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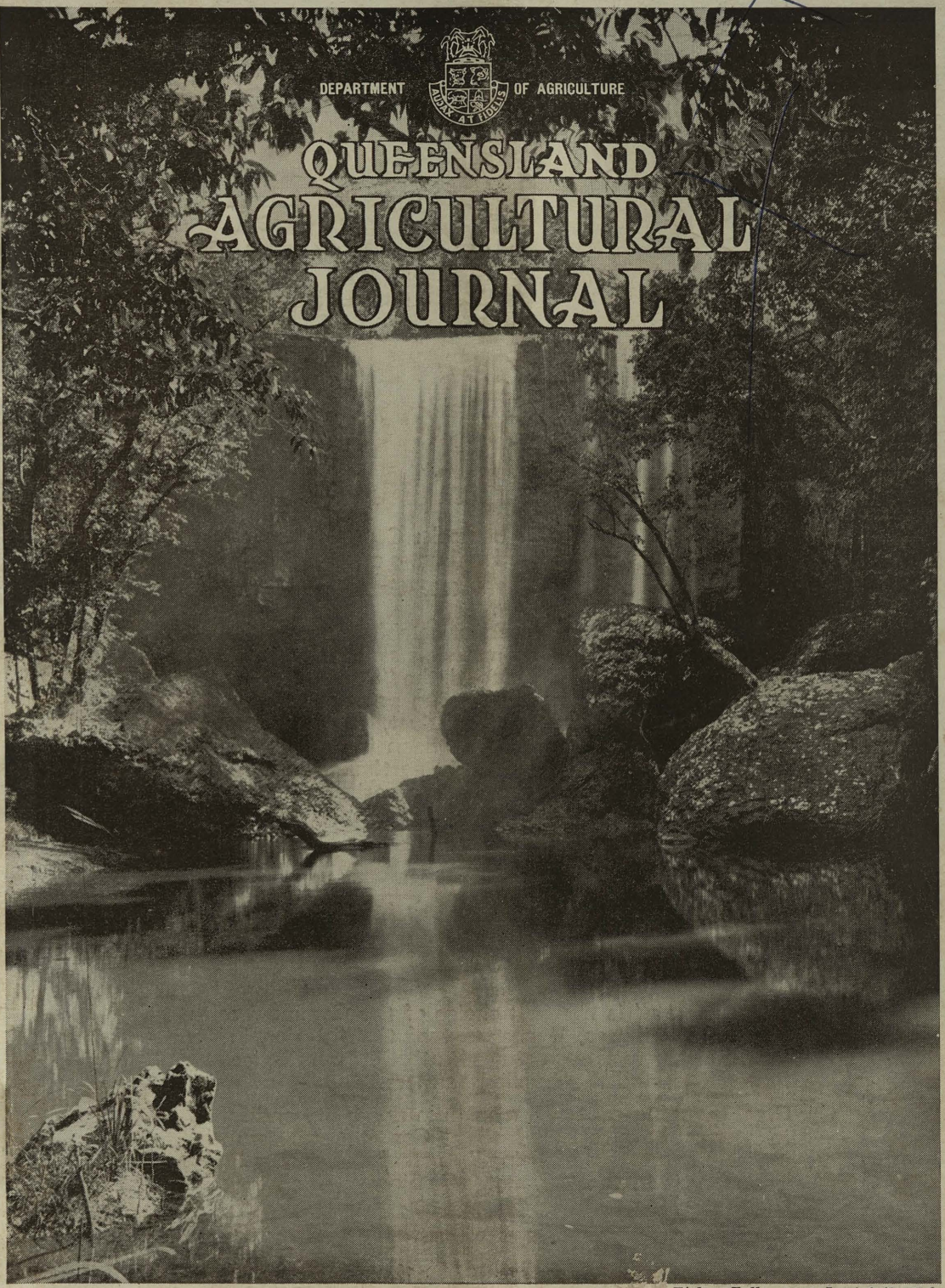

Fisher Falls, near Innisfail, N.Q.

LEADING FEATURES

Edited by J. F. F. REID

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Contents

ANNUAL RATES OF SUBSCRIPTION.—Farmers, Graziers, Horticulturists, and Schools of Arts, **One Shilling,** members of Agricultural Societies, **Five Shillings,** including postage. General Public, **Ten Shillings,** including postage.

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Event and Comment

Fodder Conservation.

FODDER conservation as a solution to a major problem was discussed by the Minister for Agriculture and Stock, Hon. Frank W. Bulcock, in the course of a recent Press statement. "There is nothing new about the conservation of fodder. Reference is made to it in the Old Testament, and it has been the subject of exhortation during the lifetime of all of us. In essence, it means the storage of foodstuffs against need—that need invariably being a drought," declared the Minister.

Continuing, Mr. Bulcock said that we stored foodstuffs against human needs; we provided wheat from harvest to harvest; we stored butter and other commodities for ourselves; but we left the source from which much of our needs and wealth comes to take care of itself. This did not suggest that we were a provident people and the absence of a State-wide conservation policy had caused the loss of countless millions of pounds. Proteins were an essential to animals as well as man, and constituted one of the greatest of our needs, yet in bountiful seasons proteins—in this State alone valued at an enormous amount annually—were allowed to go to waste. This waste was principally represented by the non-utilisation of pasturage, for pastures reproduced, under favourable conditions, faster than stock life. Much of this protein was lost beyond recall, and when the day of reckoning came we lamented a drought, utilised public finance for relief purposes, and tied a load round the neck of the producer.

Surely, said the Minister, there was a better way. Surely all our lamentations were based on a desire to ensure greater security for the future, a security which would reflect in a more general prosperity. Every producing cow that died was a loss to the State, more especially during this present period when Britain was asking for more butter, more cheese, and more milk products.

From time to time, generally after each drought, the question of fodder conservation came to the fore, but in the glee with which we greeted good seasons the necessity for fodder conservation was soon lost sight of. It must be conceded that fodder conservation on a national scale presented difficulties, but these were not insuperable, for certain farmers in every area of the State had successfully conserved fodder, either as hay or ensilage. Personally, Mr. Bulcock said he held the opinion that conservation was largely a problem for the individual. There had been a tendency in the past to talk in terms of national service rather than in terms of individual security, and because of this tendency the tasks involved had overwhelmed the designers. Roughly speaking, Queensland farms could be divided into—

(*a*) Those capable of producing hay or silage crops as insurance against drought;

(*b*) Those which, by their situation, must remain dominantly grassland; and

(*c*) The pastoral areas where, at best, only limited forms of conservation were possible.

Silage paid good dividends, added the Minister. In other words, it seemed clear that the agricultural areas must provide much of the fodder needed by the pastoral areas during dry periods, although he knew of certain pastoral holdings in Central Queensland where the making of silage constituted a part of the normal year's routine, and the owners of those properties assured him that the making of silage paid handsomely.

It must not be assumed that fodder conservation was not practised in the agricultural areas, for it was, and last year several hundred silos were laid down in the State; yet only the fringe of the problem had been touched. He believed that it was the duty of the Department of Agriculture to "sell" silos to the producer, for his desire was to see a silo on every possible farm.

Why had progress in this direction been so slow? he asked. There was a variety of explanations, principal of which were the cost, the additional routine work, and the fact that capital was lying idle both in respect to silos and the crop. However, those difficulties, real enough, vanished when balanced against the favourable factors of additional security, the more assured income that stored fodder yielded, and the introduction of balanced production.

Fodder conservation, in its narrowest aspect, had a special meaning for the dairy farmer who also was a pig raiser.

It should be remembered that a minor drought occurred in the State every five years and a major drought overtakes us every ten years. We suffered as a State in consequence, but much of it was due to our own fault. The 1936 drought cost the dairying industry alone about £3,000,000, and the drought just broken would probably reveal a similar loss.

The Fodder Position in Queensland.

"QUEENSLAND is happily placed in respect of fodder storage," added Mr. Bulcock. We could, over a restricted but growing area, produce lucerne for hay, but too much importance was frequently attached to lucerne. We had other crops that could be successfully conserved. We were a maize-producing State, and in many of our maize areas legumes other than lucerne could be grown for mixing with the maize silage.

Then again, during the past year there had been a healthy extension of the newer varieties of sorghums, which constituted an excellent fodder crop in areas where maize growing was precarious. Sorghums, although the newest of the alternate grain and fodder crops, would be an important influence in the development of fodder conservation in Queensland. The elimination of the prickly-pear had given access to new areas for cultivation, particularly in the Dalby, Tara, and Chinchilla districts, and it was good to observe that in these districts a vigorous conservation policy was in operation.

There was a time when complete reliance was placed on the concrete silo, which was, with its necessary equipment, the most expensive form of silo, but in recent years the usefulness of the pit silo had been demonstrated. The stack silo, with its attendant waste, could not be recommended, but if the choice lay between a stack of silage and no silage at all, then let us have the stack by all means.

Finance would, of course, continue to constitute the big question in relation to fodder conservation, remarked the Minister. The Commonwealth Bank was a national institution designed to be of service to the people and he had often thought that no better national investment was available for this institution than money for fodder reserves.

It was perhaps not generally known that there was a silo officer attached to the Department of Agriculture, whose duty was to instruct and supervise the building of silos, and that field officers of the Department also were available for this service.

In addition, the Department provided concrete moulds to producers who planned to construct a silo. Last year the Rural Development Bureau had undertaken a silo drive on the Atherton Tableland. There, silos had been put down for a number of producers at an average cost of £1 per ton capacity. The average capacity of these silos was 80 tons, representing 80 tons of worth-while insurance.

Appointment of a Fodder Conservation Committee.

MR. BULCOCK went on to say that a fodder conservation committee had been appointed from among experienced officers of his Department who had special knowledge of the cultural and economical factors involved and special training in all forms of farming practice. This committee was, he stressed, already at work on the examination of proposals for a State-wide fodder conservation drive. "We are to-day paying the penalty of past neglect, but I am of opinion that we have at last learnt our lesson and will soon prepare for the next dry spell," he added. The first factor in the success of the proposals was a "fodder conservation consciousness," and he believed that that consciousness was already passing from the abstract to the concrete and only required guidance to ensure a solution of the major problem confronting the producers of Queensland—the problem of recurring drought.

Brown Paper Bunch Covers for the Control of Banana Rust Thrips.

N. E. H. CALDWELL, M.Sc.Agr., Assistant Research Officer.

BROWN paper for bunch covers continues to find favour with many banana-growers, mainly as a protection for the fruit in the winter, but also in some cases as a substitute for hessian covers in the banana rust thrips control programme. At the present time hessian is expensive, and it is probable that only paper covers will be available to those growers intending to put rust thrips control measures into operation during the 1940-41 summer.

In the past, some paper covers have failed to stand up to wear and tear in the plantations, especially during the coastal wet season. Recently completed tests under plantation conditions of a number of different classes of paper enable the requirements of banana-growers to be defined somewhat more precisely than has hitherto been possible, and they indicate that a satisfactory brown paper cover can be selected for all plantations.

Paper Characteristics.

Generally speaking, the heavier the paper the better its weather-resisting properties, while unglazed papers are superior to glazed in this respect. Thus, an unglazed paper of a D/C rating* of 35 lb. wore very well, and was superior to a lighter unglazed type of D/C rating 26 lb., which, though used extensively by growers, has not been entirely satisfactory. Similarly, a glazed paper of 30 lb. D/C rating was somewhat better than another glazed paper of 28 lb. D/C rating, but the latter was definitely inferior to the lighter unglazed type of a D/C rating of only 26 lb.

It was also found that double tubes (made simply by slipping one tube inside another before placing them on the bunch) withstood adverse weather conditions in the plantation remarkably well. Thus, double tubes of a glazed paper of 30 lb. D/C rating were all absolutely intact after covering bunches for twenty weeks between February and June in a very exposed plantation, and were still intact after a further thirteen weeks' exposure from June to September on a second series of bunches in the same plantation. In contrast to this, a considerable proportion of single tubes of the same paper was fairly badly torn eight weeks after being fitted to bunches in February in the same plantation. Single tubes of this paper were considered suitable only for very sheltered areas.

Brown and other papers treated with various materials such as plastic bitumen, creosote, and linseed oil were tested on a fairly extensive scale, but none proved satisfactory. Most of them showed a decided tendency to cause fruit scalding, particularly in hot weather, while others were discarded on account of poor durability or high cost. The pale colour of the fruit induced by some of these covers does not detract from its market value.

Tubes versus Bags.

Tubes are rather susceptible to tearing by wind. Bags certainly resist tearing somewhat better for the first few weeks, but once a break

* The D/C rating is a trade designation based on the weight of a ream of sheets each 20 inches by 30 inches.

has been made by the "bell" bursting through the paper they deteriorate rather more rapidly than the tubes. For satisfactory rust control, bunches must be covered as soon as they are "thrown," and as paper covers will not stand the handling necessary to enable the "bell" to be broken off at a later date, paper bags possess no real advantage over paper tubes. Completely closed paper bags also complicate the application of dusts and the determination of fruit maturity. A suggestion for tying the paper tubes loosely at the bottoms of the bunches to minimise movement in the wind has not been fully investigated, but it seems to hold some promise, provided the labour costs entailed in this extra operation are not too great. Satisfactory waterproof glues are now available for joining the edges of the paper. Tubes need not, therefore, be sewn, though there seems no objection to this practice if it is adopted by the manufacturers.

Recommendations.

Banana rust thrips control measures involving the use of brown paper bunch covers may therefore be summarised as follows:—

1. In most plantations use single tubes of unglazed brown paper of a D/C rating not less than 30 lb., but preferably of 35 lb.
2. In exposed plantations use double tubes of unglazed brown paper of D/C rating not less than 26 lb., or of glazed paper of D/C rating not less than 30 lb.
3. Cover the bunches as soon as practicable after they are thrown.
4. Apply a 2 per cent. nicotine dust to the bunch at covering, and make three further applications at weekly intervals.
5. Mark the covers so that the age of the bunches, the time to cease dusting, and the time to inspect the bunches for cutting can easily be determined.

The additional cost involved in using double instead of single tubes is largely offset by the fact that at least one layer, and in most cases both layers, of double tubes may be used on a second bunch. Single tubes can seldom be used a second time.

BANANA SUCKERING.

A flush growth of young suckers may appear in most banana areas after heavy summer rains.

Before they form their own root system, these suckers rely solely on the parent plant for their subsistence, and where a number are present they retard the parent plant's growth and the development of its bunch of fruit.

Most growers have a definite time for suckering in their working plan, but others fit in at any time, if at all, with the result that four, six, eight, and up to a dozen suckers, ranging in size from "peepers" to fully-grown plants, are seen, *all* of which have robbed the parent plant of some of its vigour.

Even in the most fertile soils the number of suckers left to bear the grower's next bunch should seldom be more than two, and sometimes three. It is desirable, therefore—particularly if a fertilizing programme is carried out—to destroy all the suckers which are not required as soon as they peep above the ground. At this stage they are easy to disconnect with little damage to the plant, and the fertilizer applied goes *only* to those suckers which will eventually produce the next cutting of bananas.

Seed Inoculation of Legumes.

T. McKNIGHT, B.Sc., Assistant to Research Officer.

PLANTS of the legume family, such as lucerne, clovers, cowpeas, and soybean have the ability to grow in association with certain bacteria, and, as a result, to make use of the gaseous nitrogen of the air. In this way they differ from most other plants which are able to obtain this essential element only from combined nitrogen in the soil, the supply of which is often low. When this association of bacteria and legume exists, characteristic swellings or nodules are formed on the root system of the host plant, and it is inside these nodules that the nitrogen-assimilating bacteria are found. The bacteria absorb nitrogen from the air, and this is passed on to and utilised by the plant for growth.

Two beneficial results are obtained from this association. Firstly, the legume is furnished with an assured nitrogen supply which assists it to make vigorous growth. In the case of lucerne, clovers, and other pasture legumes, efficient inoculation with the appropriate bacteria greatly aids the rapid establishment of a good stand. Secondly, a method is available for building up the nitrogen content of the soil. When legumes of the green manure type are turned in at the appropriate time there is added to the soil the nitrogen which has been gained from the air and stored temporarily in the plant tissues as nitrogenous compounds. If the correct bacteria are absent, neither of these benefits can be expected and, unfortunately, this would appear to be the case in many agricultural soils in Queensland. Under these conditions seed inoculation with a pure culture of the organism is essential.

A selective action is possessed by most if the nodule bacteria which may accordingly be divided into a number of different types or strains. Each strain is capable of inoculating only a certain legume or group of legumes. The more important agricultural legumes may be separated into seven groups, each requiring a distinct strain of bacteria, which will not associate with legumes of the other groups. These groups are:—(1) Lucerne; (2) Clovers; (3) Cowpeas (including peanuts, velvet and lima beans); (4) Vetches (including field and garden peas and broad-beans); (5) Garden bean; (6) Soybean; (7) Lupin.

The bacteria belonging to each of these groups are found to vary amongst themselves in their nitrogen-assimilatory capacity, and while some are very efficient in benefiting the host plant, others may be relatively of little or no value. When providing pure cultures for inoculation purposes an attempt is made to select only those strains which are most efficient.

Three points are therefore evident: Firstly, that it is highly desirable that only inoculated seed be sown on new land. Secondly, that it is incorrect to presuppose the presence of the appropriate strain of bacteria for one legume because another legume well equipped with nodules has been grown before on the same land. Thirdly, that if moderate or even good stands of a particular legume are obtained there is no reason to assume that a further benefit would not accompany inoculation of seed with a selected strain for subsequent sowings.

The Operation of Seed Inoculation.

Appropriate bacteria which have been isolated from nodules by bacteriological methods are supplied to the farmer as a culture growing

on jelly in a 2-oz. medicine bottle. With each bottle is supplied 3 grams of a bacterial stimulant, calcium phosphate. The inoculum in one bottle is sufficient to treat up to 60 lb. of the larger seed such as cowpeas, or 30 lb. of the smaller seed such as lucerne or clover.

The inoculation process is simple, and consists in wetting the seeds with a suspension of the bacteria in skim milk. The calcium phosphate is dissolved in half a pint of skim milk, and the whole of the bacterial slime in the bottle is then transferred to this mixture. To do this, pour a little of the milk into the bottle and, putting the thumb over the mouth, shake vigorously, and then pour back into the rest of the milk. Repeat this several times until all of the bacterial slime has been washed off.

The seeds should be piled on a clean surface and then inoculated by pouring on the suspension, a little at a time, meanwhile thoroughly mixing the seeds with the hands until every seed is wetted. The seed should then be spread out in a cool, shady place to dry.

