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D. C. Mickle

P. Beck

I. J. Miller

A. A. Holland

P. B. Lewis

See next page for additional authors

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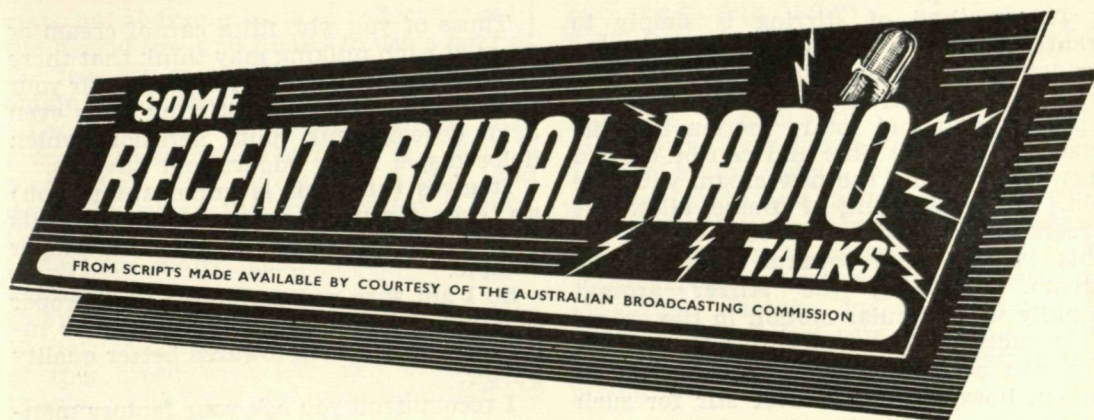
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Some recent rural radio talks

Authors

D. C. Mickle, P. Beck, I. J. Miller, A. A. Holland, P. B. Lewis, R. D. Royce, K. Needham, and L. T. Jones



CREAM STIRRING IS IMPORTANT

By D. C. MICKLE, Dairy Instructor.

WE all know that there are a thousand and one things to bear in mind in the production of satisfactory cream such as good stock water, clean pastures free from rank weeds, healthy cows, clean milking and clean milking machines, protection from heat, frequent deliveries, clean, bright cream cans etc.

All these things have a bearing on the ultimate quality of the cream and each is of vital importance if the best quality is to be produced. But one of the most neglected jobs in cream production is the systematic stirring required. One has only to examine the cans of cream as received at any of our butter factories to know that cream stirring **just does not occur** on many dairy farms.

When the factory operative dips his stirrer in the cream and gives it the first turn-over, it is apparent, in many cases, that that is the first stir the cream has had. How do we know? Simply because the thicker, older cream of higher acidity shows as lumps and, in many cases, white curd, as result of that acid, is brought up from where it has developed in the bottom of the can.

A well-stirred cream has a smooth glossy texture—it has an “alive” appearance. This is the result of even ripening, or acid development, in the cream. Well-stirred cream two or three, or even four days old, providing it has been properly cooled and cleanly produced, can give the buttermaker the opportunity of producing a butter with full flavour character. There is no reason why cream stirring should

be an onerous task at the dairy. A gentle stirring three times daily, or at least twice daily, is required. Stirring should be done with a well-tinned or stainless steel stirrer made to a pattern of solid handle and rod attached to an inverted dish-shaped plate in which three or four holes of about one inch diameter are placed equidistant one to the other. Stainless steel is recommended because then the stirrer can be left standing in the cream without ill effect. The same, of course, applies to the use of a tinned steel stirrer but this type tends towards rusty surfaces when the tinning wears through. Do not on any account use a stirrer of hollow handle type, for cracked seams or pin holes can lead to cream putrefying inside the handle and causing contamination each time it is used.

The days of using a wooden stick with which to stir cream are long past. Such type of stirrer cannot be properly cleaned and when in such condition, contaminates each lot of cream as it is stirred. The same applies to any wooden spoon. Metal spoons are also unsuitable being too short in length and do not allow for the very necessary action of bringing the bottom cream up to the top.

