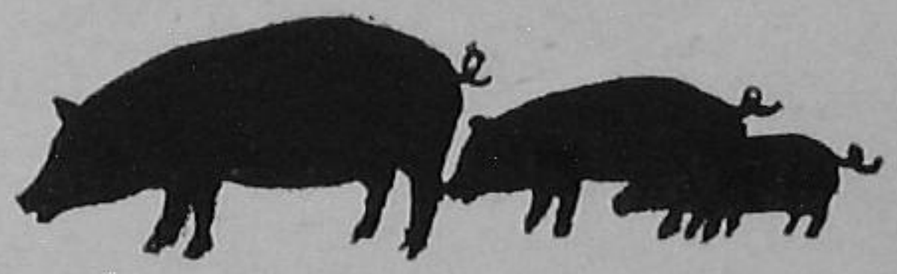
A camel generally drinks about 15 to 40 seers of water a day. But it may vary under different conditions. A thirsty camel, which has not taken a drink for long, can even take 100 seers of water at a stretch.

*Do not allow a camel to drink when it is hot after work.

*Rest the animal and allow it to cool down before taking to water.

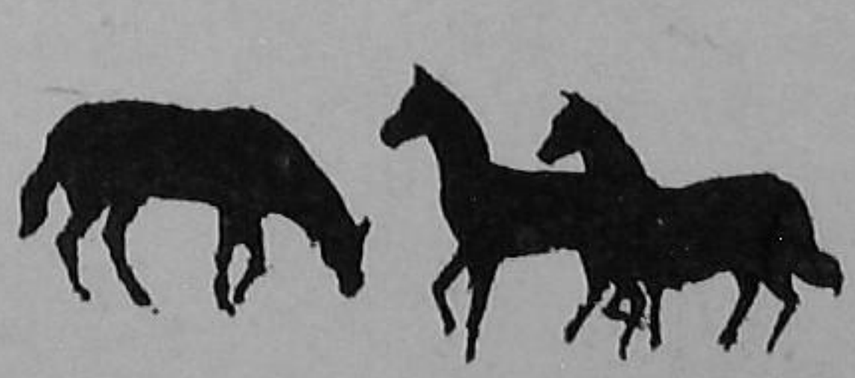
*Do not take a camel for a drink to a pool infested with biting flies. Better water them from a pail.

Pigs also need plenty of water to drink. A pig with a body weight of 100 pounds,



drinks about two to six seers of water a day. So give plenty of water to your pigs, twice daily in troughs or pails. If you are giving enough watery feeds to your pigs, you need not provide them with extra water separately.

If you have a horse, it needs 25 to 75



seers of water a day, and in hot summer days it will need twice as much.

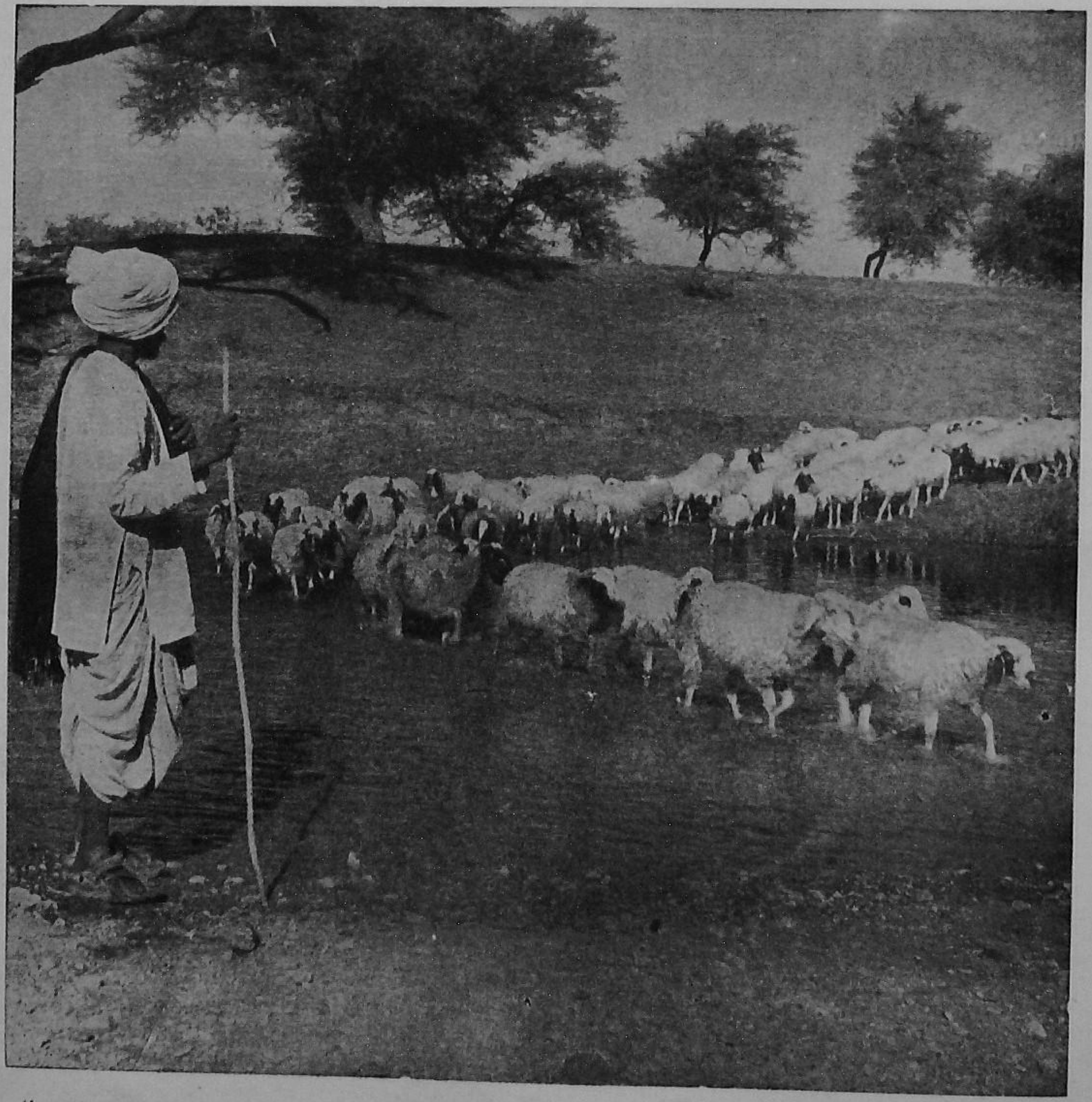
Generally two to three daily waterings are enough for your horse in the cold season. But during the hot weather and when it is in work, supply water four times a day.

Do not give water to your horse for atleast an hour after feeding. Allow it to drink freely while it is at work or even when it is sweating. A horse, even when it is hot, may be given water immediately but should be kept moving until it cools down.

Allow ample time for your horse to drink its fill. Do not take it away from water the first time it raises its head.

Provide water troughs placed at a convenient height so that your horse may not paw over the rim. If you are giving the water in a trough or a pail, see that it has no sharp angles or corners.

Look after the water needs of your farm animals particularly during the summer, and your animals will always be in good shape.



TRY VENEER GRAFTING IN MANGO

S. K. MUKHERJEE and P. K. MAJUMDAR

VENEER grafting is a good method of propagating the mango. The method, it is found, gives as good results as inarching, but does not have its drawbacks.

Inarching, the popular propagation method with mango growers, involves much care and cost, though it is quite simple and effective.

In inarching, you have to bring the seedlings near the mother plants for grafting. If the trees are very tall, the seedling-pots are to be placed on a platform specially built for the purpose and also to be watered regularly. Then again the budded plants take a longer time to grow, and our growers prefer plants of a good height for planting in the fields.