It is important to note that inoculated seed should be sown as soon as possible after inoculation, and should be planted only in moist soil. Seed should be drilled in or, if broadcast, harrowed in immediately, as exposure to sunlight kills the bacteria. Inoculated seed should not be sown at the same time as artificial fertilizer, and if possible the most efficient method is to apply the fertilizer in moist soil a day or two before the inoculated seed is planted.

Store the culture in a cool, dark place, and do not remove the cotton wool plug from the mouth of the bottle until the culture is to be used. The culture should be used as soon as possible after receipt, but it may be held for as long as four or five weeks without marked deterioration. If delays hold up sowing longer than this, it is advisable to obtain a fresh culture.

Farmers requiring inoculum should write, indicating the variety of seed and the quantity to be treated, at least ten days before sowing is anticipated, as this time is necessary for the preparation and despatch of cultures. A charge of one shilling per bottle is made for inoculum.

PASTURE MANAGEMENT.

If seasonal rains occur, many of the pastoral areas in Queensland may soon be well covered with grass and herbage. If widely distributed summer rains do fall, a good autumn crop of long grass should be assured. The effect of autumn long grass is to supplement the organic constituents of the soil. This augmented organic content will tend to maintain the fertility of the pastures. In ordinary circumstances pastures should not be burnt off. This applies especially to sown pastures, such as paspalum and Rhodes grass. The effect of a severe grass fire is to reduce greatly the potential supply of the organic constituents of the soil. If persisted in, the practice of burning-off may result in sterility of the soil. It is possible that bush fires recurring annually form one of the principal factors in the reduction of the fertility of much open forest country to far below that of rain-forest country.

In burnt-over areas, an invasion of non-nutritious grasses may always be looked for. In particular, the farmer with paspalum pastures can watch for the entrance of carpet grasses and rat's-tail grass. The prompt eradication of these almost worthless intruders may mean the saving of many weeks of labour in two or three years' time when, otherwise, these invading grasses may have spread and seeded.

In paspalum pastures, ordinary white clover should be fostered. A good pasture of this kind can often be established by broadcasting a few ounces of white clover seed to the acre in a paspalum paddock. This can be done during autumn. Generally, white clover prefers a sandy soil.

Maori Mite of Citrus.

N. E. H. CALDWELL, M.Sc.Agr., Assistant Research Officer.

THE Maori mite,* so called in Queensland on account of the characteristic dark-brown discolouration caused to the rind of oranges by its feeding, but known in other countries as the citrus rust mite, orange rust mite, fruit mite, and silver mite, is a common citrus pest in most parts of this State. The skin blemishes on the fruit are well known, the injury caused to leaves and bark is less familiar, but the mite itself, on account of its extremely small size, is seldom seen by the grower.

Life History and Habits.

The adult mites, of which only females are known, are very small, being about 1/200 of an inch in length and about three times as long as broad. The body tapers towards the posterior end, and is divided into segments by a series of rings, each of which is further divided into two on the underside. In colour, adult mites vary from pale to almost golden yellow. Larval mites are similar in appearance, though smaller and almost colourless. The eggs are white to pale-yellow spherical bodies which, though minute, are quite large relative to the size of the female.

The eggs are laid singly or in clusters usually on the more sheltered parts of the fruit and foliage. They hatch after a brief incubation period and the larval mites rapidly reach maturity, moulting twice during growth. The white skins shed by the larvæ commonly adhere to the plant and may remain long after all living mites have disappeared, thus providing a characteristic clue to the cause of the injury.

Although the mites in both adult and larval stages move about quite freely, they do not appear to migrate far from the site on which they are hatched. Consequently, they normally occur in colonies containing eggs, larvæ, and adults. On account of the rapidity with which the mites breed, especially during the warmer months of the year when the life cycle may be completed in a little over a week, these colonies may contain enormous numbers which give to the affected fruit or leaf a characteristic "dusty" appearance.

Injury.

Injury to the plant is due to the piercing of surface cells by the mites when feeding. On green fruit, the damaged area first appears somewhat darker than the remainder of the rind, and if the infestation is very heavy the surface may be almost black. A silvery grey may at times be observed in the early stages of injury on oranges and mandarins, but this does not persist. The blemish is always brown on these fruits when mature, the depth of colour varying with the intensity of attack from light-brown to almost black. Lemons, on the other hand, acquire a silvery or at times almost white colour, accompanied in severe cases by shallow but extensive cracking of the rind. Fruit outside the leaf canopy typically has the most severe blemishing on the exposed side, but on fruit inside the tree the discolouration is more usually distributed evenly over the whole surface. Severe Maori mite infestation may occasionally cause some fruit drop, while premature ripening, reduction in fruit size, rind thickening, and interference with normal juice production are also possible effects of injury.

* *Phyllocoptruta oleivorus* Ashm.

Damage to leaves and bark of the younger wood though frequently encountered, particularly on young trees, is seldom serious. Such injury is, however, often apparent before that on the fruit, and this permits the early detection of a severe infestation before the fruit is appreciably damaged. Mites feed on both surfaces of the leaf but prefer the underside. The first symptom of leaf injury is a bronzing of the surface, a condition exhibited more by lemons than the other varieties, but the final result on all kinds of citrus is the appearance of irregular dark brown patches. Injured bark is as a rule brownish-black in colour, and quite considerable areas on young wood may be thus affected.

The chief loss experienced by growers is due to a reduction in the market value of the fruit on account of its blemished appearance, and not because of any serious defect in its quality.

Maori mite blemishes are still frequently confused by the growers with those due to the melanose fungus, but the two conditions may usually be readily distinguished by the fact that the former is typically smooth to the touch and the latter quite rough.

Control Measures.

(1) As a first step towards control growers should procure a good hand lens magnifying about twelve times and become familiar with the appearance of the mite. Thus equipped a grower should, after a little experience, be in a position to know when to apply control measures during summer and autumn.

(2) In Queensland a lime-sulphur spray (1 in 15) should be regularly applied to citrus trees in late winter before the flower buds start to fill. Though not used solely to deal with Maori mite, it is an essential part of the Maori mite control programme.

(3) Further control measures will then be unnecessary until the summer. Insecticidal treatments for the control of other citrus pests must be applied in most districts during this period, particularly in the months November-December and February-April. Although these treatments may retard Maori mite development, they seldom enable a grower to dispense with special measures aimed solely at controlling this pest. Such measures involve the use of a lime-sulphur spray or a sulphur dust. Colloidal and wettable sulphurs may also be effective, but so far they have not been used extensively in Queensland for this purpose.

Where insecticidal treatments are applied first in early summer and again in late summer or autumn, special measures for Maori mite control will usually be required only in January or February. If late summer or autumn applications are omitted, further mite treatment may have to be undertaken even as late as March. If no insecticide is applied for the control of other pests in November or December, summer control of Maori mite should be established during these months, particularly in districts where the pest is of major importance. Further treatment later in the season may still be necessary if weather conditions favour a rapid increase of the mite.

In deciding on the need for Maori mite control measures and the right time to apply them, a grower must be guided by his observations and by his past experience with it, both in the orchard and in the district as a whole.

The strength of lime-sulphur to be used during the summer will depend on the temperature prevailing at the time of application. Generally speaking, strengths of 1 in 20 to 1 in 25 may be used in the early and late summer, though somewhat weaker mixtures are advisable if temperatures at the time of application are abnormally high. Dilutions of 1 in 30 to 1 in 35 are recommended for mid-summer application. Under no circumstances should lime-sulphur spraying be done during excessively hot weather.

Sulphur dust, which may with advantage be mixed with an equal part of hydrated lime, is preferable to a lime-sulphur spray in hot weather. Where other weather conditions, such as heavy rain, may make a repetition of the treatment necessary, the more easily applied dust has much to commend it. Sulphur dust should, therefore, find a wider application than the lime-sulphur spray during the months of January and February.

Dusting may be done at any time of the day, but the best results are obtained by working early in the morning or later in the afternoon when dew is on the trees and wind velocity liable to be at its lowest.

REWORKING DRONE CITRUS TREES.

In orchards where undesirable types of citrus trees have been cut back for reworking, the final thinning of shoots not required for budding into may be done. Where necessary, the trunks and limbs should be re-whitewashed to continue protection from sunburn. In districts where the growth of new shoots is sufficiently advanced (they should have attained a diameter of some $\frac{3}{8}$ in. at the base), and providing that the sap is flowing freely, they may be budded.

When the shoots are ready to receive the bud, a perpendicular cut is made in the bark at or near the base. The cut should be from 1 to $1\frac{1}{2}$ in. in length, and in depth through to the cambium layer. Another cut is then made horizontally across the top of the perpendicular one, so that the two together form a T.

Budwood should be taken only from selected trees which are healthy and vigorous and noted for consistent production of heavy crops of quality fruit. Budwood should be well rounded, mature wood about the thickness of an ordinary lead pencil or slightly less and not more than one year old. Before the buds are cut from the budstick, the leaves are trimmed off so that a piece of the leaf stalk or petiole is left in each case. By this means the bud can be more easily handled after cutting.

The bud may be cut off the stick either from above or below, but the general practice is to cut from below the bud upwards, commencing about half an inch below and ending about half an inch above. The cut must be made with a sharp, thin-bladed knife, and be just deep enough to remove a very thin layer of wood. In the absence of thorns, the wood may be carefully removed from behind the bud, care being taken not to damage the bud.

The bud is then inserted down and under the bark of the stock by raising the latter with the budding knife. In order to bring the bud and stock in close contact, they are bound tightly together with a raffia tie. In from two to three weeks the bud, if it remains green, will have taken—that is to say, united with the stock. The tie may then be cut and the head shortened back to force the sap into the bud. The stud may be utilised to support the shoot from the bud during its early growth, but when the shoot has made good growth and is strong enough to support itself the stub should be removed altogether.

Methods of Dehorning Cattle.

C. R. MULHEARN, B.V.Sc., Director, Animal Health Station, Oonoonba.

A CONSIDERATION of the merits or demerits of dehorning beef and dairy cattle and the most suitable methods of performing the operation have been made the subject of an investigation at the Animal Health Station, Oonoonba, in the course of the past two years.

Horns were evolved as an offensive weapon and they are frequently used as such, resulting in injury and bruising whenever cattle are herded together. The seriousness of the injuries caused by horning in store cattle is not fully appreciated, but it becomes very evident in fat cattle which are being transported to works for slaughter. The losses caused by bruising in fat cattle as a result of horning are very considerable and must amount to many thousands of pounds each year. It has frequently been demonstrated that rejections from a mob of polled or dehorned cattle are on the average much less than from horned cattle which have been subjected to the same conditions. Dehorning also makes cattle more docile, and this in turn allows of more rapid fattening or greater production in the case of dairy cows. The value of the polled or dehorned animal is widely recognised in other countries, and it is unusual to see a horned animal of beef breed in the Argentine or the United States of America. Dehorning also is becoming more widely practised in Australia, and on certain properties all the male calves are treated each year.

The obvious and most satisfactory method of getting rid of the horns is to breed them off, but it will take many years to achieve this object and, in the meantime, dehorning should be practised.

DEHORNING OF CALVES.

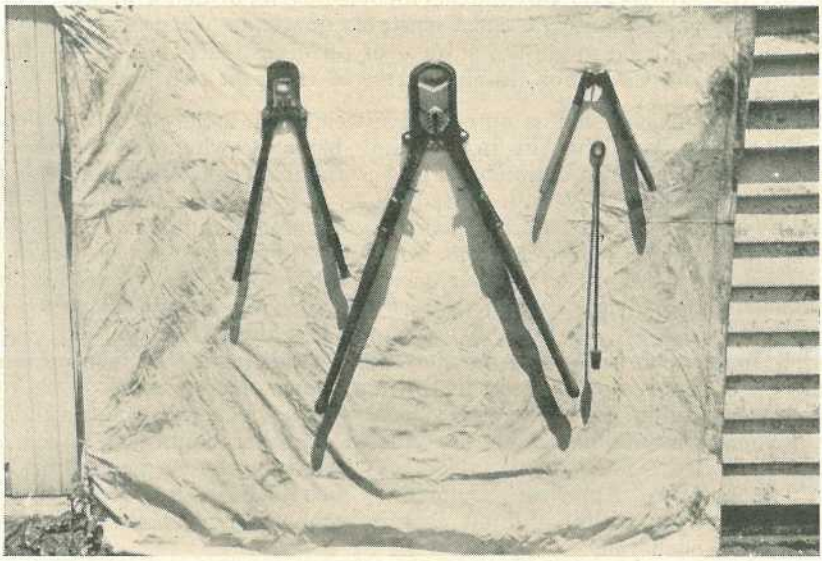
Caustic Method.

Calves up to one week old can be treated with caustic, such as a stick or solution of caustic soda or potash. The caustic stick is moistened and applied to the horn bud until bleeding commences. Care should be taken to ensure that the entire bud is treated, but, at the same time, the caustic should not be allowed to run down the head or come in contact with the eyes. Caustic has the disadvantage of difficulty in handling, and in wet weather it may be washed from the horn and cause burning on other parts of the head. This method also leaves a large raw wound, which sometimes takes a long while to heal.

The Hot-iron Method.

An alternative method with young calves is the application of a special searing iron to the horn bud. This searing iron should be round, about 1 inch across, and the searing end should be slightly concave so that it will fit over the horn bud. It should be large enough to retain the heat and have a handle of sufficient length to prevent burning the hands of the operator. This iron is heated to a dull red heat and then applied to each horn bud with sufficient pressure to ensure destruction of the bud. With a little practice operators soon become proficient in the use of this iron. One of the most important points to be remembered in respect to this method is to ensure that the calf is thoroughly restrained on the ground in such a way as to permit the head being

rapidly turned from one side to the other, without altering the position of the calf's body. This method of dehorning gives very good results in calves up to one month old and may be used to advantage with dairy calves.



A B C D

Plate 127.

DEHORNING INSTRUMENTS.—A—Gouge. B—Guillotine Type. C—Scoop. D—Searing Iron.

Plate 128.

METHOD OF HOLDING CALF FOR DEHORNING.

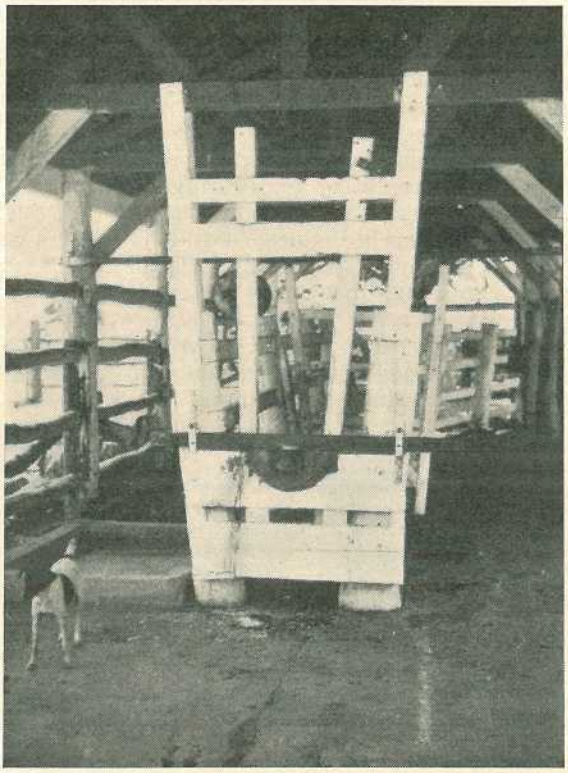


Plate 129.
Dehorning Bail at the Animal Health Station, Oonoonba.

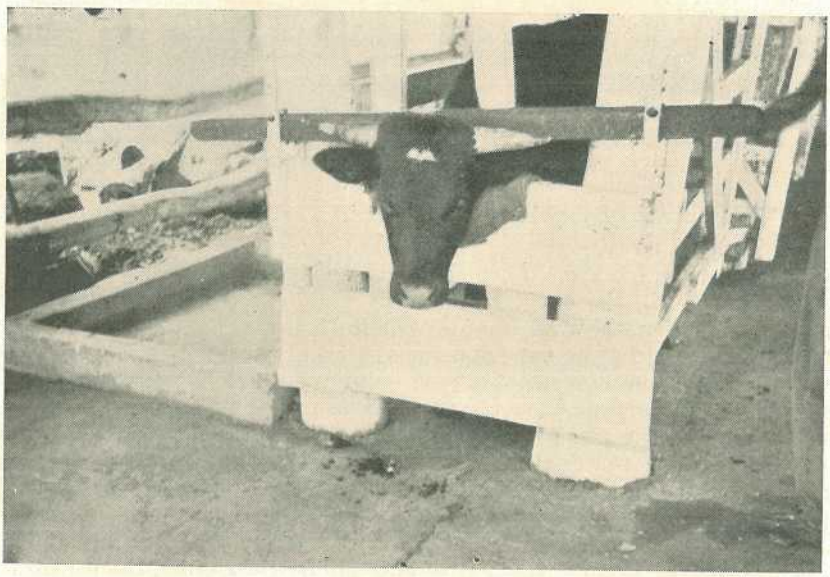


Plate 130.
Steer in Bail Ready for Dehorning.

The Cutting-out Methods.

Calves up to three months old are treated by enucleating the horn buds by means of a special instrument or a sharp knife, followed by the application of a searing iron or a caustic solution. The use of a searing iron has the disadvantage that a fire is necessary for heating the iron. However, as dehorning is usually done at branding time the fire is available, as it is necessary for heating the branding irons. The application of caustic after removal of the bud also is satisfactory, and it has the advantage that no fire is needed and that calves can be treated at any time with a minimum of trouble. A quantity of caustic could be kept at cattle yards and the young calves dehorned any time they are passing through the yards. The disadvantages of the use of caustic are that the small wounds do not heal so readily as when the searing iron is applied and that care must be exercised in its use to avoid burning the fingers or other injury to the user.

Plate 131.
GUILLOTINE TYPE DEHORNER IN POSITION FOR REMOVING HORN

The setback in calves up to three months old as a result of dehorning is practically nil, the effect being approximately equivalent to that of branding. When the calf is approximately three months old the horn core commences to grow out from the skull and the horny tissues harden, so that it then becomes necessary to employ special instruments for the removal of the horns. Such instruments usually have convex cutters, so that they make a concave wound into the skull. The two types in common use are referred to as the "Scoop" and "Gouge" types of dehorners (Plate 127). The scoop type can be used on animals up to about six months old, whereas the gouge type can be used on animals up to about twelve months old. By means of these instruments it is possible to remove the horns and all horn-forming tissues at the junction of the horn and the skull. When this operation is performed an opening is made into the frontal sinus, which is really an air cavity

within the skull. The size of the opening varies with the age of the calf, but it usually closes in from a week to a month, at the end of which time the wound should be completely healed. Bleeding frequently occurs following this method of dehorning, but it can be controlled by the use of a hot searing iron or to a lesser extent by the application of a special dehorning powder. In any case, the loss of blood is never severe in young animals, even if no dressing is applied. Calves from three to twelve months of age are usually treated with this type of dehorner and the setback as a result of the operation is never very severe.