The method of stirring is simply to **gently** turn over the cream in the can, bringing the bottom up to the top and vice versa. Half a dozen stirs with an up-and-down and rotary motion is sufficient at any one time and can be carried out when mixing the new cream with the old. On no account, of course, allow hot cream to be mixed with cold cream, for this is the start towards second-grade cream. Rattling the stirrer around rapidly with circular motion in the cream only succeeds in wearing out the tin on the can and the stirrer. Care must be taken, however, not to over stir for such will cause partial churning of the cream with uneven distribution of the fat.

Those of you who fill a can of cream or more at each milking may think that there is, therefore, no reason, for you to stir your cream. Yes, there is. Stirring gives even acid development, plus aeration which helps dispel feedy odours and flavours.

It gives (and this is important to you) an even-textured cream which permits the factory operative to obtain a proper sample.

So I am sure you will agree that proper stirring of cream is not only in your interests but is a help towards better quality butter.

I recommend you ask your factory manager to send out a cream stirrer **now**. He will be happy to do so.

CROSSBREEDING IN PIG PRODUCTION

By P. BECK, Field Assistant, Dairying Division.

PIG raising today is an enterprise where the quality product usually demands a premium in returns and to those who have studied the subject, hybridising, or planned crossbreeding, illuminates two likely advantages. One of these is the possibility of producing requirements in carcass quality to suit a particular market demand and the other is to produce pigs to obtain the benefit of what is known as hybrid vigour.

Further to the first-mentioned possibility of crossing two breeds to provide certain carcass requirements, the cross may be carried a step further by using a purebred boar of the same breed as the one of the original parents of the hybrid sow. An example of this is crossing the Large White and Berkshire to get the hybrid sow then mating the hybrid back to either the Large White boar for bacon purposes or the Berkshire boar for porkers. The progeny of the hybrid sow in such instances as this, however, are a second cross and do not have hybrid vigour to the same extent as the first cross. To overcome this and insure the crossbred advantages in the breeding sow and her progeny, it may be desirable to introduce a third breed of boar.

A very important point arising, is that if hybrid stock are to benefit the pig industry, the parent stock used for hybridising must be the result of a high standard of pure breeding. This is essential to insure good hybrid vigour in the breeding female for improved conception rate and higher fecundity with heavier weaning weights,

and in the meat pig, for such characteristics as improved feed conversion rates, higher weight for age ratio, improved liveability and greater resistance to disease.

Another method of hybridising is that which is popular in the United States. This method is sometimes known as cyclic breeding and it appears that three breeds of boars are used, each in rotation on the progeny of his predecessor.

However there still remains room for investigation into which procedure of hybridising it is best to adopt. For instance, even with a two-breed cross there is the question of which breed should provide the male and which one the female. Genetically there appears no reason why the male of one breed used on the female of another should give better results than the reverse cross, but in practice this may occur.

With a three-breed policy for meat production however, it would appear that the most logical procedure would be firstly to use two breeds superior for fecundity and

maternal characteristics to reflect these in the hybrid sow and finally to use a boar of the required carcass type on the cross, to obtain the desired result.

Crossbreeding of course cannot take precedence over pure breeding but there is room for good crossbred stock and especially where the environment is hard, the hybrid types withstand the conditions better in many cases, than purebred animals.

With the advent of the Landrace into Western Australia, selective crossbreeding of this breed with our own established breeds could form an important part of

our pig-raising industry. It is possible that the crossbreds will do well in our very hot areas, where the white skinned Landrace may be prone to sunburn. The Landrace crossed with our own breeds, may give us hybrid sows which can produce hardier, higher weight-for-age market pigs of good length, less fat and a greater percentage of the meat in the higher-priced cuts, which is most important.

Crossbreeding in the past has been an important feature in our pig-raising industry and I feel sure that the future may see it playing a bigger part in the production of pigmeat.

SALMONELLA INFECTION IN SHEEP

By I. J. MILLER, Veterinary Surgeon, Animal Health and Nutrition Laboratory.

SALMONELLOSIS, or paratyphoid as it is often called, is an highly infectious disease caused by bacteria known as salmonella. These bacteria invade the intestinal tract and subsequently gain access to the blood stream.

The source of infection is at times difficult to trace. Recovered sheep from previous outbreaks are commonly responsible. These may remain "carriers," continuing to harbour the salmonella organisms in the bowel and to excrete them in their droppings.