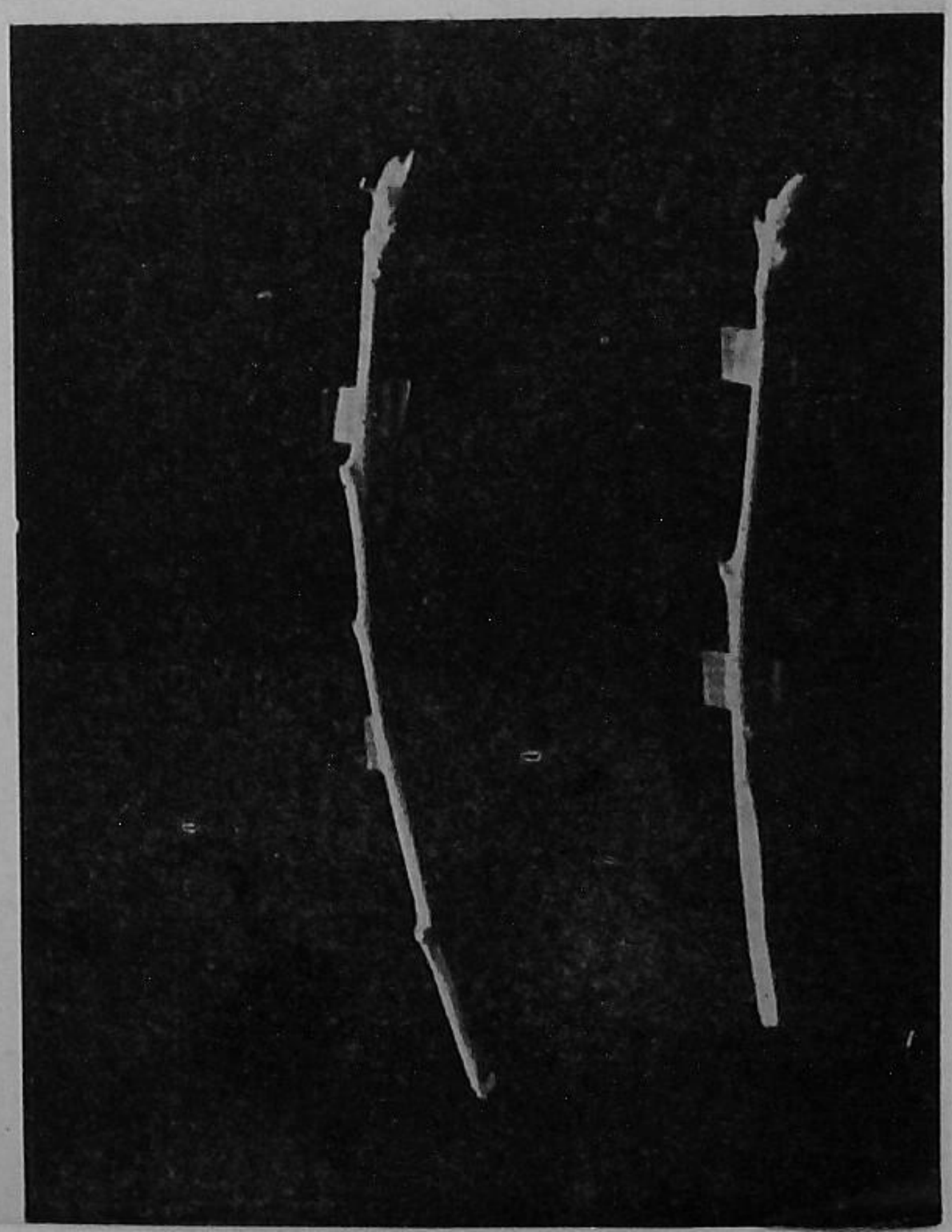
They tried veneer grafting instead at the Horticultural Research Station, Krishnanagar, West Bengal. The method was also tried at the Indian Agricultural Research Institute in New Delhi on such mango varieties as *Langra*, *Dusehri* and *Chousa*. With this method, they got a 70 to 80 per cent success.

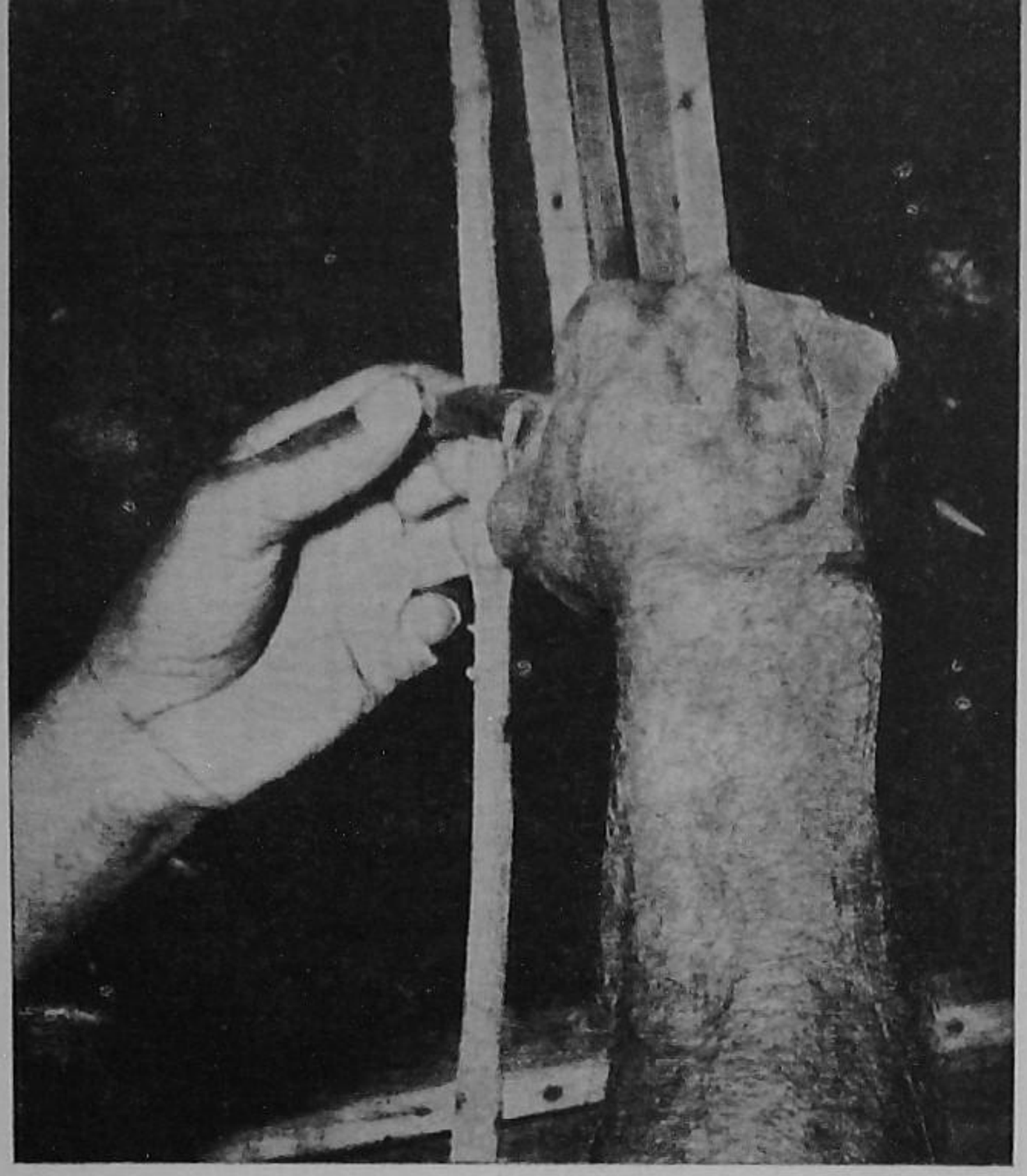
This is how you graft by the veneer method :

Select the scion stick very carefully. The scion stick should be a terminal shoot of four to six inches length and of pencil thickness. Select a terminal bud that will sprout in 10 to 15 days. Such shoots are ideal.