DEHORNING OF MATURE ANIMALS.

With animals over twelve months old, a large dehorner with a straight guillotine type blade is usually employed and a special dehorning bail becomes necessary. Cattle of all ages have been treated with this instrument, and there is usually a slight loss of condition as a result of the operation, although the check in growth of store bullocks is never very great. Bleeding may be severe following dehorning of mature cattle and, although not considered dangerous, it is objectionable and is one of the main causes of loss of condition after dehorning. It can be controlled by the application of a ligature in the form of a cord tied around the base of the horns and across the top of the head, and then twitched tightly by drawing the two pieces of cord together across the top of the poll. This ligature, which has proved very useful for the control of bleeding in dairy cows, should be left in position for from four to twenty-four hours. If the ligature is not applied, the bleeding can be controlled to a certain extent by the searing iron or by the use of a suitable dusting powder. A dressing in the form of a dry dusting powder has been found more satisfactory for use immediately after dehorning than one with an oily or tarry base. Satisfactory application of the latter dressing is difficult. A suitable dusting powder may be prepared by mixing one part of boracic acid, one part zinc oxide, one part powdered alum, and six parts powdered starch.

Although several hundred head of cattle of all ages have been dehorned either at the Animal Health Station or directly under our supervision at other centres, not a single loss due to dehorning has occurred. However, it is not wise to dehorn mature cattle at a time of the year when blowflies are numerous, as the flies may "blow" the wounds in the skull.

TIPPING.

Tipping is often practised as an alternative to dehorning in mature cattle, particularly in bulls, dairy cows, and steers which are beginning to fatten. Tipping consists of the removal of about 2 inches from the tip of the horn, so that the quick or sensitive portion becomes exposed. As a result of this operation, the extremity of the horn becomes tender for a considerable time and the animal will refrain from using it. Even when the tenderness disappears, the animal is less likely to cause ripping or bruising, for the sharp point has been permanently removed.

As dehorning of calves may be carried out at any time of the year without risk of loss, and as the advantages of such an action are outstanding, it is suggested that the question of dehorning all young beef cattle be given serious consideration. The operation could be done

Plate 132.
YEARLING AND TWO-YEAR-OLD DEHORNED STEERS AT PASTURE.

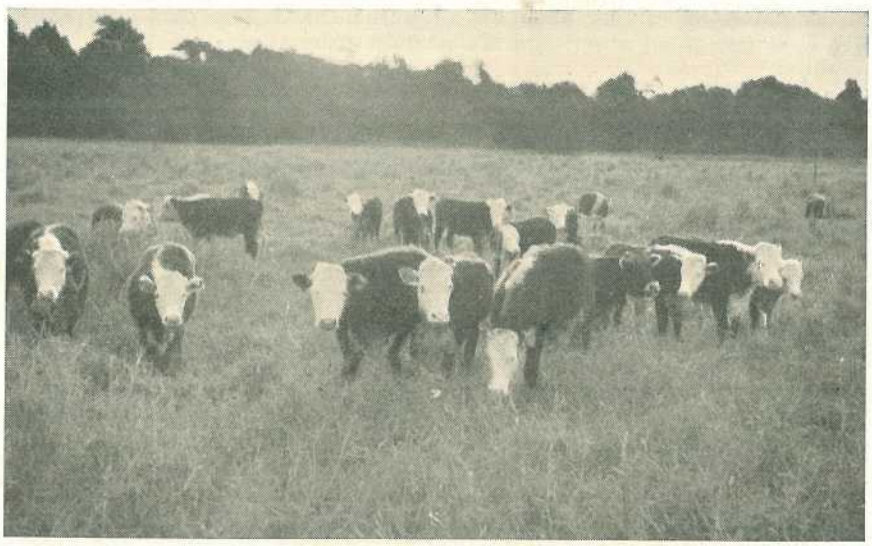


Plate 133.
YEARLING AND TWO-YEAR-OLD DEHORNED STEERS AT PASTURE.

without any great inconvenience to the breeder when the calves are handled for branding or marking. Dehorning is being practised as a routine procedure on several properties in Queensland at the present time, and there is every indication that it will become much more widely practised when it is realised that the operation is very simple and can be performed in conjunction with ordinary station management.

Further information on dehorning may be obtained from the Director of Veterinary Services, Department of Agriculture and Stock, Brisbane, or from the Director, Animal Health Station, Oonoonba, *via* Townsville.

"DON'TS" AND "BUTS" FOR DAIRY FARMERS.

DON'T have the cowshed roof covered with dust and cobwebs;

BUT lime-wash it and brush it down regularly.

DON'T have heaps of manure just outside the cowshed door;

BUT carry it away daily to the paddock.

DON'T wash a whole herd of cows with one bucket of water;

BUT use one bucket of water for every two or three cows.

DON'T use old pieces of bagging for udder cloths;

BUT use clean cloths kept for the purpose.

DON'T leave udder cloths screwed up in damp bundles;

BUT boil them daily and hang them out to dry away from the dust of the yard.

DON'T follow the practice of wet-handed milking;

BUT always milk with clean dry hands.

DON'T milk into kerosene tins or use them for cream, the folds and crevices provide ideal conditions for bacteria;

BUT invest in well-made milk buckets and cream cans.

DON'T commence milking into the bucket immediately;

BUT direct three streams of milk into a separate vessel for rejection. This milk is bacteria-laden and contains little fat.

DON'T allow milk and/or cream to stand in or near the milking bails or dusty yards;

BUT remove it immediately to the dairy or milk stand as the case requires.

DON'T use cloths for straining milk. They are too risky;

BUT use a cotton wad type strainer and strain only once.

DON'T use hot water directly on utensils after milking, as it will bake the milk serums on to the metal;

BUT rinse or soak them first in cold water.

DON'T wipe the utensils with a cloth after washing;

BUT sterilise them by boiling or steaming and allow them to dry without wiping.

DON'T abuse or knock your cows about, for this is one of the chief causes of dirty yards;

BUT treat them kindly—a contented cow will give more and better milk.

DON'T delay the cleansing of any dairy equipment after use;

BUT remember that it is much more difficult once the milk or cream residue has been allowed to harden.

DON'T forget to cool and stir any cream as provided by the Dairy Produce Acts;

BUT persevere and get "Choice" grade every time. It can be done.

An Effective Power Spray for Farm Animals.

L. D. CAREY, Chief Inspector of Stock.

POWER spraying of cattle and horses as a measure of tick control has been proved in practice to be both effective and economical. At the Brisbane Show in August last, a spraying plant designed by the Department of Agriculture and Stock for use on small holdings, and on dairy farms particularly, was set up for demonstrational purposes, and attracted the keen interest of a large number of stockowners. In response to numerous requests for plans and specifications, these notes have been compiled.

Construction.

In the accompanying plan and list of materials required, sawn timber is specified, but if suitable bush timber is available for posts and rails, it may be substituted.

If it is required to spray more than one beast at a time, the crush can be extended to provide for the extra accommodation, and also for an extension of the jetting system.

In preparing the plan, attention has been given to keeping the cost of construction to the minimum requirements. Particular attention should be given to the measurements on the plan, and the inside posts of the spray crush should be spaced so that the piping running horizontally on each side will reach from centre to centre of each post and be clear of the slide gates.

The posts and all woodwork for the crush should be erected first, care being taken to see that there is sufficient space left between the posts to allow the slide gates to pass through. The boarding-in of the sides and slide gates of the spray crush is recommended in order to save waste of fluid from the spray jets during operation.

Sawn timber is recommended for the slide gates, and they can be fitted with either rollers or slide bar at top.

After the construction of the crush, concreting should be the next procedure, the mixture to be as specified. The gravel and sand should be clean and free from dirt or other foreign matter. The concrete floor should have a slight fall towards the centre and side of the crush to the outlet drain into the screening chamber, from which the fluid is run into the holding tank or pit. A concrete sill about 3 inches high should be placed around the floor of the crush to stop the fluid from running outside.

A 200-gallon iron ship's tank or a concrete pit 3 by 3 by 3 feet would be ample capacity, and should be placed or constructed alongside the screening chamber and set in the ground, the top being at ground level.

The piping should be constructed as illustrated (Plate 135). The pipes should be braced to the posts, and the pipes to which the jets are attached placed vertically. The jets should not be exposed inside the crush any more than necessary. The bottom jets should be about 10 inches above the concrete floor.

A centrifugal pump should be erected as near as possible to the fluid tank and bolted to a concrete block.

The engine should be placed in a position suitable for the driving of the pump by a belt. If a small farm engine is available, a concrete foundation block could be erected in a convenient position, and on which

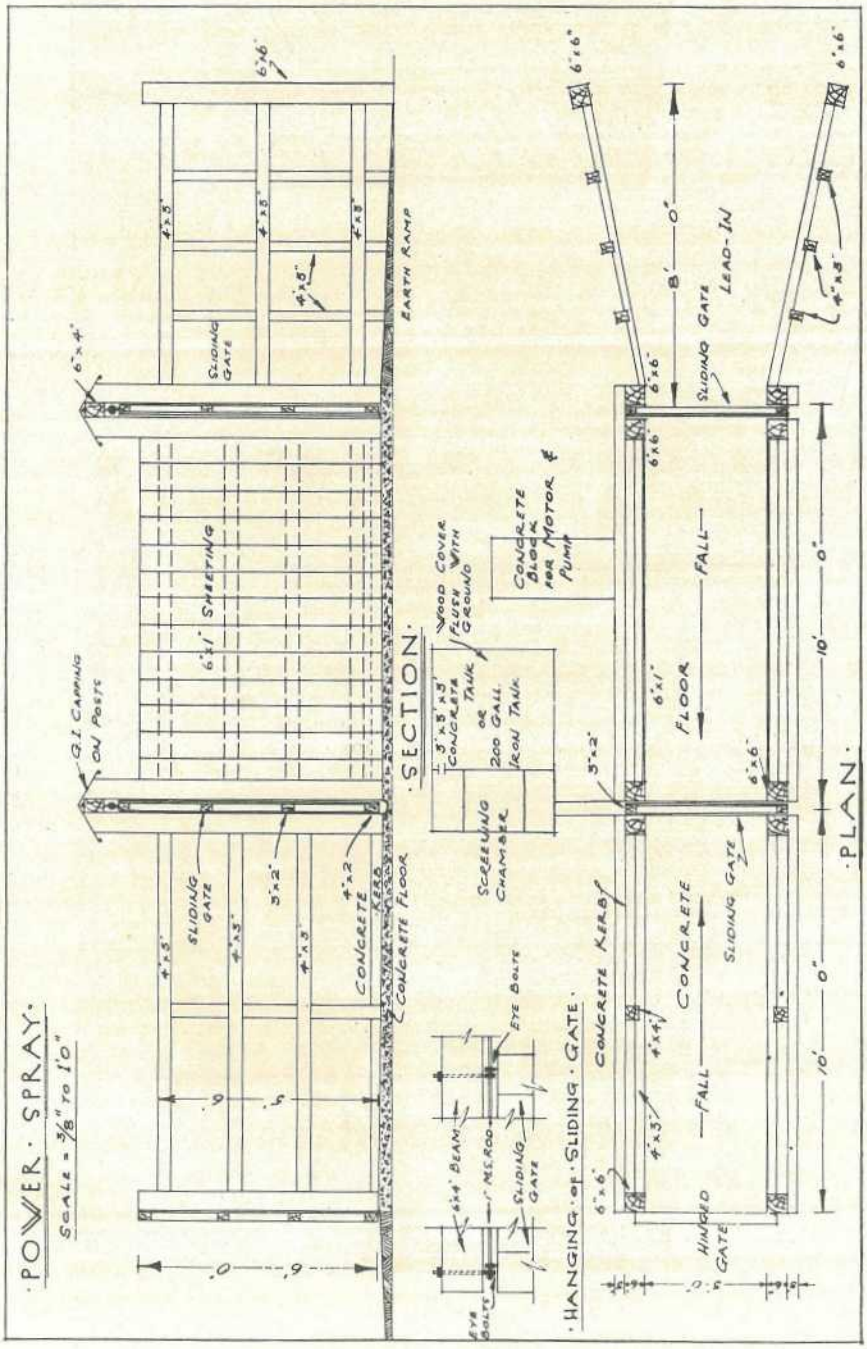


Plate 134.
POWER SPRAY PLAN.

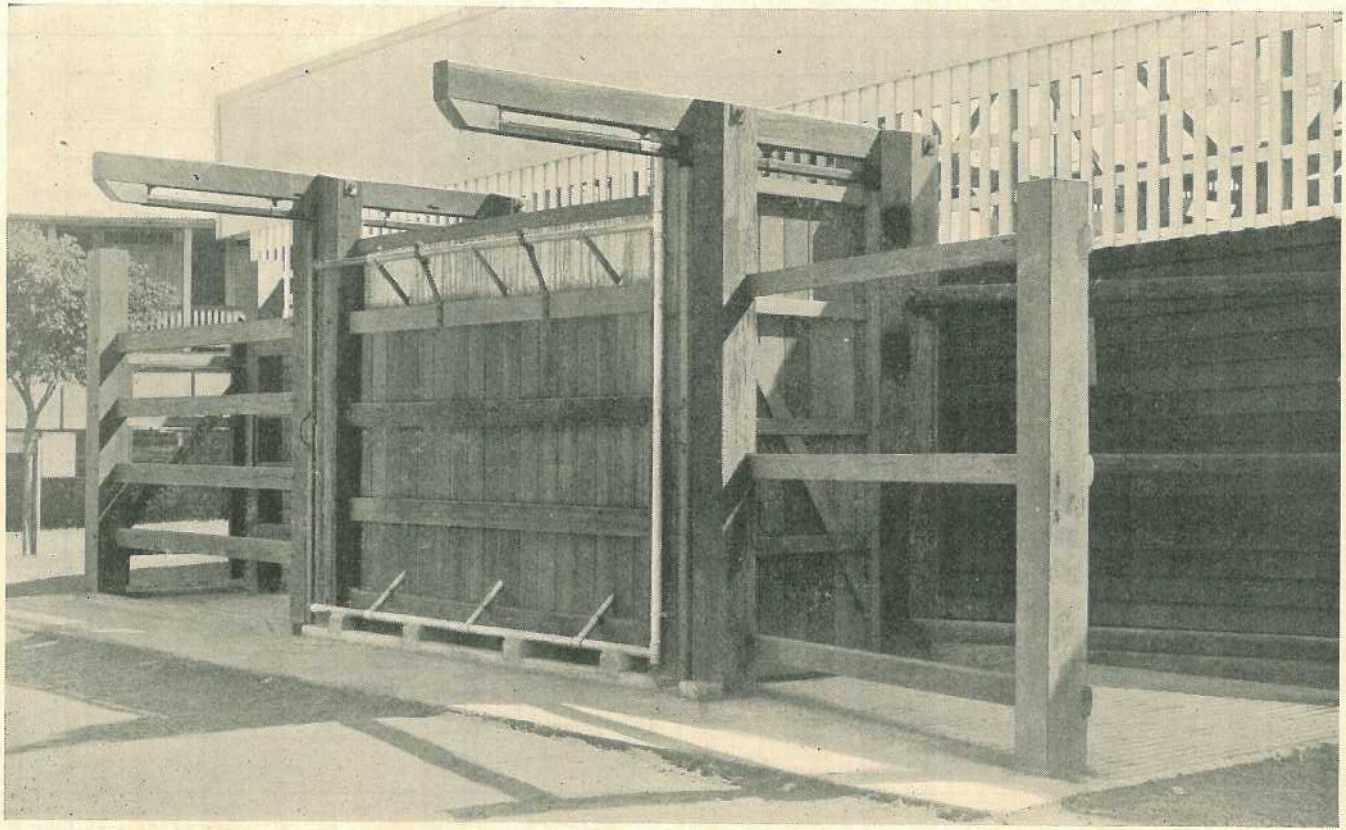


Plate 135.
A SIDE VIEW OF THE SPRAYING CRUSH.

the engine (if of a stationary type) could be placed when required. Where electricity power is available, a power motor could be installed.

The Dip Mixture.

When spraying is to be done, sufficient water according to the number of stock to be sprayed should be placed in the tank. The gallonage should be recorded and the required amount of concentrate added, in accordance with the instructions on the tin or drum. A graduated pint measure is recommended for this purpose. If the concentrate used is of, say, 1 gallon to 160 gallons of water to give the

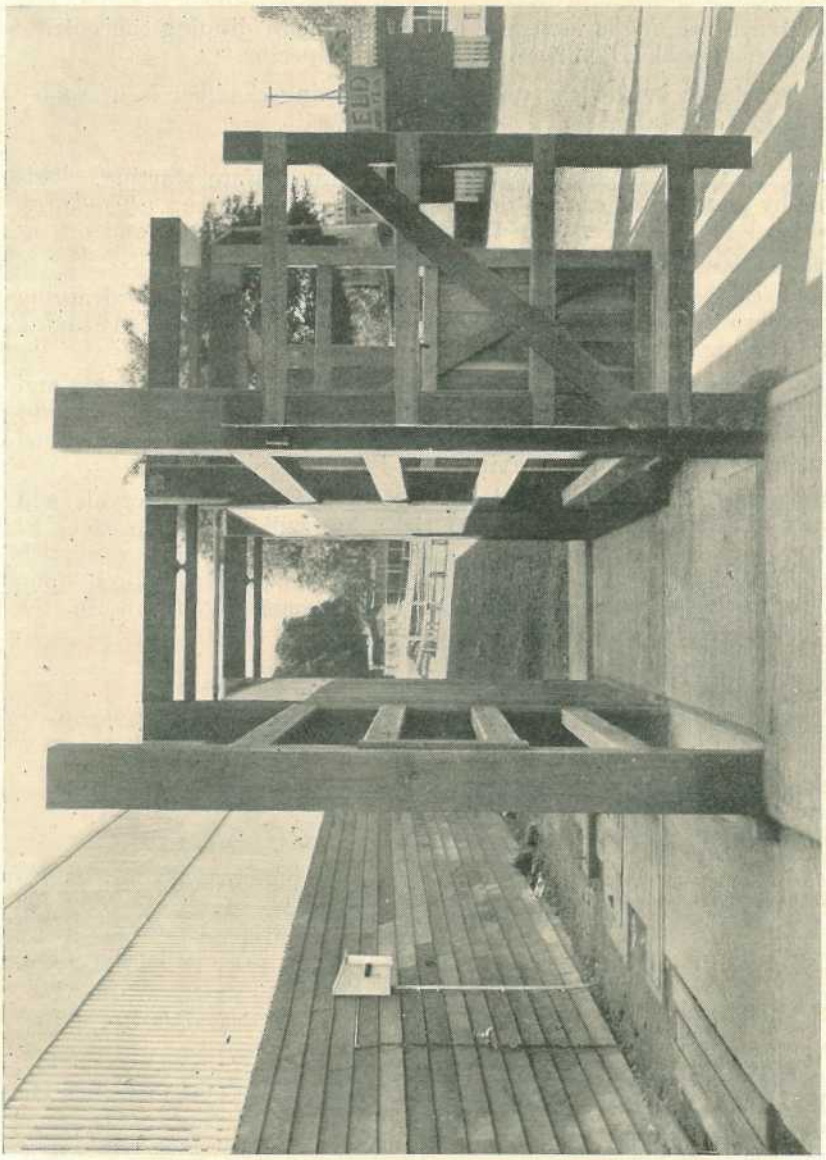


Plate 136.
The Power Spray Crush from Another Viewpoint.

standard strength dipping fluid, it would be necessary to add one pint to each 20 gallons of water placed in the tank.