Salmonellosis, however, is not confined to sheep but affects many species of animals which may also act as carriers. Therefore, cross-infection from other animals cannot be ignored, i.e. outbreaks in sheep have been attributed to birds excreting into water tanks etc. Animal products such as meatmeal are another possibility which should be borne in mind.

Outbreaks of this disease usually coincide with the dry conditions of summer and autumn, where congregation of sheep around the limited water supplies and stagnant soaks, may lead to contamination of the water by droppings from carriers.

Other factors which may be responsible for initiating outbreaks are—stress imposed during transportation over long distances; prolonged yarding at abattoirs with access to troughs contaminated by previous sheep,

and mustering together with inadequate feed and water facilities.

The early signs of an outbreak are usually a few sudden deaths and a high percentage of sheep showing symptoms. Such sheep will show scouring, at times blood-stained; trembling, depression, unsteady gait and prostration. In some showing symptoms death may occur rapidly, while in others it may be delayed for several days.

Losses may assume the proportion of 20% in very severe cases, although in recent outbreaks reported in South Australia, mortalities rarely exceed 3%. Even when the death rate is not high, a majority of the sheep in affected flocks may show signs of the disease with a resultant loss of condition. Of recent outbreaks in Western Australia, the most serious was one occurring in a flock of ram weaners. Scouring was the prominent symptom and total losses amounted to approximately 10%. A similar outbreak from the same property last year resulted in 12% deaths. Sheep of any age may be affected but many of the outbreaks investigated here have been in the weaner flocks.

On post-mortem examination the most significant feature is congestion and reddening of the intestinal lining. Confirmatory tests are carried out at the Animal Health and Nutrition Laboratory, and in suspected outbreaks it is advisable to contact either the Department of Agriculture or a local veterinary practitioner.

The treatment of affected sheep is of limited value. In the early stages the injection of Sulphamezathine Solution (33½%) under the skin at the rate of 3 c.c. for each 15 lb. of body weight has shown quite good results. On a large scale, however, this is often impossible.

In view of the limited possibilities of treatment, preventive measures should be aimed at, as wise husbandry will play a large part in controlling this disease.

The main points to consider in prevention are:—

1. Ensure adequate supplies of clean water, and clean the troughs regularly.
2. Avoid sudden feed changes.
3. When feeding grain as a supplementary ration, ensure that distribution areas are clean and these sites changed frequently.
4. Handle sheep as little as possible.
5. When transporting sheep any distance, ensure adequate resting points, taking precaution against the use of previously contaminated troughs in stock yards.
6. Where possible cover all tanks to avoid outside contamination.

If the above steps are borne in mind during the susceptible period, outbreaks of salmonellosis will be reduced to a minimum.

USEFUL SPRAYS IN THE HOME GARDEN

By A. A. HOLLAND, Plant Pathologist.

SINCE 1939 there has been a great increase in the number and chemical complexity of fungicidal materials coming on to the market. This is partially due to the efforts of the petro-chemical industries to find uses for their by-products. The home gardener is apt to be confused and dismayed at the wide array of compounds with different trade names that are displayed guaranteed to cure his various garden problems.

In my own garden with the two simple compounds of copper or bluestone and sulphur and perhaps two of the newer fungicides thiram and ziram I have been able to deal with the bulk of the problems that arise in my flower, vegetable and small fruit patch from time to time during each season.

The most effective of the copper sprays for general purposes is Bordeaux Mixture. This spray, accidentally discovered in the French province of Bordeaux in 1885, can easily be made up at home. Bordeaux mixture simply consists of bluestone dissolved in water mixed with freshly-slaked quicklime in water. The gardener can make up bottles of each solution and store them for long periods provided they are not mixed together. Once the bluestone solution and lime water are mixed the spray must be used at once as the mixture deteriorates rapidly. Should the gardener

feel the preparation is too messy, commercial preparations are available such as copper oxychloride ready for mixing and use at a moment's notice. These sprays are good but not quite as good as freshly prepared Bordeaux mixture.

Bordeaux mixture covers a wide range of diseases; the leaf spots and blights on many vegetables, shot-hole, leaf curl and rusts on stone fruits and leaf spots in the flower garden such as black spot on roses.