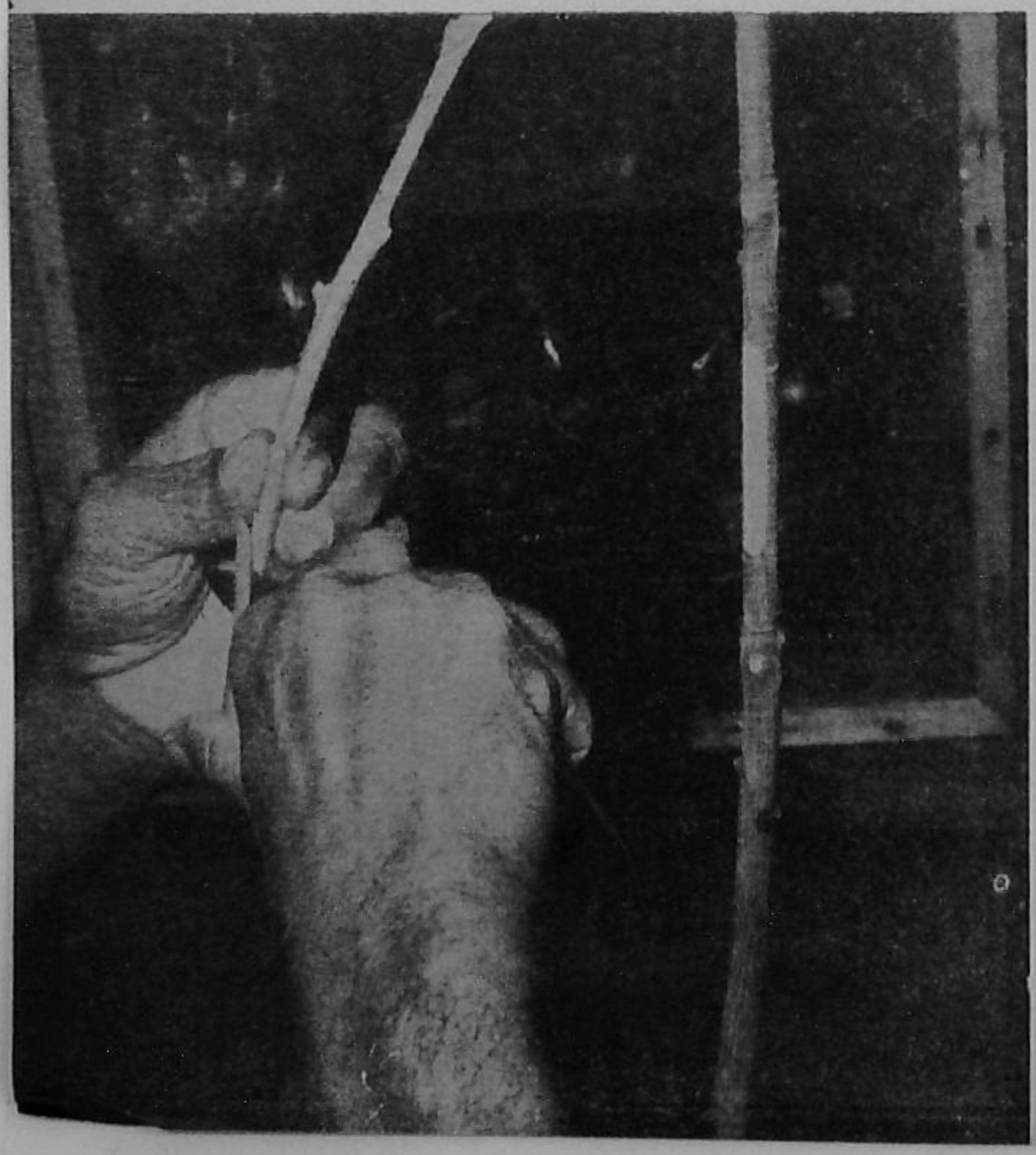
Remove the leaves from the top of the scion about one or two weeks before grafting.

You can do veneer grafting on 1 to 1½ year-old seedling stocks ½ an inch to 2½ inches in diameter. The colour of the bark will vary from greenish pink to green.

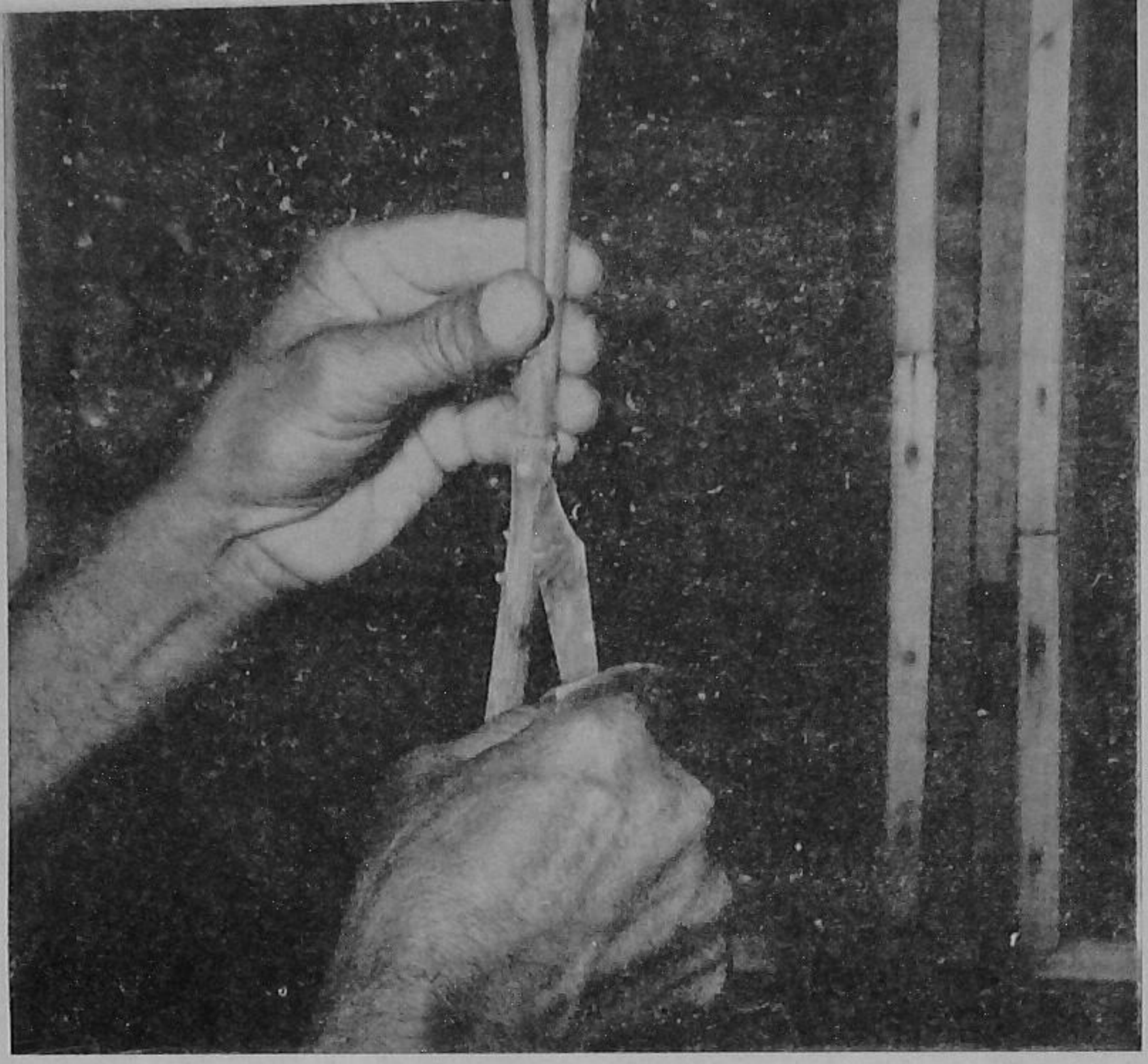




After selecting the scion stick, make a slanting cut about two inches long on one side of the stock stem.