If there is fluid remaining in the tank after spraying has been completed, the depth of the fluid should be taken, and if required for use some time later the depth should again be checked. If the water is below the previous check mark because of evaporation, water should be added to bring it to the first-mentioned level without adding any concentrate before using. Evaporation obviously increases the strength of the remaining fluid. Water evaporates, but the arsenic does not. Samples of the fluid should be submitted to the Agricultural Chemist, Department of Agriculture and Stock, Brisbane, for analysis before using.

Instructions on the charging of the tank with dipping concentrate is always obtainable from the nearest stock inspector.

A screening bucket for use in the screening chamber is necessary and should be installed.

Operation.

The centrifugal pump may require priming before starting. This is done by pouring water into the priming tap on the pump. The spray is operated from the valve on the pipe line by turning on and off, as required, during the spraying operation.

As each beast is sprayed in the crush, it is passed on to the draining crush, where it drains while another beast is being sprayed, thus saving loss in dipping fluid.

Before treating dairy cows, it is recommended that their teats and udder should be dressed with warm lard or other clean grease to prevent possible scalding of those parts. The teats and udder should be washed before being milked after spraying.

Spraying of all dairy stock on the farm at 18-day intervals will not only assist in the eradication of ticks, but will relieve the stock of tick worry and consequent loss of condition. The minimising of tick worry is naturally conducive to greater milk production, and, if done at the prescribed intervals, spraying will eventually result in the complete eradication of ticks on the holding.

Specifications.

CONCRETE.

	Cub. yd.
Concrete floor, 4-in. thick, 1:2:4 mixture, ¾-in. aggregate ..	1 4/27
Concrete in tanks, walls, and floor, 4-in. thick, 1:2:4 mixture, ¾-in. aggregate ..	17/27
Concrete in screening chamber, walls, and floor, 4-in. thick, 1:2:4 mixture, ¾-in. aggregate	11/27
	2 5/27

ORDER.

Cement, 94-lb. bags	No. 13
Sand	1 cub. yd.
Metal or gravel ..	1¼ cub. yds.
Pudlo or other approved waterproofing compound	6 lb.
610 B.R.C. or other approved fabric for the following areas—22 ft. x 4 ft., 4 ft. x 4 ft.	

CRUSH ROUGH HARDWOOD, SECOND GRADE.

6 in. x 6 in. posts—4/9 ft., 8/10 ft.

4 in. x 4 in. posts—2/8 ft.

4 in. x 3 in. posts—6/8 ft.

4 in. x 3 in. rails—6/10 ft., 6/8 ft., 8/9 ft. 6 in.

6 in. x 4 in. beams—2/9 ft.

6 in. x 4 in. posts to support beam, 2/9 ft. 6 in.

6 in. x 1 in. sheeting—34/6 ft.

Gates—

3 in. x 2 in. framing—4/6 ft. 6 in., 2/6 ft., 9/4 ft.

4 in. x 2 in. framing—3/4 ft.

4 in. x 1 in. braces to gates—2/8 ft., 1/7 ft. 6 in.

HARDWARE.

1-in. diameter W.I. rod for sliding doors threaded at both ends and with nuts and washers, approximately 8 ft. long	No. 2
¾-in. diameter W.I. eyebolts with nut and washer, bolt end 7-in. long, eye to be full 1-in. diameter	No. 6
⅝-in. diameter W.I. eyebolts with nut and washer, bolt end 5-in. long, eye to be full 1-in. diameter	No. 4
⅝-in. diameter W.I. bolt with nut and washer to 6 in. x 6 in. posts and 6 in. x 4 in. beam, 16½-in. long	No. 8
½-in. diameter W.I. bolts with nut and washer securing rails to posts, 6½-in. long	No. 12
⅝-in. diameter W.I. bolts with nut and washer securing framing of gates, 2½-in. long ..	No. 24
⅝-in. diameter W.I. bolts with nut and washer securing framing of gates, 3½-in. long ..	No. 12
Hinges to swing gate, 12-in. crook and band (pair) ..	No. 1
Gate fastening, approved ..	No. 1
Door pulls, 10-in. stamped steel or other approved pull or handle	No. 2
Nails—	
2½-in x 10 gauge	7 lb.
3 x 8 gauge	2 lb.
4 x 7 gauge	2 lb.
G.W.I. piping and fittings, spray jets, pumphose, &c., also motor and pump as directed and approved.	

CLEANLINESS IN THE MILKING SHED.

Observations at milking time on some dairy farms reveal carelessness which is dangerous from a viewpoint of infection from bacteria. Bacteria in milk and cream are well-known causes of low-grade, inferior products, and safeguards against their introduction are essential.

The milking bucket should on no account be used as a washing utensil, either for the udder and teats of the cow or the milker's hands. The act of washing the udder transfers innumerable bacteria with the dirt and loose hair to the bucket, and a simple rinsing in cold water is not sufficient to remove them all. The need for separate milking buckets and washing buckets is therefore very obvious.

A bucket and cloth for washing the udder and a wash basin for washing the hands before milking each cow are hygienic necessities in the bails. The dairyman may well ask himself the question: "Would I take my meals with hands unwashed after completing milking operations?" The answer would be an emphatic "No!" Yet the cleanliness of his hands during milking is at least as important, for milk and cream are foods which may be easily contaminated.

Clean hands are just as essential during milking as at the dining table. It is therefore remarkable that many people who are scrupulously clean in the home are lamentably careless in the cowyard and dairy.

Another very common practice is the wiping of soiled, milky hands on the clothing. These same clothes, if worn throughout the day, soon acquire a most objectionable smell and attract flies. Sugar-bag aprons—which are easily made, inexpensive and long-wearing—are suggested for use by all milkers. The aprons should, of course, be washed frequently.

The protection of milk against flies is also a matter of consideration. Most dairymen have in use a large, shallow milk vat, and this should be provided with a lid on which an opening has been left for the milk strainer, or, if milking machines are in use, for the releaser. This lid keeps out dust and vermin, and also is a help in maintaining the temperature of the milk before separating.

Hand milkers frequently moisten the cow's teats during milking from the milk in the bucket. This practice cannot be condemned too strongly, as the hands are usually soiled, and bacteria from the udder of the cow are transferred to the bucket.

The following points are all practised by the most successful dairymen:—

Wash the udders in buckets used only for that purpose.

Wash the hands after milking each cow.

Wipe the hands on a clean cloth, not on the clothes, and wear either an apron or overalls.

Aprons and overalls are easily boiled; so keep them clean.

Don't use an uncovered vat. Under the Dairy Regulations a cover for the vat *must* be provided.

The Management of Dairy Farms in relation to increased Milk Production.

J. SHILKIN, H.D.A., B.V.Sc., Veterinary Officer, Brisbane Milk Board.

THE management of dairy farms supplying milk to the Brisbane market is, in some cases, not all that could be desired. The average production is very low, and the methods employed are not always such as to produce the maximum amount of milk at the lowest possible cost. The highest efficiency possible in the different circumstances of locality, area, and other factors should be the aim, and it is considered, therefore, that the following summary of methods would, if carried out, help to attain this efficiency.

Suggested measures may be divided into two main groups, both of equal importance—

A. Management of Farms.

B. Management of Cattle.

A.—Management of Farms.

I. Subdivision of Paddocks.

There should be as many paddocks as practicable to provide for rotational grazing, so that small paddocks may be grazed off quickly by stocking heavily and then spelled. Grass about 5 to 6 inches high is much more nutritious and has a higher feeding value than grass which is at a later stage of growth. Consequently, better results in milk production and a much higher carrying capacity of the same area should be obtained.

There also is the possibility of controlling parasitic infestation. The larval stages of many parasites exist on the pastures for varying periods, and spelling of these pastures by rotational grazing will result in the destruction of a large proportion of the larvæ, with a consequent decrease in the incidence of infestation.

Where creeks make subdivision difficult, the use of specialised agricultural engineering methods would no doubt solve many problems.

II. Establishment of Suitable Pastures.

By collaboration with officers of the Department of Agriculture and Stock, it is possible to ascertain which grasses are the best under certain conditions of soil and climate and the methods of establishing such pastures. There is no doubt whatever that by laying down the most suitable grasses and proper management subsequently, the carrying capacity of any area can be increased immensely.

Large variations in feeding value occur even in good grasses, and a grass which is properly managed may possess as much as twice the feeding value as the same grass under bad management.

III. Fertilization of Pastures.

A large amount of material is returned to the soil in the form of manure, but, generally, too little use is made of it. Occasional spreading of the manure with harrows would be an advantage and, at the same time, provide a light scarification of the soil. The subdivision of paddocks enables the effect of this to be increased.

In districts suitable for the growth of clover, a top-dressing with superphosphate has the effect usually of stimulating growth of clovers. Small scale trials, however, are recommended first to demonstrate the value or otherwise of applying super. in each particular area.

IV. Growing of Crops.

The largest workable area should be placed under crop, both for feeding purposes and for conservation as ensilage or hay.

Of the non-leguminous summer crops, sorghum and maize stand out for silage purposes and also for feeding in a green state, while for grazing purposes white panicum, Japanese millet, and Sudan grass have proved their worth. The lastmentioned is more suitable for inland districts, particularly the Darling Downs and Maranoa.

All members of the sorghum family—and this includes Sudan grass—are likely to cause losses from poisoning if fed when in a fresh green condition before the flowering stage, and it is therefore advisable to allow the crop to flower before grazing, particularly if the crop has received a check from dry weather during growth.

For winter feeding, oats, wheat, and barley, sown either alone or as a mixture with field peas or vetches, are the most widely used.

Of the leguminous crops, lucerne is particularly valuable where it can be grown and maintained efficiently, while cow pea as a summer leguminous crop and field pea for a winter crop are both very valuable for supplementary feeding. Naturally, for all these crops it is advisable to plant good seed of the best varieties consistent with their adaptability to local conditions, and this information may be obtained from the Department of Agriculture and Stock.

V. Conservation of Fodder.

Many farms are sadly lacking in means for conserving fodder. On some, conserved fodder is conspicuous by its absence, and on others too little provision is made for it.

Consequently, dry periods result in the inability to maintain animals in a reasonable condition; and once cattle lose condition it is usually difficult and uneconomical to bring them back to normal milking during that particular lactation period, whereas cattle maintained in good condition milk well during a time when market supplies would normally be low.

Silage is particularly good for dairy cows, as it is palatable and nutritious, and if well made should be almost equal in feeding value to the green crops. Certain types of silos are relatively inexpensive, but even the more expensive ones would amply repay the outlay in a short period.

B.—Management of Cows.

I. Breed.

The breed chosen is a matter for the individual, but to a certain extent will depend on the conditions of the locality or the particular farm concerned. Generally, pure-bred cattle are larger and more economical producers, if properly cared for, than crossbreds and consequently more profitable. However, if crossbreds are used—and this is the rule rather than the exception—it is advisable by using good pure-bred bulls combined with careful culling, to grade up the herd. It is

possible in this way to develop a herd which can hardly be distinguished in appearance or production from pure-bred animals.

II. Selection and Segregation of Bull.

From the foregoing it is obvious that the bull must be a high-class animal for the obtaining of the best results. It should be selected, not only on appearance and pedigree, but (and this is most important) it should be the progeny of known high-producing stock.

The bull should not be allowed to run with the herd, despite the fact that this is the prevailing practice. By keeping the bull segregated in this way, it is possible to control matings more satisfactorily and so regulate lactation periods, which is an important factor when supplying milk. It also is very important from the standpoint of disease control. For instance, the presence of vaginitis in the herd can be determined much more readily than when the bull is running with the herd, and so enables treatment to be carried out sooner.

III. Control of Diseases.

Disease is the cause of very heavy economic loss to the dairying industry, and the diseases most frequently encountered are T.B., contagious abortion, mastitis, and vaginitis. These diseases, in the main, are somewhat insidious and do not give rise to spectacular losses. Consequently, they may appear to the farmer much less important than they really are and he may thus tend to disregard them. However, most of these diseases can be eradicated, and farmers should avail themselves of the facilities at their disposal for this purpose.

IV. Culling.

Culling should be heavy, and sentimental considerations should not be allowed to outweigh economic factors. A definite standard should be set for milk production, and if any cow does not measure up to this standard there should not be any hesitation in passing her out. High producers are definitely economical producers, while low producers, despite the fact that they may require less feed, are decidedly uneconomical.

Other reasons for culling are, of course, age and disease.

V. Milk Recording.

The keeping of records of milk production is advisable and will be very useful as a guide to culling. It should not be difficult to weigh the day's milk from each cow, and if this is done at weekly intervals, or even monthly intervals, a fairly accurate record of the profitability or otherwise of each cow will be obtained. Many cows milk well during the early stages of the lactation period, but do not maintain their production for very long, and the average production of such cows will be very low. The keeping of production records, therefore, will indicate these cows much more accurately than mere guesswork.

VI. Rugging.

Rugging is a very useful practice in the winter months. Cows will naturally be more contented, and by helping to maintain the usual body temperature of the animals, rugging will obviate a certain proportion of the feed being utilized as fuel.

VII. Dehorning.

The practice of dehorning makes cows more docile and less liable to fight each other. Any factor which keeps cows quiet and contented will have a tendency to improve production.

VIII. Feeding.

Feeding is naturally one of the most important factors associated with milk production, as correct feeding may mean the difference between profit and loss to the farmer. The main points to consider are the maximum utilization of pastures and crops and, where necessary, the addition of concentrates to the ration. For the most efficient production, the condition of the cows must be kept at a high level. Once they lose condition for any reason—dry conditions, disease, or any other cause—it is generally a most difficult and costly process to bring them back to normal condition and production. Generally, to maintain production in the Brisbane milk-producing districts during the winter months, it is advisable to feed concentrates. This also applies, under certain conditions, to some farms during the summer months, particularly those where only a small amount of cropping is carried out.

It has been shown that a cow of average weight requires about 50 lb. of roughage (grass, green feed, &c.) for maintenance—that is, for all normal bodily functions. Consequently, if little feed is available over and above that figure, it stands to reason that only limited amounts of milk can be produced. Therefore, it is necessary to add concentrates to the feed—larger quantities when the feed is scarce or poor in quality, and smaller quanties when the feed is plentiful and nutritious.

Where concentrates have not previously been fed it is not, as a rule, economical to commence on animals whose lactation period has extended beyond five months, except in the case of animals that have been in between five and seven months, when concentrate feeding may be adopted in preparation for the following lactation.

Milk is a substance rich in protein and minerals, particularly lime and phosphorus. Consequently, it is necessary to provide feeding stuffs which are rich in these materials. Obviously, cows cannot for long secrete more of these substances in the milk than they obtain from their feed. As milk is rich in protein, it is necessary to take into consideration both the analyses and the prevailing prices. The costlier concentrates are not necessarily the best, but, on the other hand, the cheaper ones are not necessarily the most economical, while a concentrate which is economical to feed in one State may not be economical to feed in another State.

In Queensland, excellent results have been obtained with a mixture of a concentrate high in protein and one high in carbohydrates. The best of the former are protein meal (meat meal) and blood meal, and, of the latter, maize meal, wheat meal, and sorghum meal have given the best results. Which combination of these should be used will depend on the prevailing prices which may vary from time to time.

It has been found that with cows on poor feed producing, for example, 1 gallon per day (4 per cent. butterfat), the addition of 1 lb. protein meal (or blood meal), 3 lb. cereal meal (maize, wheat, or sorghum meal) will increase production to 2 gallons daily. Increase or decrease

of these quantities will increase or decrease production proportionately, after allowing for the time lag. It must be remembered, however, that these results will only be obtained in cattle which have the potential capacity to produce these larger quantities of milk, hence the necessity for proper breeding and culling.

By feeding concentrates, admittedly the feeding costs will be increased, but the net returns should greatly offset the increased cost, always providing the right concentrates are used. For instance, the cost of feeding 1 lb. protein meal and 3 lb. of sorghum meal is, on present prices, about 3½d. per day. An increase of 1 gallon per day will, therefore, show a handsome profit.

With regard to feeding protein meal and blood meal, it is pointed out that care is frequently necessary in persuading cows to take them. Animals which are underfed and in poor condition, or animals that have been accustomed to small quantities from birth will usually present little difficulty, but others should only be fed small quantities (even as low as a teaspoonful) at first and, if possible, in combination with attractive feeds, such as linseed or cottonseed meals. Even then it may still be difficult, and it may be necessary to let animals go hungry for a day or two. Admittedly, milk producers would not be particularly keen on carrying out the latter process because of the temporary drop in milk production, but once animals take the concentrate the returns will justify the trouble involved.

Protein meal or blood meal should not be allowed to become damp or to remain in feed boxes, as they putrefy rapidly.

Cottonseed meal may be quite useful as a concentrate but, generally, is more costly than the protein or blood meals. Actually 3 lb. of protein meal is practically equivalent to 5 lb. of cottonseed meal; so that, to make the latter as economical a feed as the protein meal, it would require to be nearly half the cost, and that is not the case.

Other concentrates may be useful and economical, but this will also depend on the analyses and prices. The actual value of these materials can be worked out, and this should always be determined by application to the Department of Agriculture and Stock.