The second general-purpose spray is sulphur, which can be applied as a dust or as a spray using one of the easily obtainable wettable sulphur dusts. The sulphurs combat the troublesome and persistent powdery and downy mildews. The mildews effect a wide range of plants such as grapes, peas, onions, roses, cucumbers, rockmelons and many garden exotics. Sulphur may be combined with slaked lime to give a lime-sulphur spray, which is often more effective than the straight sulphur.

The third group thiram and ziram type sprays will be found to be fairly effective on certain diseases such as leaf curl of stone fruits where the autumn Bordeaux spray was neglected, black spot of loquats (a common disease on metropolitan backyard trees) and rusts of snapdragons and hollyhocks.

So, with two, or at the most, four sprays, you'll find you've got a reasonable protection from most diseases. Now a word about the spraying. It's not a bit of use going to all the trouble of making up a spray then putting it in the fly spray and shooting a fine mist in the general direction of the plant.

To be effective the spray must come into contact with the wog causing the trouble.

Pick a time when the wind has dropped—use a good spray gun—and spray the plant from top to bottom until the leaves are damp above and below. For a good cover on hairy or waxy plants a spreader is usually incorporated. This is simply a wetting agent and at a pinch a household detergent would be satisfactory.

One spray application is usually not enough—use a follow-up spray in about two weeks and another in say about three weeks. Remember also, to keep the sprinklers off until the spray has had time to work.

A prompt spray as soon as your plants look diseased checks the onslaught quickly and helps to provide a satisfactory crop.

TAPEWORMS OF DOGS AND CATS

By P. B. LEWIS, Government Veterinary Surgeon.

DOGS and cats, like most other animals can become infested with tapeworms and, where the infestation is heavy, digestive troubles, abdominal pain, nervousness and unthriftiness may occur in addition to local irritation which causes the animals to drag themselves along the ground in a sitting position.

It is not generally realised that—because of their exceedingly complicated life-cycles—the tapeworms which may be present in the intestines of dogs and cats can be a menace to many other animals and even to human beings.

There are many different varieties of tapeworms varying considerably in their size and life-cycles. Those found in the larger animals may be several feet in length—those affecting dogs and cats range from about 16 inches to less than a quarter of an inch.

The adult tapeworm has a head and a flat body divided into segments and these segments progressively develop until they become what are virtually bags containing large numbers of tiny eggs. At this stage, the segments break off and are passed out in the droppings.

The eggs are highly resistant to wet or dry conditions and can be blown about in dust or distributed in water supplies.

Many contaminate pastures and are eaten by sheep, cattle and pigs in which the eggs hatch and develop into bladder-

like cystic growths usually in the lungs, heart, liver and intestines. If these animals are slaughtered and the portions of the carcass containing the cysts are eaten by dogs or cats, the cysts develop into tapeworms and the cycle recommences.

Cooking destroys the cysts and breaks the cycle.

One of the small tapeworms of the dog—a worm which is only about a quarter of an inch in length—is responsible for the hydatid cysts which are a serious menace to human health and also affect other animals. A dog or cat may carry tapeworm eggs in dust on its coat and children who put their fingers in their mouths after handling the animals could become intermediate hosts and develop hydatid cysts which usually occur in the liver or lungs.

Another common tapeworm of dogs and cats passes its intermediate stage in the bodies of fleas and lice which infest the animals. If these parasites are swallowed by dogs or cats when biting to allay the

irritation caused by the fleas and lice, the life-cycle is completed and more tapeworm eggs are released by the adult worms.

The Slender-necked Bladder-worm, a very common parasite of sheep in Western Australia is the intermediate stage of another tapeworm of the dog. Yet another dog tapeworm passes its intermediate stage as a cyst in the body of a rabbit.

To guard against tapeworm diseases of animals or humans, dogs should be dosed regularly with an efficient anti-tapeworm

drug such as arecoline hydrobromide. After dosing, the dog should be tied up and all droppings burnt.

People, especially children, should always wash their hands thoroughly after handling dogs and cats.

Dogs and cats should never be fed on uncooked offal or allowed access, to slaughter-yards where they could pick up living cysts. Boiling for ten minutes will kill the cysts.

THE POISON PLANT AND THE ANIMAL

By R. D. ROYCE, Acting Government Botanist

ON many occasions, farmers have asked the question "How much poisonous plant material is required to kill an animal?" Unfortunately the answer is a very complicated one, and depends on a number of circumstances revolving about the plant, and the animal. The actual amount, subject to these factors, can vary from a few ounces to many pounds.