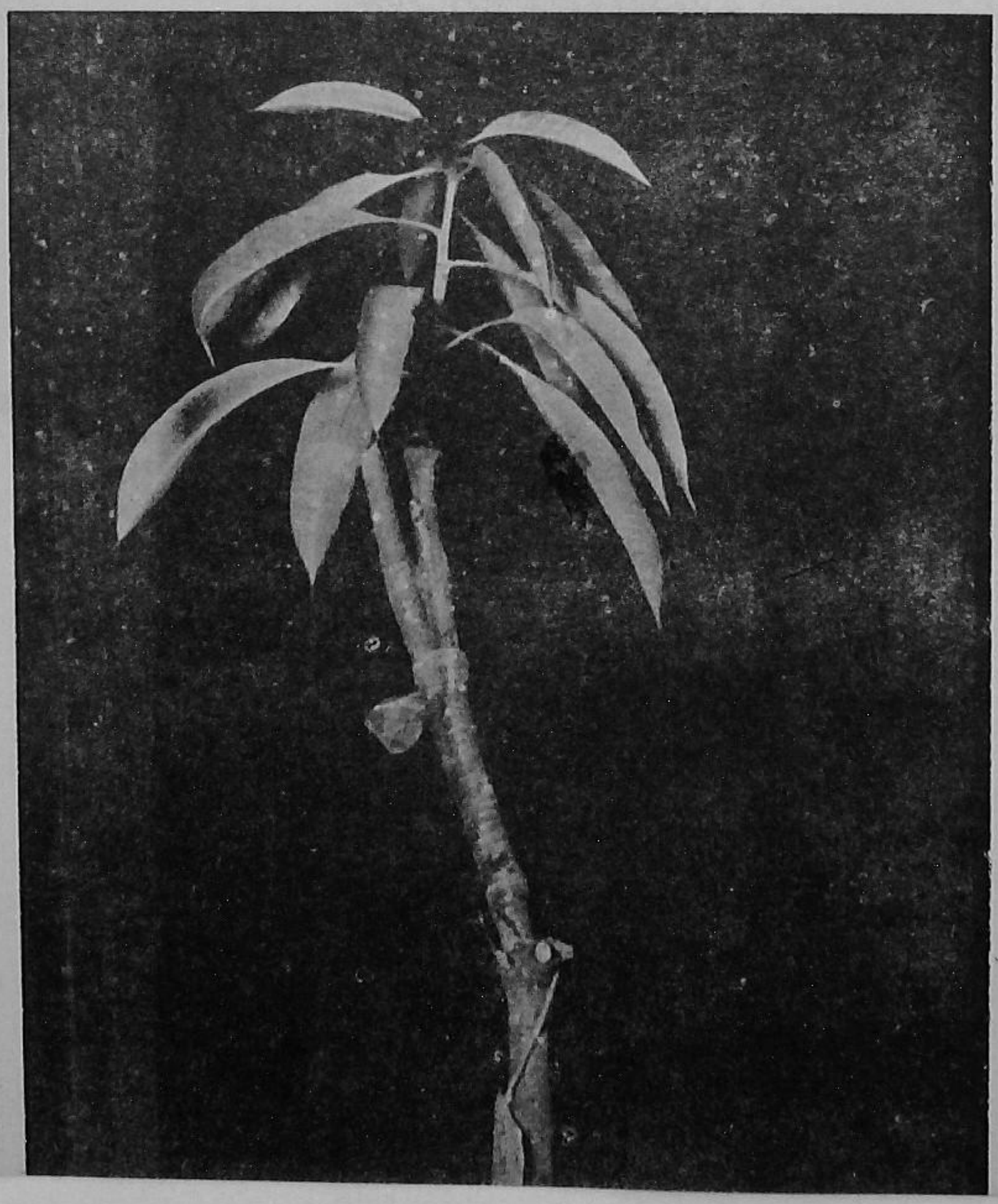
Next, make a slanting cut on one side of the scion which will just fit in with the notch of the stock.



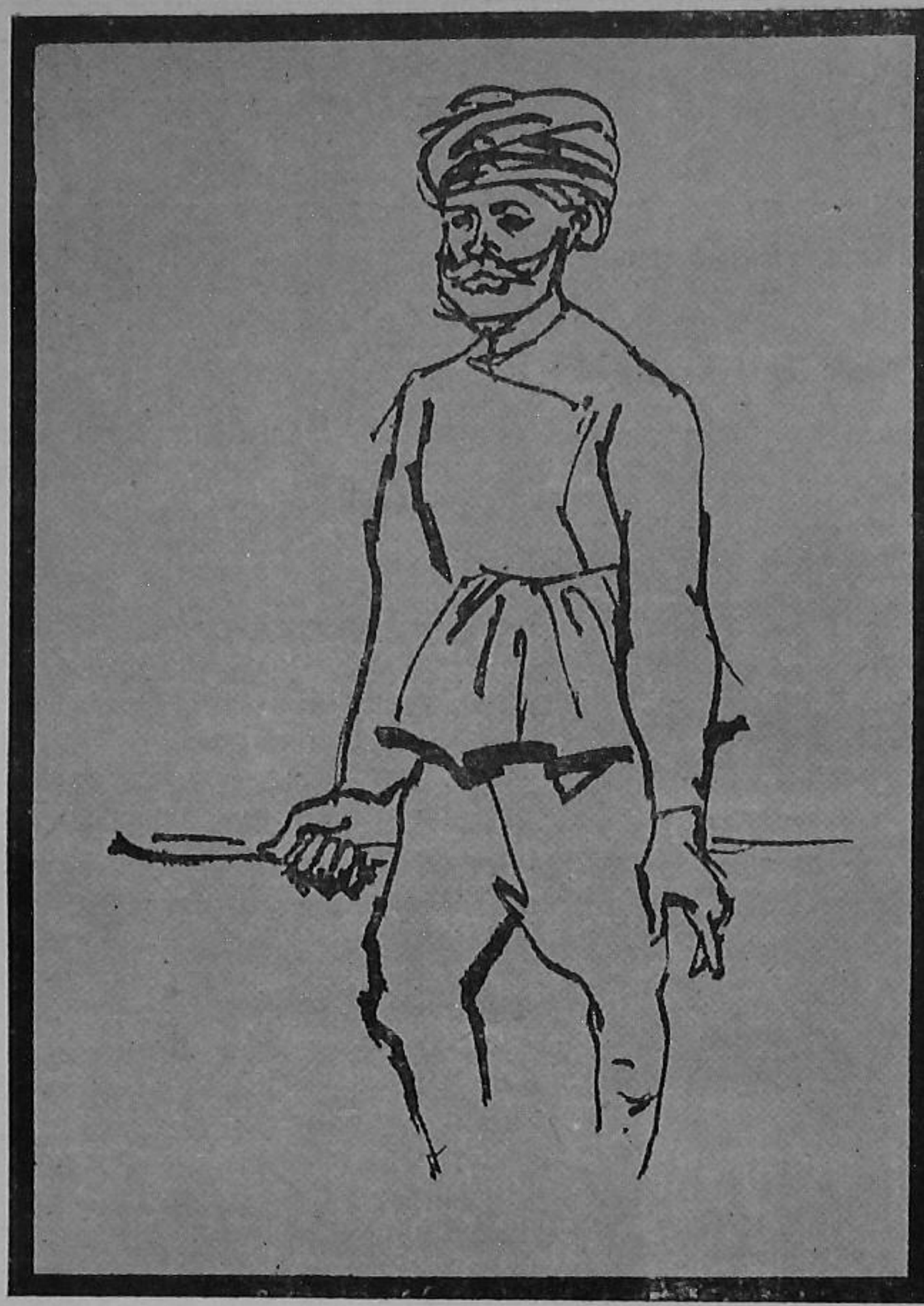
Place the scion in such a position so that the cambiums of both the stock and scion come in close contact.

Wrap it tightly with half an inch wide tape of 200 to 300 gauge alkathene film, keeping the terminal ends free.

When the scion begins to protrude at the top (after about 3 weeks), remove the upper part of the stock; buds will thus grow more rapidly. Remove the plastic wrapper after about two to three months.



Nurserymen can easily take to this method as it has many advantages. You have to use only the scion sticks from the mother plants for propagation and so you need to look after only a small area. By this method you can also propagate a large number of selected varieties, both grafted and seedling, found in different parts of the country.



The Gujrat farmers' FERTILIZER GUIDE

The Gujarat farmers must be keen to know *what* fertilizers to use, *how* to use them and *when* to use for good crop yields. Here is a general recommendation that they will find profitable. Of course it will be necessary to slightly modify these to suit one's own crop and soil needs. For that the Gram Sevak may be consulted.

Soil Type	*per acre*			*Time and method of application*
	N (Nitrogen) lb.	*P_2O_5 (Phosphoric acid) lb.*	*K_2O (Potash) lb.*	
		Paddy (drilled)		
Medium	20	10	—	Half N and full P_2O_5 to be applied at the time of sowing. Remaining N to be applied after four weeks.
		Paddy (transplanted)		
Medium & Heavy	40	20	—	

Soil Type	per acre N (*Nitrogen*) lb.	P_2O_5 (*Phosphoric acid*) lb.	K_2O (*Potash*) lb.	*Time and methods of application*
		Wheat (Rainfed)		
Sandy & Medium	10	—	—	To be drilled at the time of sowing.
		Wheat (Irrigated)		
Sandy & Medium	40	20	—	Half N and full P_2O_5 to be applied at sowing ; remaining N to be dressed after 4 to 6 weeks of sowing.
		Bajra* and *Jowar		
Light	10	—	—	To be applied at sowing.
Medium	20	—	—	
		Cotton (Rainfed)		
Medium & Heavy	20	10	—	P_2O_5 to be applied at sowing. Half N at sowing or one month after sowing and remaining half two months after sowing.
do	40	20	—	
		Groundnut and Pulses		
Light & Medium	10	20	—	To be applied at sowing.
		Maize		
Light & Medium	20	—	—	do
		Sugarcane		
Medium & heavy	150	75	—	P_2O_5 to be applied 4 to 6 inches deep at planting. N to be applied in four doses; first at planting, second, 6 to 8 weeks after planting, third, 12 to 16 weeks after planting, and fourth, at the time of earthing up.
		Tobacco		
Light & Medium	150	40	—	Half N and full P_2O_5 at transplanting and other half of N one month after transplanting.
		Potato (On Riverbed)		
Sandy	70	70	70	Before planting.
		Vegetables		
	40	20	20	Full P_2O_5 at sowing or transplanting and remaining N and K_2O one month later.
	80	40	40	