IX. Provision of Mineral Supplements.

As mentioned previously, milk is extremely rich in minerals, particularly lime and phosphorus, and unless cows are on particularly rich feed it is very doubtful if the supply of these minerals will be adequate. Therefore, it is highly desirable that provision be made for their supply, and for this purpose the best and most economical source is sterilized bone meal. This should be combined with salt, which also is essential, as follows:—

Sterilized bone meal	2 parts
Salt	1 part

and fed at the rate of 2 oz. per day, mixed in the feed.

Where cattle are on good feed and on protein meal (which actually contains a certain amount of bone meal), it may only be necessary to add two tablespoonsful of salt to the ration, particularly when there is an adequate water supply.

It is advisable to allow dry cattle access to a mineral supplement in the paddock, and this can be put in boxes under cover. One of the best of these mixtures is:—

Sterilized bone meal	2 parts
Powdered limestone	2 parts
Salt	1 part

The proper application—including, of course, the modification where conditions necessitate it—of all the above factors is essential if the farmer is to produce milk along the most efficient and economical lines. Haphazardness in any direction may well lead to uneconomic production.

CARE OF CREAM IN THE SUMMER.

In summer time dairy farmers should, it is suggested, exercise more than ordinary care in ensuring cleanliness in every detail of dairy practice, otherwise it will be difficult to avoid rapid deterioration in the quality of milk and cream. A little extra care will ensure the maintenance of quality and, in consequence, a top-grade test.

Premium for Quality.—To exemplify the financial advantage of supplying choice cream, assume that the daily production on a farm is 60 gallons of milk having 3.8 per cent. butter-fat test. If the separator screw is set to deliver one part of cream to 9 parts of skim milk, then 6 gallons of cream of 38 per cent. fat test will be obtained from the milk. This is equivalent to 28 lb. of commercial butter. Calculated on the basis of 1s. 2d. per lb. for commercial butter, and in accordance with the statutory difference in payment for the respective grades, the price payable by a butter factory for such a quantity of cream would be—

Grade.	Daily Return. £ s. d.	Monthly Return. (30 days.) £ s. d.
Choice at 1s. 2d. per lb.	1 12 8 ..	50 0 0
First grade at 1s. 1½d. per lb. ..	1 11 6 ..	47 5 0
Second grade at 1s. 0½d. per lb. ..	1 9 2 ..	43 15 0

Importance of Sterilized Utensils.—The chief factor in milk and cream production is the sterility of the utensils, over 80 per cent. of the original bacterial contamination of milk being due to this source. Scrupulous care of the utensils alone (provided there is no carelessness otherwise) is the best safeguard of cream quality. Rules to observe in the cleansing of dairy utensils are—

1. The rinsing out of residual milk with cold or lukewarm water.
2. The removal of fat and grease by washing in warm water in which a fat solvent, such as washing soda, is dissolved. Use a scrubbing brush and not pieces of rag for this purpose. This makes a utensil "physically clean."
3. The near-sterilization by the use of sufficient quantity of boiling water or steam. This makes a utensil "bacteriologically clean."

Other Rules.—Other rules requiring careful observance are—

1. Washing of the udder with a moistened cloth. A weak solution of permanganate of potash (Condy's fluid) is useful for this purpose. The udder cloths should be boiled and hung to dry after each milking.
2. Milking with clean hands. A washbowl, towel, and soap should be provided.
3. Storage of utensils and cream away from the possibility of dust contamination.
4. Cooling the cream and maintaining it at as low a temperature as practicable.
5. Stirring the cream frequently.
6. Maintaining a cream test of between 38 to 42 per cent. butter-fat.
7. Not mixing warm cream with cold cream until the animal heat has been reduced.
8. Frequent delivery of cream to the factory.

Systematic and strict observance of these rules is an assurance of satisfactory cream returns.

Hay Bale Battens.

F. B. COLEMAN, Officer in Charge, Seeds, Fertilizers, Veterinary Medicines, Pest Destroyers, and Stock Foods Investigation Branch.

UNDER the provisions of "*The Stock Foods Acts*, 1919 *to* 1935," it is prescribed that the total weight of battens used on bales of hay shall not exceed 10 per cent. of the gross weight of the bale. A recent inspection of the hay being offered for sale revealed that, in the main, the battens used are well below this very liberal allowance. This applies particularly to hay received from other States of the Commonwealth, which is packed with battens which weigh considerably less than those generally used in Queensland. However, cases do occur in which legal requirements are not observed. Bales are sometimes "loaded" with one or more battens of excessive weight, some weighing as much as 11 lb. each.

The accompanying photograph of battens selected from hay offered for sale tells its own story.

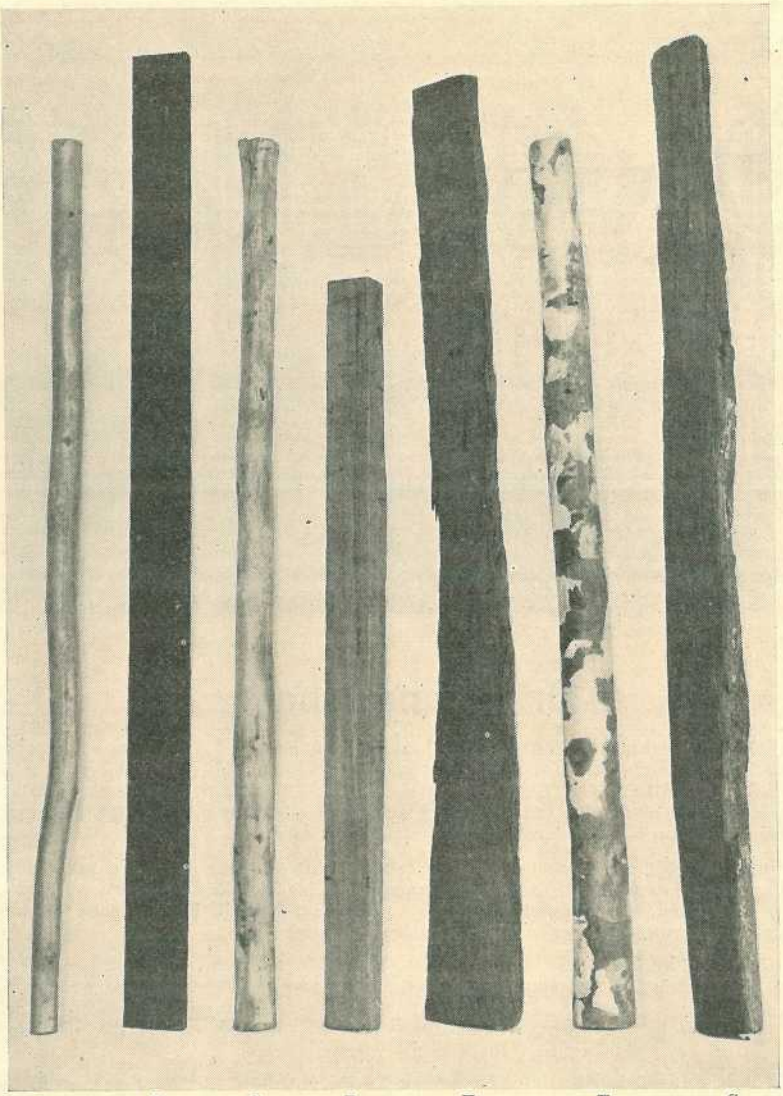
The concern with which a purchaser of hay would view his delivery when battened with heavy timber of the sizes illustrated (battens D to G) may well be imagined. This concern is obviously detrimental to the selling value of a consignment, even if the total weight of the battens is within the limit imposed. The weight of wood actually used on a bale should be the absolute minimum necessary to stand the strain imposed.

Overweight battens is a serious matter for the purchaser, especially of a large consignment. Hay so unduly "loaded" is a distinct breach of sound marketing principles, the effect of which recoils justly on the head of any producer or consignor who so offends, whether through carelessness or otherwise. In preparing any commodity for market, a little extra care and attention to its "get up" invariably pays. A good reputation among purchasers is obviously an asset to any seller.

In order not to exceed the maximum allowed, and to provide for a uniform pack, the total number of battens per bale should not exceed eight. No batten should be longer than the bale, and should be not more than 3 inches wide by not more than half an inch thick.

When the battens on any bale of hay are suspected of being in excess of the prescribed maximium dimensions, the hay is liable to seizure, in which case a period of thirty days is allowed for the overweight battens to be replaced. In the event of seizure the seller would be called on to bear the expense incurred, including any storage charges that may be involved. In the event of non-compliance with the Act within the thirty days, the hay would be subject to forfeiture.

The provisions of *The Stock Food Acts* provide a penalty of £20 for the first offence, £50 for the second offence, and £100 for subsequent offences.

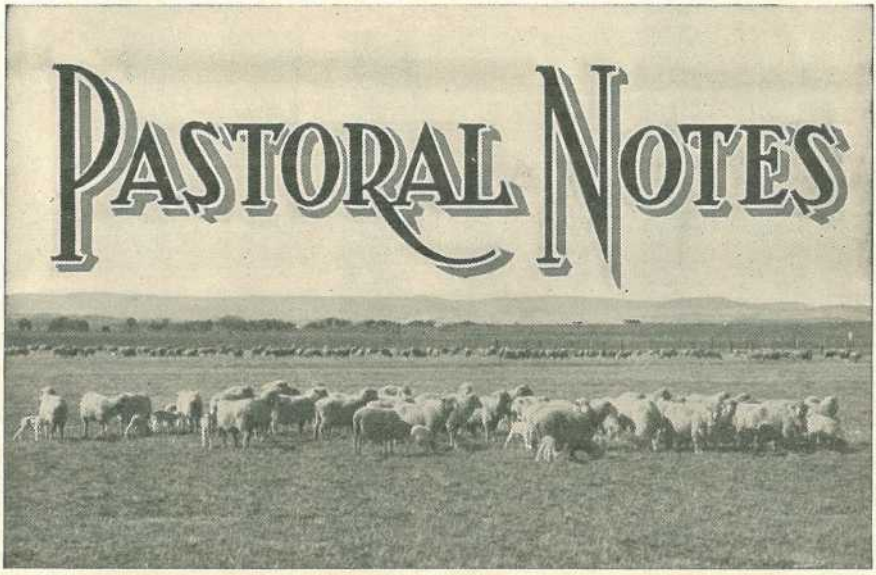


A B C D E F G

Plate 137.

Hay Bale Batten Specimens, Selected from a Market Consignment.

——	Weight.	Size.	Length.	Remarks.
	Lb. Oz.	Inches.	Ft. In.	
Batten A	1 15¾	1½ (diameter)	3 7¾	Round green sapling
B	2 14	3 x ½	4 0	Sawn hardwood batten
C	3 4	1⅞	3 7¾	Round green sapling
D	5 9	2⅞ x 1½	3 0	Sawn hardwood
E	6 8½	5¼ x 1¾	3 10¼	Split hardwood post
F	7 4¾	2¾ (diameter)	3 7½	Round green tree
G	11 1¼	3½ x 2¾	4 0	Split hardwood post



Drenching Sheep.

BEFORE drenching, an effort should always be made to ascertain which species of worm is the cause of the trouble, and this can readily be done by a post-mortem examination of a badly infested animal. The fourth stomach, small and large intestines, should be cut open and examined carefully, and if the animals are coughing, attention also should be given to the lungs.

For the worm that occurs in the fourth stomach—the barber's pole worm—bluestone is recommended. Carbon tetrachloride is also very effective against this worm, but there is some risk attached to its use, and it is therefore no longer recommended by the Department of Agriculture and Stock.

Bluestone and nicotine sulphate are used for the removal of the small hair worms which inhabit the small intestine. Hair worms are the cause of a disease known as "black scours." Infestation is most severe among young sheep, in which the losses may be very heavy. Bluestone and nicotine sulphate is the only drench which is of any value against these small worms.

Where a mixed infestation of stomach worms and hair worms occurs—a frequent experience, especially in young sheep—the bluestone-nicotine sulphate drench should be given, as this drench is effective against the stomach worm also. Moreover, it may be used for the removal of tapeworms from lambs, although these worms may also be removed by arsenic and epsom salts.

For the nodule worms in the large intestine, there is as yet no efficient method of removing them by means of drenches which are given through the mouth. They may, however, be combated by the use of an enema containing sodium arsenite, which, if administered carefully, has a very high degree of efficiency.

Lung worms are treated with certain drugs which are injected into the wind-pipe, the formula being—

Oil of turpentine—1 cubic centimetre.
Creosote—0·5 cubic centimetre.
Olive oil—2 cubic centimetres.
Chloroform—0·5 cubic centimetre.

This formula represents a dose for one adult sheep. For lambs, the dose is reduced by one-half.

In country subject to worms, the sheep should be given treatment at regular three to four-weekly intervals during the summer months, for otherwise little or no benefit from the treatment may be evident. Treatment is to be regarded only as a temporary measure in the fight against worms, for it must be realised that when paddocks are heavily infested with worm larvæ the animal is no sooner freed of worms by treatment than it is attacked again by larvæ which are picked up by the animal when grazing. In about three to four weeks' time the larvæ have grown and have reached such a size and attained such numbers that the health of the animal is again affected.

Further information on mixing and administering of these drenches may be obtained from the Animal Health Station, Yeerongpilly.

DISINFECTION.

The object of disinfection is to destroy organisms and ultra-visible viruses which cause disease. It is a job which should certainly be done after the occurrence of one or more cases of contagious disease, such as tuberculosis, contagious abortion, swine fever, and influenza.

Periodical disinfection of stables, milking sheds, piggeries, and poultry runs is highly commendable as a measure of disease prevention.

The extent and thoroughness of the work would depend on the nature of the disease which had occurred, and would not need to be so extensive or intensive when merely carried out as a routine measure.

A common error in disinfecting premises is to first remove accumulations of excreta, discharges, dirt, and dust; otherwise, the casual organisms and viruses contained in the accumulations are disseminated throughout the building, and may lodge in places which cannot be easily covered by the disinfecting solution afterwards.

The proper way is first to apply liberally to all parts of the premises a suitable disinfectant in solution, and to leave it in contact for twenty-four hours.

After the disinfectant has been allowed to act for that period, the walls and floor should be scraped (or scrubbed), and the scrapings soaked with kerosene and burnt.

Suitable solutions are phenol or other coal tar preparation (1 pint to 4 gallons water), chloride of lime (1 lb. to each gallon of water), or crude carbolic acid (1½ pints to 4 gallons water), to be sprayed on all surfaces.

If shearing sheds and yards are disinfected before shearing commences, losses of stock through infection of wounds may be avoided.

LAMB-MARKING.

Lamb-marking should be done under the most hygienic conditions possible. The work consists of castration and the insertion of the registered earmark on the off ear of ram lambs, and of marking similarly the near ear of ewe lambs. In addition, an age mark is frequently placed on the ear opposite the registered mark. Tails are removed from all lambs.

The ewes and lambs should be mustered and yarded the night before marking, thus avoiding operating when the lambs are in a heated condition, which leads to excessive bleeding.

All instruments should be cleaned and disinfected thoroughly. Ear-marking pliers should be frequently dipped in a prepared disinfectant in the course of operations.

There are two recognised methods of castration—viz., slitting and tipping.

Slitting has its advantages in that it leaves the wether with a more pronounced cod. However, when flies are bad there is a greater tendency for the lamb to become flyblown. In tipping, the tip of the purse is entirely removed. Tipping is the better method of the two in the opinion of many sheepmen, as it leaves a cleaner wound with better drainage. The wound so made also heals more satisfactorily. Moreover, tipping is faster—a fact which counts when thousands of lambs have to be marked.

The best age at which to mark is from a fortnight to three weeks. A proved fly remedy, both curative and antiseptic, should be applied to all wounds. The use of old yards should be avoided if practicable.

YELLOWWOOD.

A NATIVE PLANT POISONOUS TO STOCK.

Yellowwood (*Terminalia oblongata*) is a small tree common in the Central districts of Queensland, particularly about Emerald, the leaves of which have been proved to be poisonous to sheep. The tree should not be confused with the large timber tree found in South-Eastern Queensland and known by the same name.

The leaves are mostly an inch to one and a-half inches long, and the flowers small and insignificant. The fruit is about an inch long.

Sheep are prone to eat the leaves when these are shed by the tree, as happens in dry weather and, therefore, at a time when other feed is likely to be scarce.

Symptoms Produced.—The leaves are not unpalatable to sheep. Symptoms consist of nervous disorders manifested by "fits." These, however, do not appear until after the sheep have been eating the leaves over a period of several days or even weeks. If the sheep are disturbed, these "fits" may be aggravated. The animal is seen to drop down in its tracks as though stunned, and lies trembling and rigid, or the head may be raised and swayed from side to side. The attack may last from a few seconds up to nearly a minute. When on its feet again it sways unsteadily for a few moments, then moves off to join the flock.

The presence of strangers, or loud noises near the animals, seems to induce the "fits."

So far as is known, cattle are not affected, although a peculiar wasting disease of animals in the yellowwood areas is possibly associated with the eating of the leaves. This is a subject for further investigation.

Post-mortem.—On post-mortem, the plant is found to have been rolled into hard masses or lumps which tend to block the intestine and set up digestive disturbances, such as impaction. These results have been confirmed in experimental tests. Sheep are usually found dead on the edges of water-holes or where they have fallen over the branches of fallen trees, and where they have found difficulty in again rising to their feet.

General.—As with many other poisonous plants, the chemical nature of the poison present in the leaves and responsible for the "fits" is not known. Nothing can, therefore, be recommended for administration to the animal to combat the effects of the poisonous agent. Sheep which have been on the plant for some time suffer a considerable loss of condition and there is also a corresponding loss in wool production.

THE EWE FLOCK.

No operation on the property, as a part of general management, is of more importance than the systematic culling of the ewe flock.

All work on a grazing place has for its object, as a matter of course, the making of money. Judged from this point alone, culling definitely pays. It costs no more to feed a profitable sheep than a waster.

From another point of view, the opinion is ventured that 2,000 well-bred and well-fed sheep give a greater return than 3,000 indifferently-bred and half-fed animals. Then, again, the additional space one is able to give the smaller number must come into consideration.

Culling should be done when the fleece has about twelve months' growth, and should apply not only to the ewe flock, but also to the young sheep, especially those which it is intended to keep as future breeders. It is necessary to have fixed a definite type in the mind, and consideration should be given to a type suitable to the particular district in which the property is situated, and stick closely to that type.

Any sheep not measuring up to the standard should be rigorously rejected, and this does not apply only to the covering of the animal. Apart from the fleece, some of the common deficiencies which should be taken into account are: Want of size and conformation, body wrinkles denoting the "fly trap" sort of sheep, a leaning towards delicacy of constitution, bad feet and heads, besides many other deficiencies recognised readily by a good classer during the practical operation.

Regular culling leads to the establishment of a good flock, but the full benefit of the practice is not achieved unless better rams are provided for in the policy adopted.