Undoubtedly the most important plant factor is the actual species involved. For example, Pituri is far more toxic than Bullock Poison, and less would be required to produce lethal effect. Species which are widely distributed, show variation to a greater or lesser extent and Prickly Poison is a plant which exhibits this variability of form associated with variation in toxicity. It occurs in no less than six distinct forms, one of which is almost harmless, while two are as toxic as any of our poisonous plants. Other species e.g. Blind Grass, show little variety in actual form over their whole range but show great variation in toxicity. It is possible that this variability, at least in part, is due to differences in both soil and climatic conditions.

Stock losses tend to be seasonal, because the toxicity of the majority of poisonous plants is itself seasonal. This is particularly true of the better known pea-flowered poisons of the two genera *Gastrolobium* and *Oxylobium*. These plants are at their lowest toxic ebb during the late summer and autumn, but with the advent of winter rains there is a gradual build-up of toxicity as the young shoots elongate. The appearance of the flower buds heralds a greatly increased rate of accumulation of

the toxic principle until its peak during the flowering and seeding stages. With the shedding of the seeds, toxicity again decreases to the normal summer level. Seedling growth of most of these plants is about equal in toxicity to that of the pre-flowering mature plant.

The quantity of plant material necessary to produce a toxic plant effect is further complicated by seasonal conditions, the portion of the plant eaten (leaves, fruit, seeds etc.), and the condition of the material at the time it is ingested.

The animal factors affecting the question under discussion are properly the province of the veterinary surgeon, but a few of the more important factors are worth mentioning. The most important is the condition of the animal, and it is obvious that weak animals will not be able to withstand toxic substances as well as animals in forward condition.

When stock are hungry, due either to grazing on fallow or poor pasture or as a result of travelling, they eat rapidly when fodder is available and if any of the plants grazed are dangerous, the build-up of toxicity will be so rapid that the animal body would be unable to cope with it, and

relatively small amounts under these conditions could produce the same effects as larger amounts under normal conditions.

The species of animal and its age, sex and breed are of paramount importance, while under certain circumstances the

colour of its coat, its capacity for selective grazing, and its feeding habits can be of very great significance. With all these variable factors operating, it is understandable that the answer to our question for each individual case, is difficult.

SIRE SURVEYS TO PROVE BULLS

By K. NEEDHAM, Dairy Cattle Husbandry Officer.

THIS year, in Western Australia, about 16,000 cows will be bred artificially. Considering that the artificial breeding scheme in this State is now only in its second year it is apparent that the scheme has been accepted by the dairy farming community and it is anticipated that the demand for it will increase very rapidly.

With its expanding use there is a continual need to obtain replacement bulls of a very high standard. To achieve this it is necessary to institute a system of proving sires. It is not good enough to utilise bulls simply on the basis of their production backing. Whilst this method, must of necessity, be used before a sire-proving scheme has had an opportunity to operate, it must subsequently be replaced by some system which assesses the ability of the bull to transmit to his offspring the potential for high production.

Obviously the only method of doing this is to record the production performances of the bull's daughters. This, broadly, is what is referred to as a sire survey scheme.

It is proposed, in Western Australia, to introduce such a scheme which will be available both for the bulls standing at the Wokalup Artificial Breeding Centre and also on pure-bred private herds. The essential, therefore, of any such scheme is a system of heifer calf identification and it is on this aspect particularly that I wish to speak to you to-day.

In past years a method of identification of heifer calves has been available to members of grade herd recording units, but in future it is planned to provide this to all members of artificial breeding units and in addition to members of grade herd recording irrespective of whether they are members of an artificial breeding unit or not.

Broadly the method of identification has been designed to show, in one ear of the animal, the sire and the year of birth, and

in the other, the individual identification for the animal. This marking will be performed by field operators and by herd recorders, and the farmer concerned will be given a form setting out the particulars inserted in each of the ears of the calf. A copy of this information will be forwarded to the Wokalup Centre and will be filed into a coded system.

From time to time as these heifers come into production and are ultimately recorded it will then be possible to accumulate a considerable amount of information concerning the ability of any given bull to pass on his potential for high production. Thus basically this will enable us to prove him, and to determine whether or not he is a suitable sire to continue with in an artificial breeding scheme.