TICK FEVER IN POULTRY IS SOMETHING YOU HAVE TO WATCH

By S. G. IYER

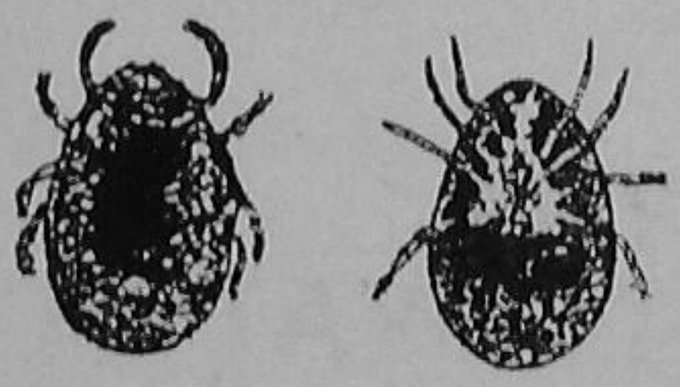
EVERY poultryman sooner or later learns what tick fever or Spirochaetosis can mean in poultry losses. This fever is one of the commonest and the most fatal of poultry diseases in India. In south India the disease is not so common, but in most other parts of the country, it carries off very large number of birds every year.

You can recognise the disease by high fever, loss of power in the legs and the general weakness and diarrhoea in your poultry. Young birds get it more easily than older birds, and imported birds are more likely to get it than our local stock.

The disease is caused by a thread-like, spiral-shaped blood parasite, put into the bird by the bite of the common poultry tick. Apart from direct bites, fowls may pick up the disease by eating ticks or their eggs, or by swallowing foods mixed up with the droppings of infected birds.

The grown-up female tick lays her eggs in cracks and crevices of poultry houses, and the young ticks hatch out in about fifteen days in warm weather. These are very active, but do not suck blood for three to four days. On the fourth day they may be seen sticking to the fowls near the base of the wings and the under surface of the neck where they remain and suck blood for four to nine days. Thereafter they drop off and hide themselves in dark places, and moult in a week's time, come out, and again start sucking blood, fall off the host and moult again. After a further period of feeding and rest, they become adults.

The adult tick only attacks fowls at night, and is usually not noticed during the day, as it hides in holes and crevices in the poultry house. As the tick is small in its early stages, and it hides during the day when fully grown, even when present in large numbers it passes unnoticed. If you suspect ticks, search for them at night on your birds and also on the approaches to the perches.



(L) A Tick ; (R) The same upside down

The period of incubation of the disease is from five to nine days. Tick fever lasts from three to five days, and in a chronic form even up to 21 days. Affected birds will be found shy of their fellows, standing about depressed and with the feathers ruffled. One of the earliest symptoms is swelling of the feet and claws. The fowl rapidly becomes weaker and weaker and the temperature rises to 110°-111°F. The comb and wattles turn pale. Plenty of loose greenish droppings are also seen. The bird is unable to perch thereafter and you will see paralysis in its legs, wings and neck muscles. Finally, the bird will be seen lying with its wings spread out on the ground and its head twisted backwards. In an acute case, the bird dies in convulsions.

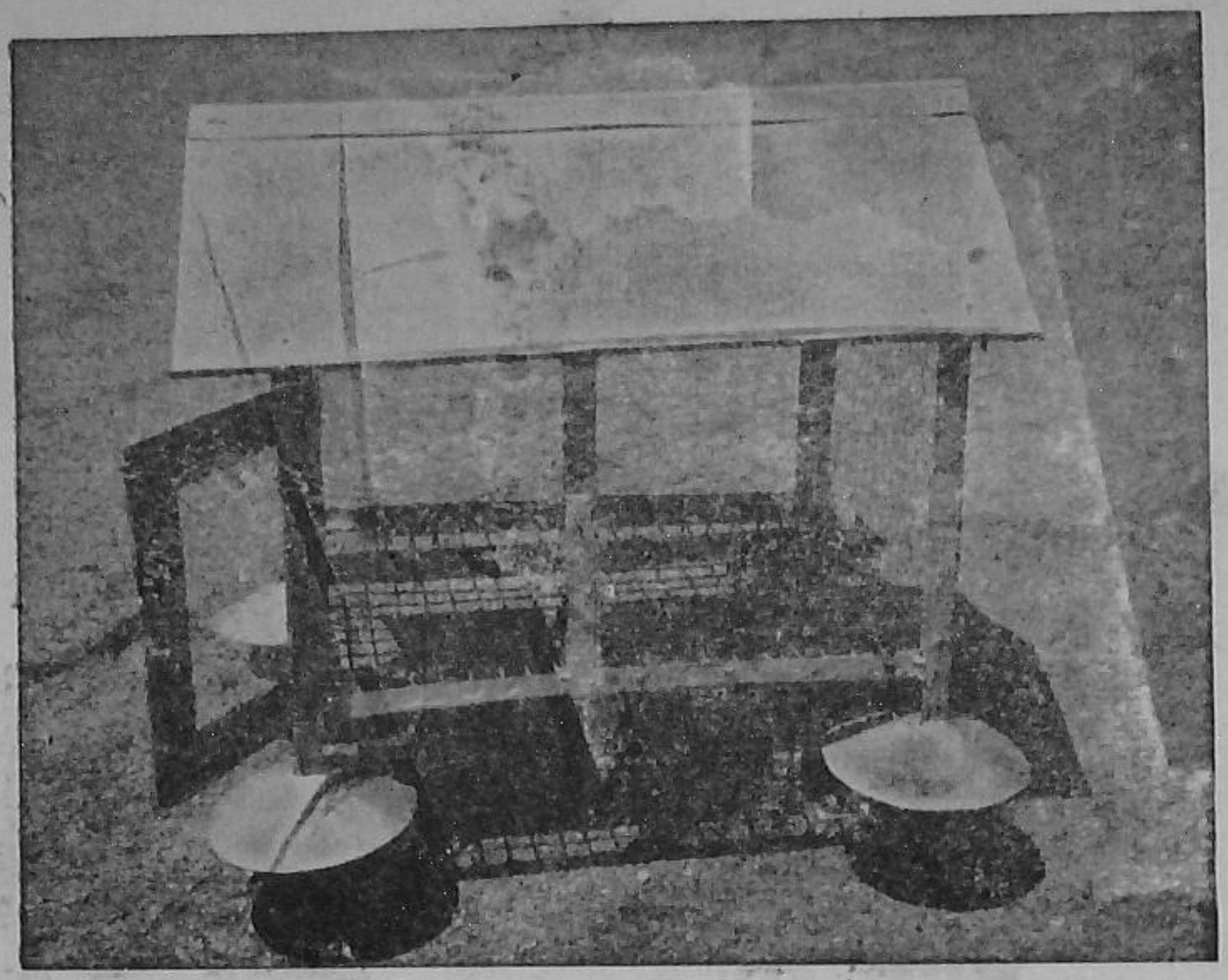
When the disease is severe, 90 per cent of the birds may die.

A bird that dies of the disease starts rotting rapidly. When cut open, its blood will be found thin and watery, the spleen often purple and four to five times the normal size. The liver is also enlarged and congested, and full of small whitish spots. The inner lining of the intestine is usually much swollen and flecked with blood.

If you suspect trouble from ticks in your flock, you should get in touch with your veterinary doctor. He will be able to say for certain that the disease is tick fever if you send him samples of blood taken during the height of the fever.

Ticks can only produce tick fever if they themselves are infected. But even healthy ticks can be a source of trouble, if present in large numbers, as they suck blood out of the birds. Even in such cases, death from loss of blood is not uncommon, especially in young birds.

The first step in treating birds for tick fever is to get help in diagnosing the disease. However, if ticks are present and losses are heavy, take immediate steps to get rid of the ticks. This is no easy matter if the houses have been badly made, as ticks in such places hide deep in crevices and it is difficult to kill them. If the house is of metal, you can make a good fire of waste straw or hay in the house and then kill the ticks. In well-built brick houses, use a blow-lamp freely and follow up by a thorough spraying with kerosene under pressure, if possible. Paint wooden houses and equipment with kerosene or creosote. Treating mud houses is very difficult, and it is better that you destroy such houses, making it a point to remove the birds during the day time to new houses.