CARE OF SICK ANIMALS.

Stockowners are frequently required to diagnose and treat sick animals and, from their constant observation of stock in good health, are quick to notice any abnormal behaviour due to sickness. A knowledge of the normal temperatures, pulse, and respiration rates of various animals is most valuable in arriving at a correct diagnosis of the trouble. The temperature of all young animals is somewhat higher than that of older animals, and various influences—such as periods of oestrum (heat), time of day, external temperature, and so on—may alter the temperature of the mature animal. The temperatures of healthy farm animals are—horse, 99·5-101 degrees; cow, 100-101 degrees; sheep, 103 degrees; pig, 102·5 degrees.

The temperature of an animal is usually measured in the rectum, and a self-registering thermometer such as is commonly used in ordinary medical or nursing practice may be used. Care should be taken to see that the column of mercury is shaken down. A small quantity of vaseline smeared on the bulb as a lubricant to assist the passage of the instrument is desirable, and it is inserted with a circular motion between the fingers, forward in a line with the backbone, and allowed to remain for a few minutes before it is withdrawn carefully and the reading taken. If the temperature of an animal is found to be about 2·5 degrees above normal it is said to have a low fever; if it reaches the vicinity of 4 degrees above normal a moderate fever is indicated; and if in the neighbourhood of 6 degrees above normal it has a high fever.

In some diseases, such as tetanus and sunstroke, the temperature may be as much as 10 degrees above normal. Having decided by use of the thermometer whether the sickness is of a febrile (pertaining to fever) or non-febrile nature, treatment and nursing must be considered.

Good nursing is of the utmost importance. The patient should be provided with a soft bed, shade from sun, wind, or rain, and a rug in cold weather. A supply of water and green feed also should be provided if possible.

Medicines are usually administered by the mouth in the form of a drench, and it is necessary to use care and patience when using this method. The head of the animal should not be raised above a horizontal position, and only small quantities of the drench poured into the mouth at a time, allowing time for swallowing. Pinching the throat to induce swallowing should not be practised, and the head should be lowered if the patient commences to cough.

BRUISING OF CATTLE.

The meat export industry is seriously prejudiced by the bruising of cattle when travelling to the meatworks, and the annual loss to both the owner and the State is considerable. Bruising is caused by many factors, particularly so when journeys are long, but the two chief causes are ill-treatment and horning, because of faulty supervision during trucking and in transit.

Cattle travelled to market on the hoof always give a higher percentage of first-class beef than railed stock, provided, of course, they have the condition and weights essential for export. Much of the bruising attributed to train travelling is caused in the trucking yards. In many instances, every endeavour is made to load the trains in a minimum of time. This is a mistake. Care should be taken to avoid crowding in gateways, because, where jamming occurs, the outer beasts are bruised on ribs and hips. Precautions are necessary both at the crush entrance and in the crush. If cattle are trucked in "single file," their sides do not come in contact with the rails. Drovers in charge should insist that no unnecessary force is used to drive the cattle, for every injury affects the quality of the carcase.

Competition in the chilled and frozen meat trade to-day is keen, each competing country endeavouring to produce a better carcase; therefore, if Australia is to retain or increase her output of first-grade beef, the cattle received at the meatworks must be of prime quality and free from injuries of any kind. Growers and dealers may assist the trade by judicious handling of stock. Dehorning is essential. This is a simple operation and should be done when branding. Records proved conclusively that polled cattle give a much higher percentage of first-quality beef than horned cattle.

Dehorned cattle are also much more docile in the paddocks, cover less country when feeding, and retain condition longer.

Keeping Cheese Milk Cool.

THE problem of holding milk overnight during the warmer weather without an appreciable rise in acidity and multiplication of bacteria is a difficult one. Most cheese factories are, fortunately, situated on the Darling Downs, which, because of altitude, enjoy cooler nights than some other parts of the State.

Mechanical cooling is not always practicable, so the fullest use should be made of other means available for keeping the milk as cool as possible. Milk freshly drawn from the udder is at a temperature of 102 deg. Fahr., the normal body temperature of the cow. Unless the animal heat is reduced as soon as possible, the milk will only slowly adjust itself to atmospheric temperature, and bacterial multiplication will be rapid. Another reason why it is sound practice to reduce the temperature is that freshly drawn milk possesses what is called a germicidal power—the ability to restrain bacterial growth—for some hours. The actual period in which this property is active depends on the temperature of the milk. At 90 deg. Fahr., it is only about three hours; at 70 deg. Fahr., about ten hours, and still longer with lower temperatures.

Where water is plentiful on the farm, and assuming it is laid on to the dairy, the most suitable method of cooling milk under the prevailing conditions, is by passing it over a tubular metal surface-type cooler, through which water is circulating, preferably water direct from a bore. If water is unavailable in sufficient quantity, aeration of the milk over a plate-type aerator will bring the temperature down to that of the atmosphere. The beneficial effects of cooling and aeration are beyond dispute, but they may be completely nullified if the cooler or aerator itself is not kept scrupulously clean and well scalded or sterilised, for the original bacterial contamination of milk may be greatly augmented if either is neglected.

Aeration or cooling of the milk is also necessary if cottonwood filter discs are used for straining.

After the milk has been cooled, it is necessary to hold it under the best conditions practicable to prevent any rise in temperature. Milk kept in a closed dairy retains its heat, or even tends to become warmer, in a close atmosphere, with a consequent increase in bacterial activity. Milk kept overnight in a moving current of air has the heat withdrawn from it more rapidly, but suitable protection against marauding animals and the early morning sun should be provided. The milk stand now required by the Dairy Regulations in which to hold the night's milk is very suitable for the purpose, for the cool air fanning the cans overnight keeps the milk much cooler than in an enclosed room. Distributing the milk in as many cans as practicable, say, half filling each can, assists still further in achieving the desired end, while some farmers even place wet bags around the cans on very hot nights to ensure more effective cooling. Finally, the milk cans should always be covered in transit to the factory as a protection from the sun.

CREAM BLENDING.

An examination of cream on the receiving platform of almost any factory will indicate the necessity for careful treatment and storage on the farm. Proper blending of the cream after separation is essential.

The process of cream ripening assists the production of delicate butter flavours.

The development of lactic acid in the cream is desirable, because the lactic acid bacteria if present in large numbers prevent the undesirable off flavours and taints from developing.

Small quantities of cream are more difficult to hold in a satisfactory condition than larger quantities, and consequently, the dairy farmer should keep his supply in as large a bulk as possible.

Objections to blending have been raised by some dairy farmers, who claim that if the cream from each milking is kept separate, only portion of the supply will be graded second-grade when sent to the factory. To this objection, however, it might be stated that the aim of dairy farmers to-day is, or should be, to have all and not merely part of their cream of the highest "choice" quality.

To blend correctly, the cream from each separation is first cooled for about an hour before adding to the bulk supply, which should always be kept as cool as possible.

If the use of the cooler and aerator has been effective, the cream should then be ready for blending. The farmer must satisfy himself, however, in all cases that the cream is sufficiently cooled before attempting to add it to the bulk.

Thorough and frequent stirring with a metal stirrer is necessary for correct blending.

If two or more cans are to be sent to the factory, approximately equal portions of the cool cream from each separation should be placed in each can. This will ensure that a standard cream is supplied.

CREAM STIRRING.

Some dairy farmers show by the cream which they send to a factory that they lack knowledge in regard to the care of cream on the farm. Clean methods in production may be nullified by the spoiling of good cream in the dairy.

As butterfat is the lightest constituent of cream, it rises gradually to the top as soon as the cream enters the can. Therefore, in unstirred cream the lower layers, rich in separated milk—which contains a high proportion of casein, and consequently a low proportion of butterfat—are at the bottom. Changes in the separated milk due to bacteria are often such that when the cream reaches the factory it is graded down as sour and curdy.

A dry film on the top of the cream or layers of different colours and texture through the can tells the grader at once that the cream has not been stirred, and he is immediately impressed by the defects in it.

To keep a uniform consistency of cream and to ensure the best possible ripening conditions, the cream should be cool before it is added to any existing supply. Regular stirring is then necessary to liberate accumulated gases and aerate the mass, which ensure uniform consistency. Aeration not only reduces the temperature of the cream, but also retards the growth of undesirable bacteria.

Stirring pays because no dairy farmer can afford to lose the difference in price between choice and lower-grade creams on each consignment that he sends to the factory.

TO CHECK A BAD HABIT IN CALVES.

Skim milk-fed calves are often seen sucking each other after the buckets have been emptied. This bad habit should be stopped. Septic conditions, malformed teats, distorted udders, and early lactation in heifers may be traced to the habit of calf sucking calf. Either keep the calves away from one another by leg-roping until the taste of milk has dissipated, or feed them with meal—e.g., crushed or ground grain, pollard, bran, &c.—immediately after they have finished the milk.

INFERIOR CREAM.

One of the most common sources of the contamination of cream, and one that is often overlooked, is the badly washed cream can.

More cream is spoilt by being stored or carried in a badly washed can than by most other ways. This applies to cans in good order as well as those that are dinted and rusty.

The reason is not far to seek. Hundreds of cans pass through the same rinsing water of the mechanical can-washer at the butter factory daily, and although a final steaming is carried out in the last stage of the washing process, it is not of sufficient duration (nor is it practicable) to sterilise thoroughly all of the cans thus treated.

It should be obvious that cans which have contained second-grade cream will require extra attention, in order to prevent the transmission of taints due to bacterial activity—such as cheesiness and rancidity—to the fresh supplies of cream.

A tallowy smell which is often found in returned cans may be due to inefficient washing, followed by exposure to the heat of the sun, causing deterioration of the fat.

Is is, therefore, advisable, in order to safeguard the quality of cream, to rinse all cans on their return from the butter factory with boiling hot water to which a little washing soda has been added. The cans should then be rinsed with clean boiling water to remove all traces of the soda.

The storage of the cleansed cans is important. They should be placed upside down on a suitable rack to allow for cooling and drying. On on account should anything but boiling water be used for the final rinsing, nor should any attempt be made to dry the cans with a cloth. The storage rack should be placed in such a position as to be well removed from any possibility of contamination from the stockyard.

DRY MILKING IS CLEAN MILKING.

Milking with hands which are moistened with milk at the beginning of and during milking is known as wet milking. Dry milking—which is used always by the cleanest and most efficient milkers—means commencing with clean dry hands, which are kept as dry as possible during milking.

The method of milking with unwashed udder and teats and moistening the unwashed hands with milk is an objectionable and dirty habit and seriously contaminates the milk, as well as chapping the teats. To anyone who doubts this no further evidence is necessary than a glance at the accumulation between the fingers of the person who practices wet milking. In some countries where milkers' competitions are held at agricultural shows and elsewhere, deliberate wet milking disqualifies a competitor.

It should be remembered by the dairy farmer producing milk for city or town requirements that wet milking causes loss of keeping quality, a serious disadvantage in a warm climate.

It is often claimed that dry milking is difficult for anyone unaccustomed to it and, in attempting a more hygienic method, vaseline is used as a lubricant to make stripping easier and to help keep the teats soft and flexible. This is certainly to be preferred to careless wet milking, but if the teats are washed before starting to milk and the milker also washes and dries his hands frequently during milking—as required by the Dairy Regulations—both are generally sufficiently pliable and the use of vaseline should be unnecessary.

Injured or chapped teats should be protected during milking by placing round them a piece of cotton wool and afterwards applying a suitable ointment. The ointment hastens healing and softens the teats for the succeeding milking.

TREATMENT OF CREAM.

Dairy farmers are again advised to give close attention to the cooling, aerating, and stirring of cream. The flush growth of grass in the wet season often causes a grassiness in cream, as well as a "feedy" flavour. Aeration and cooling will do much to offset the development of these defects.

MILK CONTAMINATION.

Numerous researches have established that the two chief sources of bacterial contamination during milk production are the degree of sterility of the utensils used and the personal influence of the milker, but significant contamination occurs from several other sources and may even, on occasion, outweigh that due to the first-mentioned factors. It has to be remembered, too, that the effect of the various factors is cumulative; so it is essential to exercise the utmost care in all operations if the contamination is to be kept down to a minimum.

Two objects, the contaminatory influence of which may appear to be of only minor importance, but which cause infection and which are often overlooked on many farms, are milkers' stools and leg ropes. Since, by merely touching one—either stool or leg rope—bacteria may be transferred from one to the other, it will be apparent that by handling dirty stools and leg ropes before sitting down to milk and then milking without first having washed the hands—a common practice—bacteria may be transferred to the teats and from them into the milk in the bucket, as it is almost impossible to prevent the hands becoming moistened with milk during milking. Both those objects deserve the same consideration as all other causes of infection in clean milk production. It is a common procedure on the best farms in European countries to have metal stools for the milkers and chain fastenings for the cows, or, if wooden stools are preferred, to clean them daily.

DAIRY FARM ESSENTIALS.

There are two necessary adjuncts to a dairy farm, which are often looked for in vain—a crush and an isolation paddock.

A crush is necessary for the handling of bulls and young stock, but few dairy farms are equipped with one.

An islation paddock is very necessary, but is rarely provided.

How many diseases could be checked if a farmer had a good isolation paddock in which he could place and watch a suspected animal, without any danger of the animal coming into contact with the rest of his herd?

CREAM IN SUMMER.

Frequent and early delivery of cream to butter factories in summer is an important point in dairy practice. Daily delivery is not always possible in some districts, but nothing less than a four times a week delivery should be the rule from October to March, inclusive.

The holding up of supplies and delaying the cream carrier for the purpose of making certain that the morning's cream goes with the cream obtained previously should be avoided. The mixing of newly produced warm cream with older and cooler cream is not infrequently the cause of cream being graded down on delivery at the factory platform.

Dairy farmers would be well advised to have their cream ready for the cream carrier on each morning of delivery. Should the morning's cream not be cooled down and ready on time, that particular cream should be held back for the next delivery; and, if this is done, better factory results will be obtained.

It has been reported that some dairy farmers make a practice of holding up the cream carrier for the purpose abovementioned, and even were this not detrimental to their own cream it is somewhat sefish and unfair to neighbouring farmers who desire their cream to arrive at the factory as early as possible.

As summer has come, the attention of all dairymen is directed to the necessity of supplying cream with a butterfat content of not less than 38 per cent.

A sound summer slogan for all cream suppliers is: "Frequent and early delivery and test around forty."

Creep Feeding Sucking Pigs.

A FARMER'S aim in rearing pigs is to market them as soon as he can. One way of achieving rapid growth in pigs, and, at the same time, keep breeding sows in good condition is creep feeding of suckers. A litter which has been creep-fed from three weeks of age will usually average 40 lb. per pig or heavier when weaned at eight weeks. Creep feeding means heavier weaners and, therefore, should be practised in every piggery.

Not only do suckers benefit from creep feeding, but sows also benefit indirectly. By obtaining a substantial proportion of their food requirements from the creep, the suckers' demand on the sow's milk supply will be less, besides having a self-weaning effect. The sow is thus given an opportunity to maintain her condition, and she may be mated again after her litter is weaned without any need for a rest and heavy feeding to recover condition.

Suckers which are supplied with an adequate balanced ration, and have access to supplies of the required vitamins and minerals build up a constitution capable of resisting disease more than pigs not fed in this way. Creep feeding thus ensures vigorous growth and health of young pigs.

Creep feeding is simple and does not require elaborate equipment. A hurdle or partition with openings sufficiently large to permit suckers to pass, but which exclude sows, is placed across a corner of the pen. In the hurdled-off space, shallow troughs are placed for food and water. The suckers soon learn to pass through the openings and will take small quantities of food frequently during the day, thus avoiding gorging, with the attendant risk of digestive disorders.

Separated milk, meat meal, pollard and maize, wheat or sorghum, either as whole grain or crushed, are useful for creep feeding. Barley also is very good, but should be crushed before feeding. Where milk is available it may be mixed with a grain meal to form a thin swill, or fed separately. Meat meal may be placed alone in a trough, and the pigs allowed to eat what they require. Young pigs will chew whole grains, except barley. When crushing grains, especially wheat, they should not be made into a fine meal.

No matter what foods are used in the creep, strict cleanliness should be practised. Sour milk should not be left in the troughs and fresh milk poured on top of it. Place in the troughs just enough that will be cleaned up readily each day, and, when necessary, remove any soiled food. Clean water for drinking should be available at all times, especially when meals are being fed.

Pigs make their most rapid and economical gains in proportion to their weight when between three and ten weeks old. Therefore, any assistance at this stage—such as creep feeding, which will assist rapid growth—is worth while. Pigs which have been creep-fed do not suffer a set-back at weaning time, and for these reasons alone, creep feeding is recommended for every piggery where the farmer breeds his own pigs.

PIG FEEDING.

It usually pays the farmer to purchase some concentrated foods to feed in conjunction with home-grown foods, which are relatively inexpensive, but insufficient to feed all his pigs properly. It rarely pays to keep pigs in store condition.

Given good weather conditions during the winter, the milk supply may not fall to any great extent, as forage crops would be available for dairy cattle. Forage crops could also be grown for pigs. Good green forage may be used to replace one-third of the growing pigs' ration and two-thirds of the dry sow's ration; hence, when weather conditions are favourable, an effort should be made to provide a succession of forage crops for pigs, and thus save an appreciable amount of grain, meal, and milk.

Crops suitable for autumn and winter planting include rape, field peas, and oats. Rape is a very quick-growing crop under favourable conditions, and is usually ready for grazing eight to ten weeks after planting. If the pigs are removed from the crop when most of the leaves have been eaten, the crop should make fresh growth, and in this way three or more grazings may be obtained. Field peas are best grazed by pigs when the seed pods are well formed, while the plant is still green; oats should be grazed off by pigs when about 10 in. high.

Wherever practicable, grazing is more satisfactory than cutting the crop and feeding it to pigs in their pens. If the regular pig paddocks can be cultivated, cropped, and fed off, the soil fertility will benefit, much labour and food will be saved, and the sanitation of the piggery will be improved.

ISOLATION PEN FOR SICK PIGS.

The distance between isolation pens for sick pigs and the pig yards or dairy structures is not so important as the relationship of these structures from another point of view. Thus, while advising a minimum distance of, say, 150 feet, it should be emphasised that such isolation pen should be so placed that—

(*a*) No drainage from it can spread to the main sties or any of the dairy buildings; and

(*b*) That if healthy pigs are allowed to wander, the isolation pen should be so guarded that they cannot make contact with it.

Ordinarily, therefore, the isolation pen should be on lower ground, and, if in the paddock in which pigs wander, should be protected by fencing in such a way that healthy pigs cannot come in contact with it.