Two major points emerge, upon which the success of this scheme will be dependent. Firstly, the more people who elect to join a grade herd recording unit the better, as it will then be possible to have a greater number of recorded heifers available for the service. The more information which is available for any individual bull the more reliable will be the data which is obtained. Secondly, the success or failure of this scheme is obviously entirely dependent upon the cooperation of the dairy farming community. I have no doubt that this co-operation will be forthcoming and I feel sure that you will look forward with interest to the time when the first results of the survey will be available. This will, obviously take some little time but once commenced the scheme will become a continuous one.

PEAT AS A SUBSTITUTE FOR HORSE MANURE

By L. T. JONES, Senior Plant Research Officer.

HORSE manure has been used extensively in the past for market gardening on sandy country in the suburbs of Perth, and has proved very satisfactory. However, horse manure is now scarce and expensive, and it has become necessary to find suitable substitutes. Plant foods can be supplied easily and cheaply in artificial fertilisers, but in vegetable gardens, it is usually necessary to replenish the soil humus by the use of such bulky organic manures as horse manure, fowl manure, peat, etc.

In this talk, I will discuss the possible use of peat as a substitute for horse manure, for gardening on sand country. Peat is defined as a black spongy material, formed from the partially-decomposed remains of plants, which are preserved under water in marshes and swamps. We have chosen peat as the most likely substitute for horse manure, because it could be obtained in large commercial quantities close to the market gardens, and its occurrence lends itself to large scale mechanical digging. Many of the suitable peat swamps, close to Perth, will in time, be used for factory sites, and the peat could therefore be removed before such areas are filled in.

The practical importance of this talk hinges on the question, "Is it essential to use horse manure, etc., in vegetable gardening?" It is known from the results of soil-less gardening that we could grow vegetables by the continuous feeding of complete chemical fertilisers. However, practical experience has shown that to obtain high yields and first quality vegetables on sand country, it is safer, simpler and cheaper to combine the use of a bulky, organic manure, like horse manure, with the application of the more concentrated and more soluble artificial fertilisers, such as superphosphate, sulphate of ammonia and muriate of potash.

Materials like horse manure and peat play their part in intensive gardening by—

- (1) Supplying a continuous source of plant foods, which are not easily leached out by rainfall or irrigation water.
- (2) Limiting the rapid washing out of added mineral fertilisers.
- (3) Improving the physical conditions of the soil.

Recently a quantity of good quality peat was dug out of a swamp at Osborne Park and used to compare its effectiveness with horse manure on a crop of cabbages on sand country, under sprinkler irrigation. The two materials were compared on a volume basis as it was considered probable that transport and handling charges would mainly determine the cost of application. A surface layer, half an inch deep was applied, which is equivalent to 80 cubic yards to the acre. This application was found to apply, 15 tons per acre of horse manure and 55 tons per acre of moist peat.

In these first trials, it was found that while normal applications of mineral fertilisers were being applied, peat was a good substitute for horse manure, but that when the final fertiliser application, normally applied to "finish" the cabbages was omitted, horse manure was superior to peat. This indicates that horse manure is both a fertiliser and a soil improver, while peat is mainly a soil improver.

It is therefore obvious that to get the best results from peat as a soil amendment, adequate fertilisers for that particular crop must be used.

The chief value of peat, may lie in the fact that the humus it adds to the soil will be of a persistent nature, and so may confer prolonged benefits on the soil. On the other hand, horse manure would tend to "burn out" more quickly.

We feel that there could be a place for the use of peat as a soil amendment in market gardening, and probably home gardening, too. Therefore, we propose to continue our studies with peat until more definite statements can be made of its value for various crops under proper management practices.

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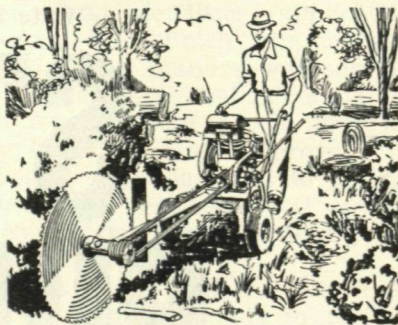
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