Ticks can have no access to such a poultry house made of angle-iron and fitted with metallic cups to their legs

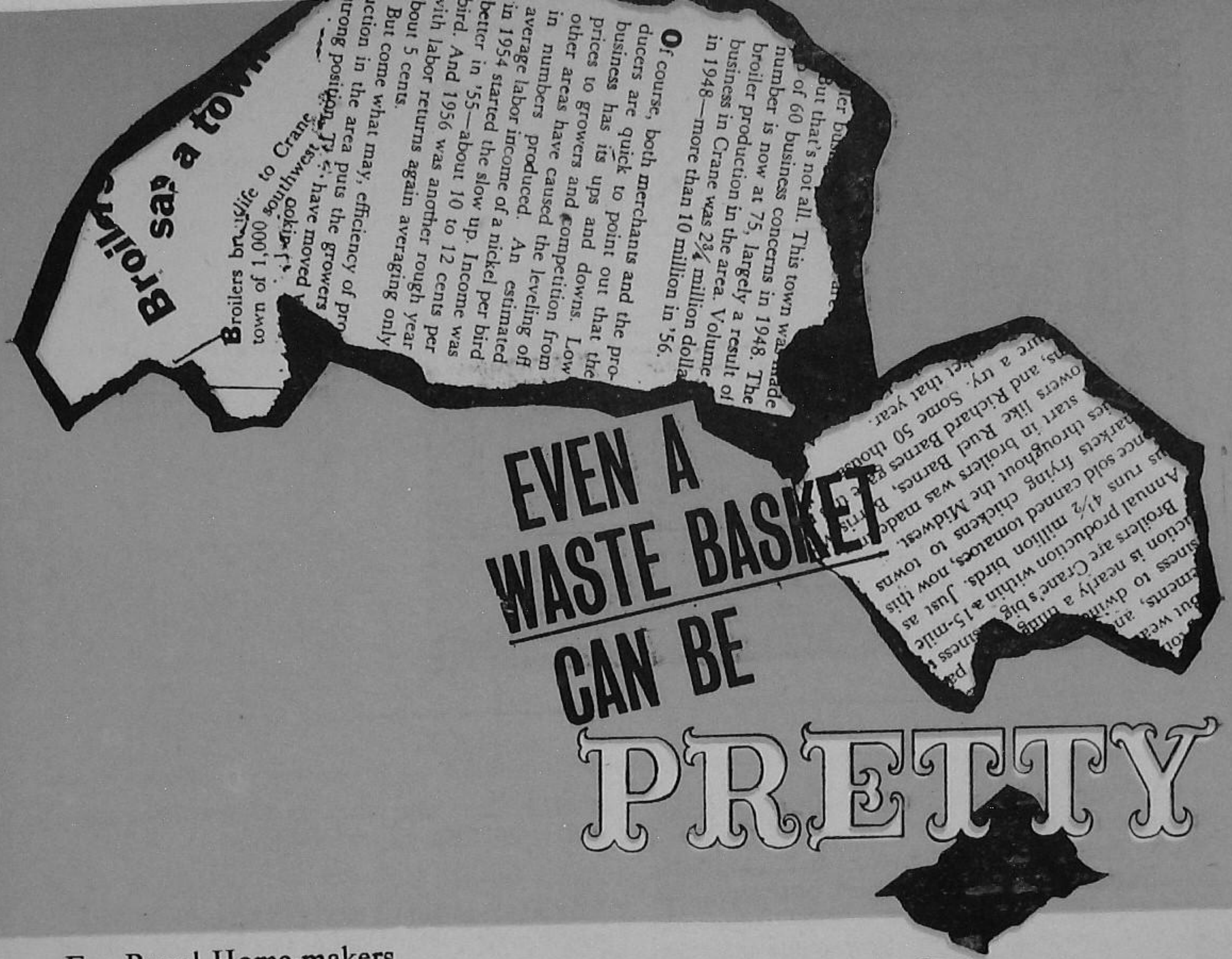
Treat affected birds without delay. Inject penicillin procain in doses of 15,000 to 20,000 units. Sulpharsenol is also a valuable preparation, for use during an outbreak. A dose of 200 mg. per kg. body weight in 2 cc distilled water by intramuscular injection is a safe dose for the birds. This way, birds will get a life-long immunity to the disease. Once the fever goes down, no drug will help.

As in other diseases, in tick fever prevention is better than cure. Fowls can get infected during railway transit. To prevent the disease being introduced by newly purchased birds, isolate them for a period of 10 days in a coop, and watch for ticks on them. Thoroughly disinfect the crate in which the birds are received. Better still, destroy such crates.

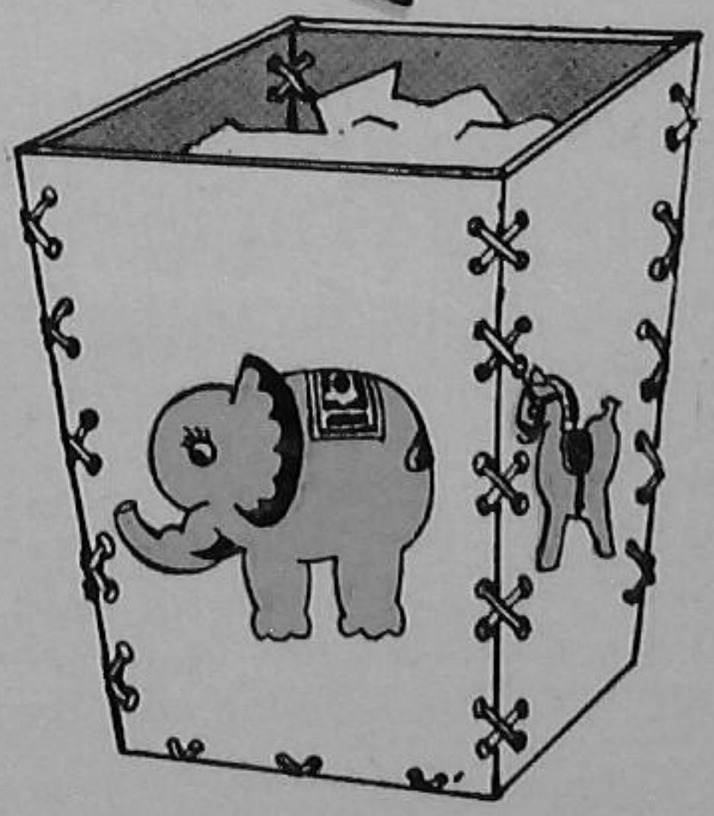
If you are a beginner in poultry, start with new houses on clean soil. The safest type of house is one made of angle iron, and covered with wire netting. The safest method of obtaining new stock is to purchase eggs and hatch them in an incubator.

Houses can be made tick-proof by making a cement channel all around the house and keeping it filled with water. Take care, however, to see that no gaps are left in this barrier. If you fail to replace the water when required, or bridge the gap in any way, infection may be the result.

You can prevent ticks from attacking the fowls by providing tick-proof perches in poultry houses. You can easily do this by fitting a metallic cup on each of the vertical supports of the perches, and filling these cups with water and a thin coat of kerosene. Renew the water and kerosene whenever necessary. Take care to see that the perches are kept well away from the walls. If the ticks can crawl up these, they are sure to get on to the fowls. Another way to keep perches free from ticks is to suspend the perches from the roof by means of wires.