BUYING A BOAR.

The boar should come from a large, thrifty litter, and be obtained from a reliable breeder. He should be a little more on the compact side than the sow, not too chunky or short, but showing full development at every point, and of a strictly masculine type representing the full type of his breed. He must show quality, smoothness and evenness in every part, have a typical masculine head, with eyes and ears wide apart, the jowl reasonably full and well laid on to the shoulders, which should be smooth and free from wrinkles. He should have a full heart-girth extending well down to the bottom lines, nearly or quite on a level, with as deep a flank as possible. He should possess rather short or medium length legs, with bone of fair size and quality, pasterns short and straight, and the hoofs well set, legs standing square, straight, and well under him. A long, wide and deep ham, and tail well set up are also desirable characteristics.

When selecting a boar the best available should be bought, for during his life he may be the sire of hundreds of pigs, while the sow can only produce a limited number. If the boar is good he will improve the standard of the herd. His selection, therefore, is of very great importance.

BACON PIG WEIGHTS.

The loss of weight in transit of a pig from farm to factory and through the process of slaughter, dressing, and cooling varies with pigs at different weights. Generally lighter weight, unfinished pigs shrink more than heavier weight, prime conditioned stock.

Factors which affect the amount of loss are the size and weight of the pig, the way in which the pig has been fed and "finished," the weather, distance from farm to factory, conformation and condition of the pig, and the amount of food eaten before the pig is weighed alive. There also are variations in animal individuality; for instance, some pigs are of a nervous, excitable disposition, and fret, while others are more contented and are unaffected by the journey.

In extensive tests it has been shown that under conditions similar to those ordinarily ruling in Queensland, pigs weighing 150 lb. to 200 lb. alive on the farm lose about 10 per cent. of this weight in actual transit to the factory, and then another 20 per cent. in dressing and cooling off. Lighter pigs, weighing 100 lb. to 140 lb. alive on farm usually lose approximately 33 per cent. by the time they are dressed and cooled off. While these figures are possibly a fair average, individual pigs vary considerably.

On the sale of about 1,000 bacon pigs from experiments conducted conjointly by the Departments of Agriculture and Stock and Public Instruction in Queensland, results were as follows:—

All pigs were weighed after a twelve-hour fast at the sty. They also were weighed at the factory before slaughter not more than twenty-four hours afterwards and were weighed again in the usual way at the factory after slaughter. The average loss from live weight on the farm to actual cold dressed weight at a factory was 30.5 per cent., varying from 25 per cent. to 34 per cent., with heavier losses on lighter weight stock marketed slightly unfinished for purpose of comparison.

These deductions may be accepted as a guide to the general average of factory deductions in Queensland.

THE FARROWING SOW.

While "in pig" the sow should be given as much freedom as possible, for activity promotes health and good digestion, to the advantage of the sow and her prospective litter.

Her food should not be stinted, but she should be kept in moderate condition. Sows which are too fat at farrowing will probably have trouble in delivery, and may also suffer from many other troubles, of which milk fever is only one. On the other hand, if the sow is kept too short of food she cannot nourish the young pigs properly while carrying them, nor can she suckle them properly when born.

At the time of farrowing a close watch should be kept by the usual attendant —strangers upset the sow—who should not interfere unless there is evidence of trouble in parturition or the sow attempts to bite her young. This sometimes happens when some of the pigs remain to be born and one of those already dropped tries to get to the teats; especially if it squeals, the sow—usually a young one— will seize the piglet in her mouth and quickly squeeze the life out of it. Should she break the skin and taste blood, she may turn on the rest of the litter and eat them. The attendant can prevent this by taking each piglet as it is dropped and putting it aside in a straw-lined box until all are born, when they may be put on to the teats and all will be well.

For the first two weeks after farrowing the sow does not require more food than she received during the last two weeks of pregnancy, but after this the supply should be gradually increased as she requires it.

There is nothing commoner than deficiency diseases in young pigs caused by the absence of the requisite amount of mineral matter in the food. Mineral matter is contained in fish meal, while cod liver oil, with its essential vitamins, stands pre-eminent as a constituent in the food of young pigs. One teaspoonful of cod liver oil twice a day is sufficient for pigs up to ten weeks old.

Draughts, dampness, and uncleanliness, as well as unsuitable food for the mother, will cause scouring, which may lead to death.

Given reasonable care and attention, no trouble should arise, and this little extra care means the difference between a strong, healthy litter and a few stunted, unthrifty runts.

THE BRANDING OF PIGS.

Most pig raisers are now conscious of the necessity for branding pigs offered for sale. Where practicable, the body tattoo method of branding is now in fairly general use. However, there are cases where it is desired to identify live pigs on arrival at bacon factories or saleyards, and for this purpose body tattooing is not suitable; in the absence of a more satisfactory method of branding, the firebrand is used.

The firebranding system is open to abuse in the hands of a careless man, and pigs which have been injured through faulty branding are sometimes noticed at bacon factories and saleyards. Their carcases are so blemished as to lower their value to the trade. The most common mistakes in firebranding are the use of too large a brand, and its application for too long a period—thus causing a deep burn in the skin of the pig which becomes an ugly sore.

Pigs with blemishes caused through faulty branding are not required by the trade. It is frequently observed that exporting buyers at the Cannon Hill saleyards refuse to bid for badly branded pigs. This, of course, reduces competition, and the blemished pigs are sold at a comparatively low price.

Where pigs must be firebranded, a small brand should be used; the pigs should be clean and dry, and the brand used very hot and applied lightly and quickly on the shoulder or neck.

SALT FOR PIGS.

Salt is harmful to pigs only when fed in excess. In tests to determine whether salt has any toxic effect increasing amounts up to 2.5 oz. of salt a day were fed to pigs, without any harmful result, and the animals gained normally in weight. This result was obtained under conditions in which the pigs had free access to water, for if pigs are fed increasing amounts of salt without water the result will be disastrous.

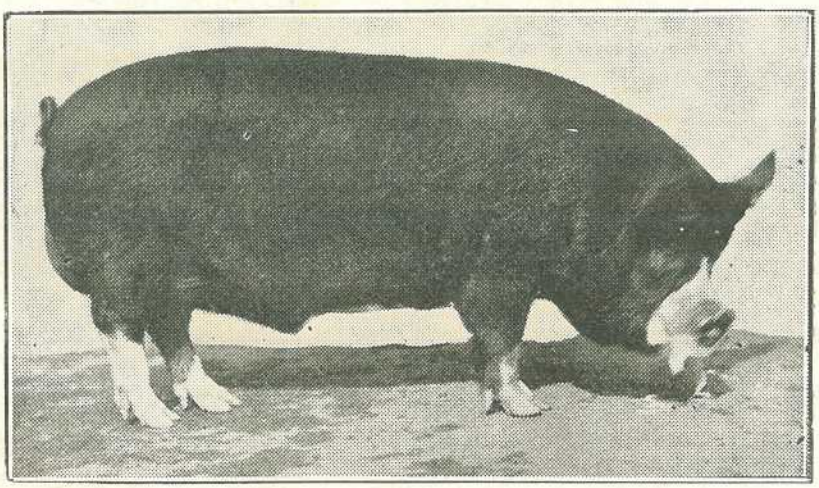


Plate 138.

The Modern Berkshire Pig.—A well proportioned animal with lengthy body, light forequarters, and well-developed hams. Colour markings are important, while fine skin and hair give evidence of breeding and constitutional development. This animal was a prominent prize-winner at Southern Shows.

Name and Address.	Name of Hatchery.	Breeds Kept.
G. Adler, Tinana	Nevertire ..	White Leghorns, Australorps, Rhode Island Reds, and Langshans
F. J. Akers, Eight Mile Plains ..	Elmsdale ..	Australorps
E. J. Blake, Rosewood	Sunnyville ..	White Leghorns, Australorps, White Wyandottes, and Rhode Island Reds
W. Brown, Waterworks road, Ashgrove	Strathleven ..	White Leghorns
A. F. Buchler, Milman	Pincrow ..	White Leghorns
J. Cameron, Oxley Central ..	Cameron's ..	White Leghorns and Australorps
M. H. Campbell, Albany Creek, Aspley	Mahaca ..	White Leghorns and Australorps
J. E. Caspaney, Kalamia Estate, Ayr	Evlington ..	White Leghorns
J. L. Carrick and Son, Manly road, Tingalpa	Craigard ..	White Leghorns and Australorps
N. Cooper, Zillmere road, Zillmere	Graceville ..	White Leghorns
R. B. Corbett, Woombye ..	Labrena ..	White Leghorns and Australorps
T. G. Crawford, Stratford, via Cairns	Rho-Isled ..	Rhode Island Reds
B. Cross, Apple Tree Creek, Childers	Spring Hill ..	White Leghorns, Australorps, and Langshans
Dr. W. Crosse, Musgrave road, Sunnybank	Brundholme ..	Australorps, White Leghorns, and Rhode Island Reds
O. M. Dart, Upper Brookfield ..	Woodville ..	Australorps, White Leghorns, Langshans, and Rhode Island Reds
Dixon Bros., Wondecla ..	Dixon Bros. ..	White Leghorns
W. Easson, Formosa road, Tingalpa	Grassdale ..	White Leghorns and Anconas
E. O. F. Eckert, Laidley ..	Laidley ..	Australorps, White Leghorns, and Langshans
F. G. Ellis, Old Stanthorpe road, Warwick	Sunny Corner ..	Australorps
Elks and Sudlow, Beerwah ..	Woodlands ..	White Leghorns and Australorps
B. E. W. Frederich, Oxley road, Corinda	Glen Albyn ..	Australorps
W. H. Gibson, Manly road, Tingalpa	Gibson's ..	Australorps and White Leghorns
Gisler Bros., Wynnum ..	Gisler Bros. ..	White Leghorns

Name and Address.	Name of Hatchery.	Breeds Kept.
G. Grice, Loch Lomond, via Warwick	Kiama ..	White Leghorns
J. W. Grice, Loch Lomond, via Warwick	Quarrington ..	White Leghorns
Mrs. M. Grillmeier, Mount View, Milman	Mountain View	Australorps, Minorcas, and Rhode Island Reds
C. and C. E. Gustafson, Tannymorel	Bellevue ..	Australorps, White Leghorns, and Rhode Island Reds
P. Haseman, Stanley terrace, Taringa	Black and White	Australorps and White Leghorns
C. Hodges, Kuraby	Kuraby ..	White Leghorns and Anconas
H. Hufschmid, Ellison road, Geebung	Meadowbank ..	White Leghorns, Brown Leghorns, Minorcas, Australorps, and Rhode Island Reds
S. W. Kay, Cemetery road, Mackay	Kay's	White Wyandottes, Light Sussex, Rhode Island Reds, Australorps, White and Brown Leghorns
F. W. R. Longwill, Birkdale ..	Nuventure ..	Australorps and White Leghorns
J. McCulloch, Whites road, Manly	Hindes Stud Poultry Farm	White Leghorns, Brown Leghorns, and Australorps
W. S. MacDonald, Box 208, Babinda	Redbird ..	Rhode Island Reds and Anconas
F. McNamara, Vogel road, Brassall, Ipswich	Frammara ..	White Leghorns and Australorps
A. Malvine, junr., The Gap, Ashgrove	Alva	Australorps and White Leghorns
H. L. Marshall, Kenmore ..	Stonehenge ..	Australorps and White Leghorns
W. J. Martin, Pullenvale ..	Pennington ..	Australorps, White Leghorns, and Langshans
C. Mengel, New Lindum road, Wynnum West	Mengels ..	Australorps
J. A. Miller, Racecourse road, Charters Towers	Hillview ..	White Leghorns
F. S. Morrison, Kenmore ..	Dunglass ..	Australorps, White Leghorns, and Brown Leghorns
Mrs. H. I. Mottram, Ibis avenue, Deagon	Kenwood Electric	White Leghorns
J. W. Moule, Kureen	Kureen ..	Australorps and White Leghorns
D. J. Murphy, Marmor ..	Ferndale ..	White Leghorns, Brown Leghorns, Australorps, Light Sussex, and Silver Campines
S. V. Norup, Beaudesert rd., Cooper's Plains	Norups ..	White Leghorns and Australorps
H. W. and C. E. E. Olsen, Marmor	Squaredeal ..	White Leghorns, Black Leghorns, Australorps, Brown Leghorns, and Anconas
A. C. Pearce, Marlborough ..	Marlborough Stud Poultry Farm	Australorps, Langshans, Rhode Island Reds, Light Sussex, White Wyandottes, Khaki Campbell Ducks, Indian Runner Ducks, and Bronze Turkeys
E. K. Pennefather, Douglas street, Oxley Central ..	Pennefathers ..	White Leghorns and Australorps
G. Pitt, Box 132, Bundaberg ..	Pitt's Poultry Breeding Farm	White Leghorns, Brown Leghorns, Australorps, Langshans, White Wyandottes, Rhode Island Reds
G. R. Rawson, Mains road, Sunnybank	Rawson's ..	Australorps
J. Richards, Atherton	Mount View ..	White Leghorns and Australorps
H. K. Roach, Wyandra ..	Lum Burra ..	Australorps and White Leghorns
W. G. Robertson, Bilson road, Nundah	Ellerslie ..	Australorps, Light Sussex, and Plymouth Rocks
C. L. Schlencker, Handford road, Zillmere	Windyridge ..	White Leghorns
S. E. Searle, New Cleveland road, Tingalpa	Tingalpa ..	White Leghorns and Australorps

Name and Address.	Name of Hatchery.	Breeds Kept.
A. Smith, Beerwah	Endcliffe ..	White Leghorns and Australorps
A. T. Smith, Waterworks road, Ashgrove	Smith's ..	Australorps and White Leghorns
T. Smith, Isis Junction	Fairview ..	White Leghorns and Langshans
H. A. Springall, Progress street, Tingalpa	Springfield ..	White Leghorns
J. Steckelbruck, The Gap, Ashgrove	Cosy Nook ..	White Leghorns and Australorps
A. G. Teitzel, West street, Aitkenvale, Townsville	Crescent ..	White Leghorns
W. J. B. Tonkin, Parkhurst, North Rockhampton	Tonkin's ..	White Leghorns and Australorps
P. and K. Walsh, Cleveland ..	Pinklands ..	White Leghorns
W. A. Watson, Box 365 P.O., Cairns	Hillview ..	White Leghorns
G. A. C. Weaver, Atherton ..	Weaver's ..	Australorps, White Leghorns, Buff Leghorns, Wyandottes, Anconas, Indian Game, Rhode Island Reds, Barred Rocks, Buff and Black Orpingtons
H. M. Witty, Kuraby ..	..	White Leghorns and Australorps
P. A. Wright, Laidley ..	Chillowdeane ..	White Leghorns, Brown Leghorns, and Australorps
R. H. Young, Box 18, Babinda	Reg. Young's ..	White Leghorns, Australorps, and Brown Leghorns

MARKING PULLETS.

The marking of early laying pullets provides a practical method of selection where the trap nest is not used.

Records obtained by trap nesting in various parts of the world show that—

(1) Early laying pullets are, as a rule, the highest producers;

(2) Birds that lay late into the autumn and are late in moulting are also high producers.

As the early layers and late moulters are high producers, a marking system will assist in distinguishing between profitable and unprofitable fowls.

In one convenient system of marking, a coloured leg band is placed on the left shank of all pullets which start to lay before six months of age. A band of another colour is attached to the left shank of pullets starting to lay when six and seven months of age, and a third coloured band is used for fowls which commence to lay in the eighth month. Pullets that do not lay until after the eighth month should be culled from the flock, or kept in a pen by themselves, and forced for egg production.

Pullets which are early layers show the following characteristics:—

(1) A large red comb;

(2) An active disposition and a ravenous appetite;

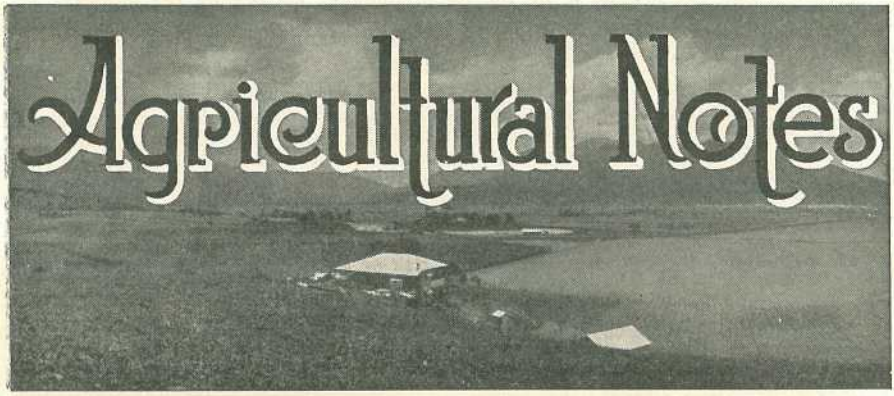
(3) Roominess between the keel and pelvic bones;

(4) An occasional disappearance of the yellow colouration round the vent in some yellow shanked varieties.

In small flocks, individuals showing the abovementioned characteristics may be caught in the nests and then marked.

During the following season, all fowls which were marked as late maturing the previous autumn and moult in December, January, and February may be culled. All the early laying birds, and those that moult after 1st March may be kept for layers or placed in a special breeding pen and mated to a male known to have come from a high laying hen that has been trap nested. In this way the egg production of the offspring may be raised.

The points outlined provide a simple method of selection which will, properly used, raise the level of production in a flock.



Establishing Lucerne.

LUCERNE is grown for hay purposes chiefly in warm districts on deep calcareous soils provided with abundant moisture. In such situations heavy crops are produced over a number of years. Within recent years cultivation of lucerne has been extended into fairly dry districts, but most success may be expected on soils rich in lime and with ample moisture available to the plants.

Land intended for lucerne is best cropped with a cereal, such as wheat, oats, barley, or rye—or panicums and millets—prior to its preparation for lucerne. Stubbles should be cultivated to induce volunteer growths of weeds and other seeds; these should be turned in subsequently by ploughing. For a first cultivation, two deep ploughings should be given at right angles to each other. Moisture should be conserved by frequent cultivation. In dry districts, where a good rainfall cannot always be depended upon at seeding time, fallowing is particularly necessary for the purpose of conserving moisture. The land may therefore be ploughed in late autumn or early winter the year before it is intended to sow. The depth of the ploughing is governed by the character of the soil. Alluvial soils should be ploughed to a depth of about 7 inches, but on other classes of soil of lighter or more porous nature a depth of 4 to 5 inches is sufficient. The ploughed land should then be allowed to lie in the rough state for a month or so and be broken down with harrows after summer rains. During summer the land should be frequently worked with harrows or cultivators so as to allow neither growth of weeds nor the formation of a hard crust on top. If the seed-bed cannot be worked down sufficiently fine with the harrows, a one-way disc cultivator or roller will do all that is necessary. If the land is rolled, it should be harrowed immediately after the rolling. Where the soil surface shows a tendency to dry out just prior to sowing a light ploughing may be given and followed by the harrows. Sowing on top of the harrowed surface, followed either by a light rolling, or by brush harrowing, is a good practice; but if rolling is adopted, a set of light harrows should be used immediately afterwards. Rolling assists in bringing the soil particles in closer contact with the seed and works in the same manner as compressing a partly dried-out sponge.