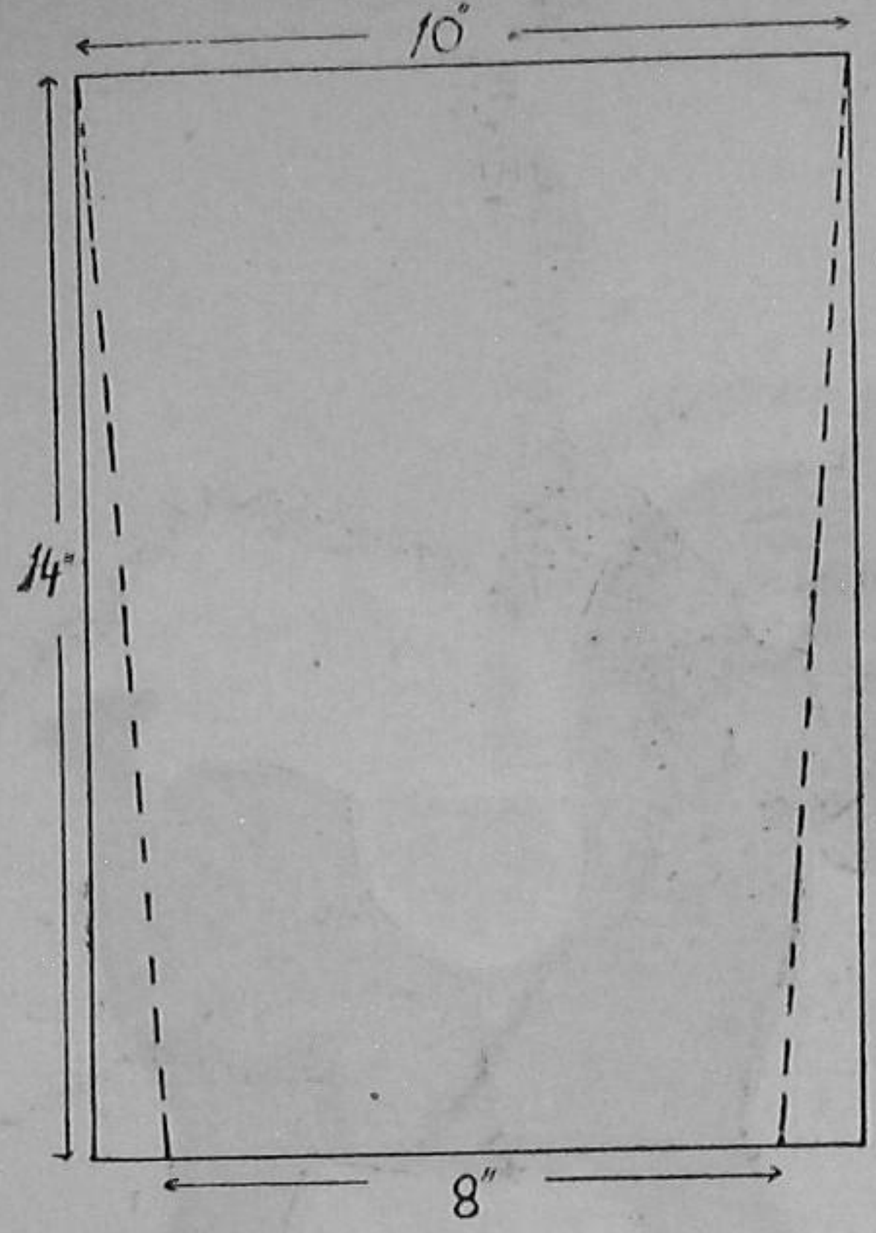
For Rural Home-makers



By KAMLESH PURI

How often have you wondered what to do when your children and some times even the grown-ups go on throwing titbits and unwanted things here and there in the house ? You can't go on collecting them all over the house all the time, for there will be no end to it. What in fact you should do is to make a few waste baskets and keep them at convenient places in your home. And such baskets can be pretty too.

You will see how fast children pick up the habit of throwing all the refuse into these baskets. And once they start doing this,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14"
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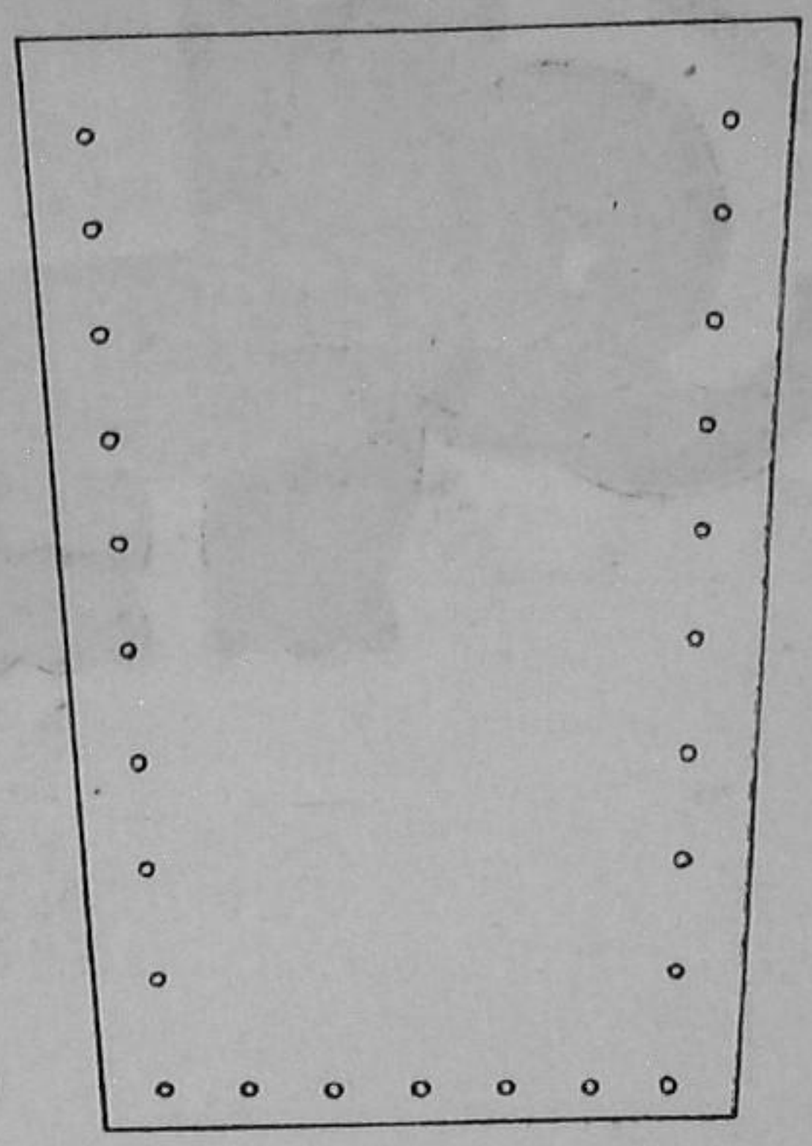

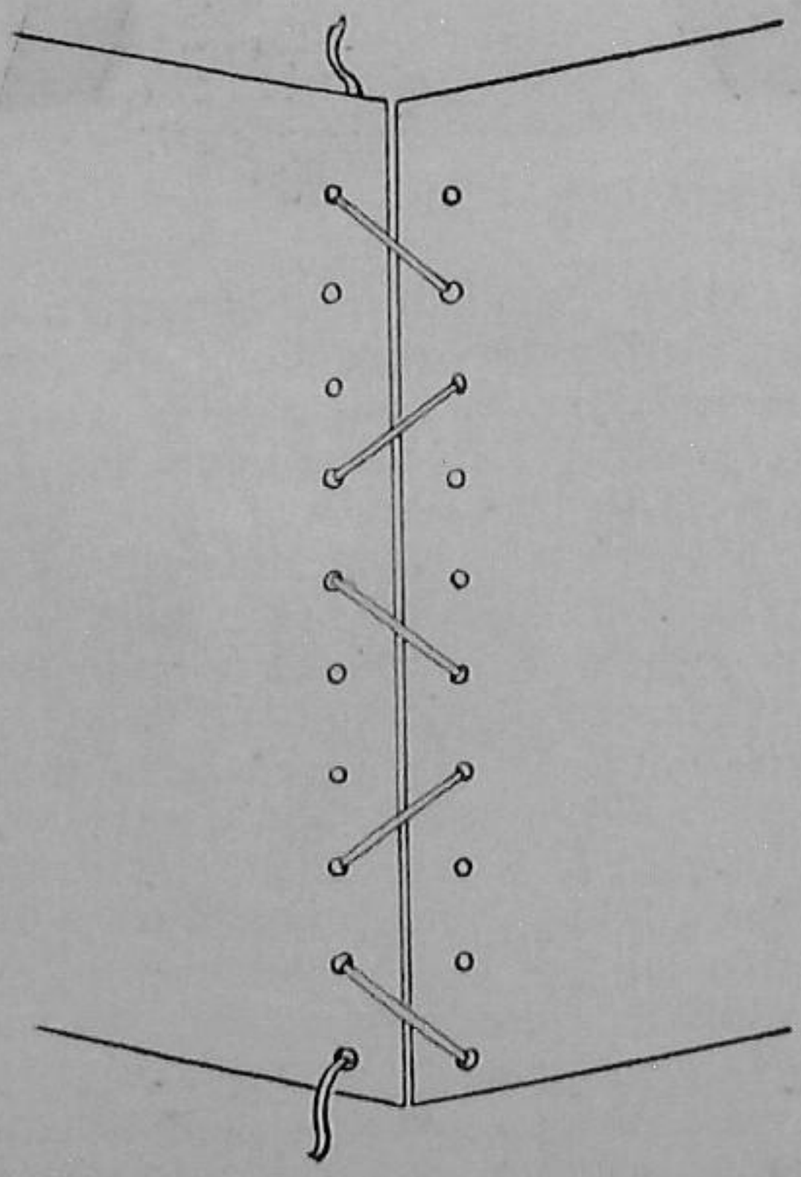

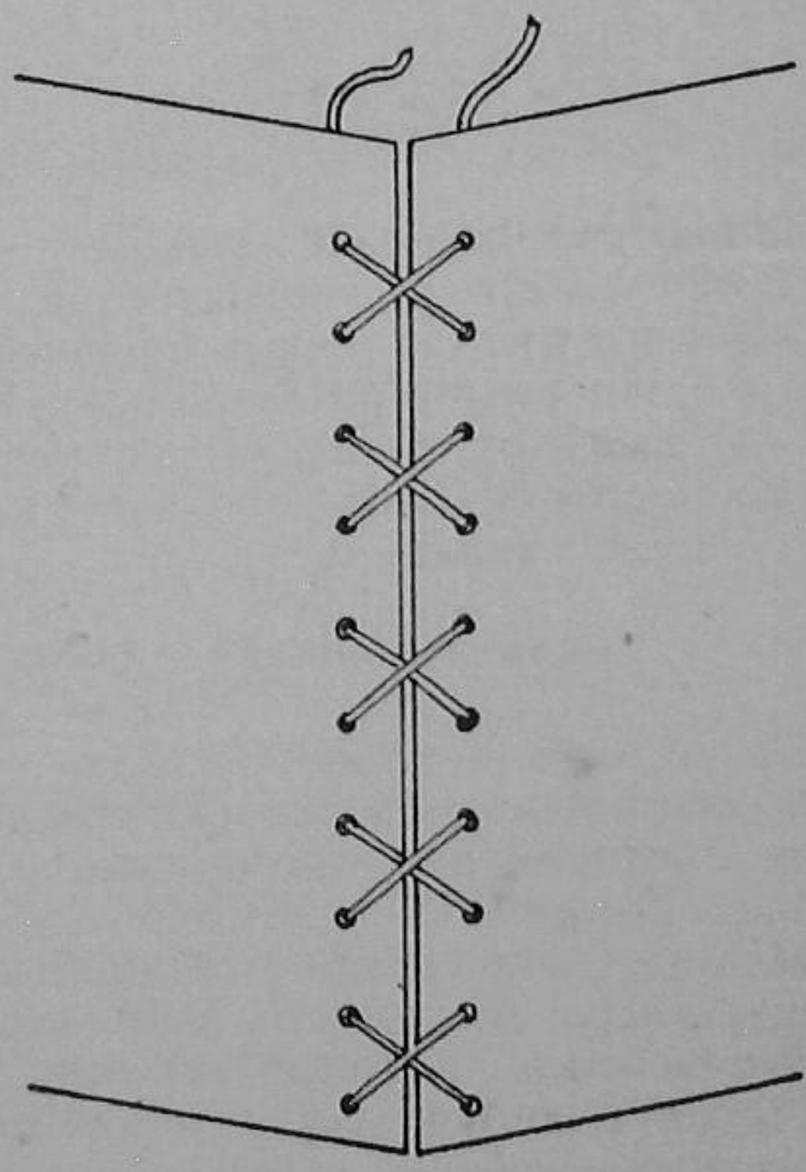

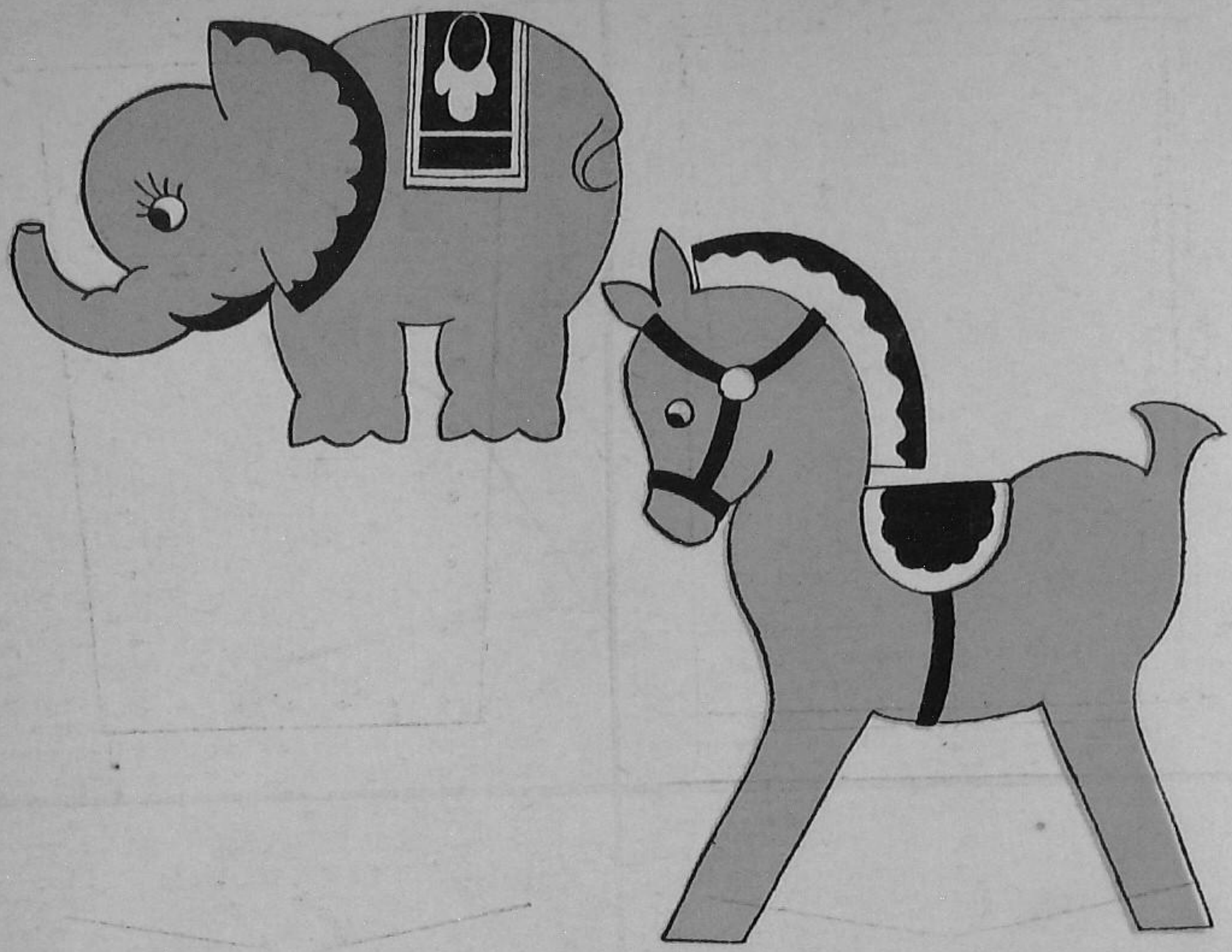

you will find your home all spick and span just the way you always wanted it to be.

Materials you will require for preparing one such basket are pressed wood or plywood board—46 inches by 14 inches, water colours, poster colours or oil colours and some strong lacing of suitable colour.

HOW TO MAKE IT

Fold a piece of paper (14 inches by 10 inches) length-wise. The paper will now measure 14 inches by 5 inches on the left. Keep the fold on the left.

Measure four inches from the bottom of the fold and mark the point as A. Measure a point five inches along the top, call it B. Join A and B with a straight line. Cut along the line.

Next, trace the outline of the pattern on the plywood or the pressed wood board and then cut it. Sand the edges till they are smooth.

Mark dots half inch apart and ¼ inch inwards from the edge along the sides and the lower edges of each side of the basket. Mark similar dots all around the bottom portion of the board as well.

Make holes at these dots, with a drill or any pointed instrument. Better make the holes on the right side. Sand the holes lightly.

Decorate the sides of the basket. You can use motifs or designs for decorating. If you are painting them, apply two coats of clear varnish or white shellac. This will prevent the colours from fading away. But be sure that the first coat of colour is dry before you apply the varnish or shellac. Thread the holes with lacing as shown in the illustration.

Place this basket at a convenient place, and your children will enjoy throwing the rubbish in it.

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