Lucerne is best sown in April or May, the young plants then being sufficiently well established before the onset of cold weather to enable them to survive. Provided the seed is drilled in, a sowing rate of 12 to 14 lb. per acre is ample, and often too much, in the best lucerne-growing districts. If hand broadcasting is practised, slightly more seed should be used. The rate of seeding should be lighter in dry districts and, for grazing purposes, a seeding of as low as 2 lb. per acre is permissible. Seed sown on the surface should be covered by means of a light harrowing.

Though fertilizers are not used to any considerable extent in the main lucerne-growing areas, many growers have obtained payable results by applying up to 1½ cwt. of superphosphate per acre, either drilled in with the seed or used as a top-dressing. Nitrogenous fertilizers appear unnecessary.

Fully a month or six weeks will pass before the young root system becomes established and the lucerne is fit for its preliminary cutting by the mower. An early mowing, before the young lucerne flowers, acts as a pruning and stimulates the root growth. After the preliminary cutting, a light harrowing may be made if absolutely necessary because of foreign growths.

Often promising stands of lucerne, following good germination, are destroyed through cutworm attacks. Damage at this time is irreparable, or the blank spaces are filled with weeds which considerably lessen the value of the crop. The Paris green-bran cut worm bait broadcast at the rate of 30 lb. per acre gives effective control, provided it is distributed as soon as the depredations of the pest become apparent. The necessary materials should therefore be held in stock on the farm for emergency. Cutworms attack only very young lucerne and intelligently applied baiting is then quite safe. Bait distribution in established crops is undesirable because of the possible risk of stock poisoning.

FERTILIZER AND MANURE.

Some confusion is often caused by the indiscriminate use of the words fertilizer and manure. Although interpretations or definitions may vary in various parts of the world, in Queensland the terms as implied or defined by the Fertilizers Act have the following meanings:—

Fertilizer is any manufactured or natural substance sold or offered for sale for application to the soil for the use of plants and/or remedying any soil deficiency, and which has been prepared in such a way that it is stable, dry, and in a form fit for storage; if insoluble, it must be ground to the required degree of fineness.

Manure is farmyard, sheep, poultry, or stable manure, or other natural organic material of this type which has not been dried or treated in any way to render it fit for sale in the ordinary commercial way as a fertilizer.

THE CONTROL OF SLUGS AND SNAILS.

Slugs and snails are well-known pests of gardens and seed beds in Queensland. They feed by rasping and chewing the foliage, stems, and roots of vegetables or flowering plants. The damage so caused can be quite severe, particularly in young plants and seedlings.

Both pests have a greyish body but while a snail carries a shell on its back into which the body can, if necessary, be withdrawn, a slug has no such protective device. The head bears two pairs of sensory tentacles. A feature common to both is the "foot," a conspicuous muscular structure possessing glands which secrete the familiar slime. Slime glands occur elsewhere on the body and the secretion both assists movement and serves to throw off irritating substances which may foul the body of the animal.

Feeding takes place at night. During the day both slugs and snails take shelter in the shade of low-growing shrubs or plants and under boards or logs.

Systematic collection and destruction of these pests will help to keep them under control, and one way of simplifying these operations is to place boards or large cabbage leaves on the ground in infested areas. Slugs and snails sheltering under the boards can be destroyed the following day; those feeding on the cabbage leaves, to which they are very partial, can better be destroyed at night.

Metaldehyde is both very attractive and highly poisonous to these pests. "Meta," a product sold primarily for heating small portable stoves, is a commercial metaldehyde suitable for use in control measures. A metaldehyde-bran bait is prepared by mixing three tablets of "Meta" ground to a powder with 1 lb. dry bran and moistening the product with one-half cup of water. The bait is distributed over the more heavily-infested areas, either broadcast or in small heaps containing a teaspoonful of bait, at 2-foot intervals. Ready-mixed metaldehyde baits are now purchasable in Queensland and these should normally give reasonably good results.

Metaldehyde is somewhat toxic to human beings and is, as its earlier use for heating purposes suggests, very inflammable. Reasonable care should therefore be exercised when using it—e.g., In areas to which children and pet animals have access, the bait should be broadcast and not distributed in heaps.

CLOVERS ON THE COAST.

A marked increase in milk production in late winter and spring when white clover is plentiful in the pastures is a common experience in coastal dairying districts. Unfortunately, it is not every year that weather conditions are favourable for the development of a good growth of clover in unimproved paspalum pastures.

Generally, the requirements of clovers are a fertile and not too acid soil and a fair supply of soil moisture. Where white clover is naturally abundant in paspalum pastures it may be taken for granted that its requirements are supplied, but it is true that the production of thousands of acres of paspalum pasture could be improved by the encouragement of clover growth.

Soils which are distinctly acid can only be made suitable for clover growth by the use of lime. If the fertility of the soil has been lowered by many years of grazing, it is advisable either to renovate with the plough or paspalum renovator and top-dress with fertilizers. On suitable areas it may be preferable to plough out the pasture and grow a green manure or some other form of crop prior to resowing the area with a mixture of grass and clover seeds. Renovation and green-manuring practices, in addition to increasing soil fertility, also tend to increase the water-retaining properties of the soil.

In all cases where pasture has been renovated, or where new permanent pastures are to be sown, it is advisable to add clover seed to the pasture. The clovers which have proved themselves of outstanding usefulness for incorporation in permanent pastures are white clover and red clover, and both should be included in permanent pasture sowings on the sub-tropical coast. White clover provides good grazing from about August until November, while red clover makes the bulk of its growth from September till March. Compared with white clover, red clover is a short-lived plant and dies out in a pasture within two or three years. It is of great use, however, in providing feed during the first year while the white clover is establishing itself.

When sowing on renovated paspalum or in new pasture mixtures, about 1 lb. per acre of each of the clovers should be used. New Zealand strains of white clover are superior to European or local strains of which commercial seed is available; the best seed to use is New Zealand Government-certified white clover seed. New Zealand strains of red clover also are preferable to other commercial types.

CEMENTED BAG BUILDINGS.

The chaff and cement bag can be turned to good use in the building of fowl houses or similar farm buildings of light construction according to the following plan, which has proved successful in practice.

A framework of timber is first of all built up, after which wheat or cement bags are opened out and stretched very tightly over it, being nailed down with ⅝-inch clout tacks. Next, a mixture is made up as follows:—

Water, 1¼ gallons,
Cement, 12 lb.,
Lime, 2 lb.,
Salt, 1 lb.,
Alum, ½ lb.

(In damp or wet weather use 1 pint less of water.)

Sieve the salt and lime together through a fine sieve—to thoroughly mix the materials and get rid of any big lumps—add the water and then the cement —stirring while adding—and finally the alum. Wet the stretched bags with water and apply the mixture without delay, using a fairly stiff brush, first on the outside, and then on the inside. Before the mixture sets, but after the initial wetness disappears, apply a second coat to the outside. When this sets, the bags will be quite hard and stiff, somewhat like plaster board. Subsequent coatings will, of course, make a stronger board.

The cost of the process, including bags for the foundations, works out at about 8d. a square yard. From this it will be seen that it is a very cheap and easy method of construction. Sheds built according to this plan three years ago show no signs of disintegration.

THE TRENCH SILO.

That interest is being taken by more farmers in the conservation of stock foods is shown by the number of pit silos being constructed for the storage of the summer fodder surplus. There also is, however, some evidence of apparent apathy in respect of the establishment of fodder reserves. A good way of conserving fodder is to place it in a trench silo, and the attention of dairy farmers is directed towards this cheap and effective method of storage.

A few important points in the construction, method of filling, and emptying of the trench are briefly given for the benefit of interested farmers.

Select a reasonably level and well-drained site as near the place of feeding as conveniently possible. Mark it out according to the capacity required. A trench 30 feet in length, 8 feet wide at bottom, 12 feet at top, and 8 feet deep, having an outslope at each end of 1 in 3 grade, would hold approximately 45 tons. By altering the length and retaining the other measurements, the capacity may be increased a ton for each additional foot length.

To construct the trench, excavate according to the desired dimensions, using plough and scoop and depositing the spoil along either side to back up the logs, which should be placed lengthwise to raise the walls 2 feet above the surface. Complete the job by trimming the walls smooth with mattock and spade.

The cost of construction involves labour only, and the time taken would vary according to the nature of the ground. In ordinary circumstances, two men equipped with suitable plant should excavate a trench of 45-ton capacity in about two or three days.

In filling the trench silo there is no necessity to chaff the material, full-length crops being loaded in the field and drawn through the trench, off-tipped, and spread in even layers lengthwise, the empty vehicle passing out the other end. Thus each layer is consolidated as a result of the trampling of the horses' action throughout the whole filling process.

Should the crop be at all dry through over-maturity or as a result of frost, a sprinkling of water may be added during the filling process. The filling should continue well above the surface, forming a parapet of about 3 feet high, sloped towards the sides of the trench.

Complete the filling by covering it with grass well watered, finally topping with a 9-inch to a 12-inch layer of earth.

The material so stored will be fit to use as silage in from two to three months after filling, if so desired, or it may be safely stored for many years without undue deterioration or loss.

To remove the silage for use, the trench should be opened up at one end, taking the earth and grass covering from a portion only as required, and cutting down vertically with a sharp implement, such as a spade or hay knife. When a complete face section from top to bottom has been removed, an adze may be used to slice off additional material in a semi-chaffed or short-chopped form, resulting in its being in a more acceptable condition for feeding direct to stock without further preparation.

The silage may be fed as it is to practically all classes of stock. For cows in full milk, however, better results are obtained by the addition of a small quantity of protein-rich fodder and concentrate, such as lucerne chaff and cottonseed meal.

Further particulars about silos and silage may be obtained on application to the Under Secretary, Department of Agriculture and Stock, Brisbane.

A LAND SURVEY FROM THE AIR.

Excellent results are expected from a detailed survey from the air of the whole of the Murrumbidgee irrigation areas. The scheme is the most ambitious of its kind ever undertaken in Australia, enabling accurate maps to be made in a few hours that would take years to complete under the old methods. The district has been photographed in a series of parallel lines from a height of 5,000 feet. The photographs of each farm have been enlarged so that they coincide exactly with the original contour survey. They provide an amazingly clear plan of the plantings of trees and vines from which the position, size, and even the health of individual trees may be clearly seen. The work is being supplemented by a ground survey staff, so that particulars not available from aerial photographs may be accurately recorded.

The farmers concerned are co-operating readily in this huge undertaking.

Cabbage-growing for Market.

THE cabbage is one of the most important vegetables for the market gardener. It grows best in the cooler districts, but by carefully selecting varieties the crop may be grown in most parts of Queensland.

The seed should be sown in beds of well-drained, deeply and thoroughly worked soil. The soil, if heavy, should be improved by the addition of sand or decayed vegetable matter; if poor and sandy, the addition of a loamy soil or well-rotted manure will be beneficial.

The surface of the bed should be fertilized and firmed, and the seed sown thinly in shallow drills about 4 inches apart. After sowing, mulch the bed with well-rotted leaf mould to prevent excessive evaporation of moisture.

The seed-bed should be watered regularly, for a check on the growth of young seedlings is often followed by unsatisfactory results.

When large enough to handle, the seedlings should be thinned to an inch apart, for if grown too thickly they develop into long, spindly, weak plants.

Shading during the hottest part of the day is often necessary, but this shade should be removed as soon as the plants are strong enough to withstand the heat. Overshading also produces spindly plants. Approximately 1 lb. of seed will provide sufficient plants for an acre of cabbage.

In about six weeks the young plants should be large enough for transplanting. They may then be hardened off by restricting water supplies for a day or two before their removal to the field. Transplanting should be done in cloudy or showery weather, but if weather conditions are unfavourable the young seedlings should be watered in, and, as a further precaution, the top half of the leaves may be trimmed off to lessen transpiration until the root system is established.

Loosening of the soil in the seed-bed with a fork before lifting the plants helps to save many of the small roots. If the bed has been well soaked previously, the plants will lift with a ball of soil adhering to the roots, which will help to keep them moist.

The roots of the young plants should be kept damp after removal from the bed, and this may be done by standing them in a bucket containing a puddle of soil and water.

In planting, a hole is first made in the ground with a dibble—an old spade or digging fork handle is suitable. The hole should be only deep enough to allow the roots of the seedling to reach the bottom of the hole. Turn in a little earth, and then draw the plant slightly upwards before pressing the soil firmly around it. This ensures that the main root will not be doubled up.

The plants should be in rows 3 feet apart; in the rows the smaller varieties should be spaced 2½ feet and the larger varieties 3 feet apart. The growth of cabbages should on no account be checked. Regular cultivation and watering are, therefore, essential.

The right variety should be selected for different times of the year. Winter-planting types should be early and quick maturing..

In the cooler areas, seed of the early varieties is sown during autumn. Main crop varieties are sown between August and December. The coastal districts are best suited to the winter crop.

Cabbage should be marketed as soon as possible after cutting, and only good, firm-hearted vegetables should be sent for sale. Care in handling is essential, and when placed in bags for railing they should be packed as firmly as possible.

Recommended varieties are:—

Early.—Early Allhead and Early Drumhead, both of which are large, early, and quick growers.

Main Crop.—Succession is the most popular variety, and may be grown almost any time. It is a good large Drumhead type.

Surehead is slightly larger than Succession. It is hardy, and may be planted closer in the rows, as it has fewer outside leaves.

THE CONTROL OF PINK WAX SCALE IN CITRUS ORCHARDS.

Pink wax scale is of greatest importance in the coastal regions, where it is very prevalent, but it may also be found in appreciable numbers in inland areas. It has a considerable number of host plants other than citrus, but it is only on citrus trees that it becomes of any economic importance.

Young scales (crawlers) make their appearance on the trees in early December and early March. In this stage they are minute, reddish-coloured creatures, and may be seen moving actively about amongst the old scales on leaves and twigs. After a short period of activity, the crawlers settle down and commence feeding. At first they secrete a white covering, which is gradually replaced by the typical pink waxy secretion. The young scales are quite conspicuous along the midribs of leaves, on leaf petioles and on young twigs.

While in the crawling stage the young scales are easily dislodged and blown about by the wind. Thus, during the breeding season, there is a continual migration into orchards from other host plants, which are invariably growing in the vicinity.

The most essential point in the control of this species is to apply the scalicide at the right time. If the migration from outside sources into the orchard has not been practically completed before treatment, the subsequent infestation may be so considerable as to nullify the effects of the application. This is a case in which it is better to be a little late rather than too early. Generally speaking, it may be said that the right time to spray is when the typical young scales in the orchard are about the size of an ordinary pin's head.

The most satisfactory spray consists of 5 lb. of high-grade laundry soap, 12-14 lb. of clean fresh washing soda, and 75 gallons of water. A washing soda wash containing 1½ lb. of clean, fresh washing soda to 4 gallons of water is very effective, but inclined to be severe on the trees. The resin-caustic soda-fish oil spray is also effective, and has certain advantages in that it kills much older scales than either of the other mixtures. The use of this spray, however, is inadvisable when the temperature is in excess of 90 deg. Fahr. Fumigation with hydrocyanic acid gas may also be used with a fair measure of success.

Pink wax is not a particularly harmful scale in itself, but it so weakens the affected parts as to predispose them to injury from other causes. Also, it is almost invariably accompanied by a copious growth of sooty mould or fumagine, which, as most orchardists know, is most objectionable, especially when on the fruit. Sooty mould cannot exist in the absence of pink wax or some other insect to provide it with food material. Therefore, to control pink wax, the commonest source of such food material is to ensure comparative freedom from sooty mould.

FRENCH BEANS.

A considerable variety of beans is grown in Queensland, but certain varieties are outstandingly more popular than others. The Canadian Wonder is an all-round favourite on the market, but because of its susceptibility to disease is not grown to the same extent now as formerly. Brown Beauty is very popular in North Coast districts, where it is known as a hardy and prolific variety. Stayley's Surprise also is grown extensively, and is usually planted two or three weeks earlier than Brown Beauty. Other varieties grown to a lesser extent are Feltham's Prolific and Burnley Selection, the latter being a new variety supposedly blight-resistant.

Plantings may be made at almost any time of the year, depending on local conditions in each district. On the North Coast, on areas free from frost, June and July are the two main months for planting. Other districts prefer spring or summer planting.

In some parts of the State in the past great difficulty has been experienced in raising a crop during the hot months because of the ravages of the Bean Fly, but experiments have shown that it is possible to obtain at least partial control of this pest by spraying. Information on this and other pests and diseases of beans can be obtained on application to the Under Secretary, Department of Agriculture and Stock, Brisbane.

In preparing land for general market garden crops along with cultivation, they generally require the free use of well-rotted stable or other manure, but in the case of beans the application of heavy dressing of such manures often results in the production of an over-abundance of foliage and poor setting of pods. Beans grow best in a well-cultivated soil, and preferably one that has been manured for a preceding crop. Well-drained clayey loams yield the best result.

Fertilizers should be freely used. There are on the market several commercial complete fertilizers for beans, sold by well-known and reputable firms, which can be purchased with confidence. The customary dressing is 6 cwt. to 8 cwt. per acre. It should be applied in the bottom of the drills, covered with about an inch of soil before planting the seed.

Planting is usually done by striking out drills about 6 in. deep and, after applying the fertilizer and lightly covering this with soil, dropping the seed by hand and again raking in a light covering of soil. During subsequent cultivation the drills will gradually fill up. The rows may be 2 ft. 6 in. to 3 ft. apart, and the seeds spaced 6 in. to 8 in. in the rows. Thirty-five lb. of small and 52 lb. of large seed is sufficient to plant an acre.

Horse cultivation is usually carried out, but it is not advisable to commence this work in the early morning, or at any time when the plants are wet, as the spores of certain diseases are more easily spread under these conditions.

Weeds should be kept in check, as they will seriously affect the growth of the crop.

The maximum output of beans can only be gained by picking thoroughly as they become fit, that is when young and tender; otherwise they will begin to form seed, and the plants will cease to bear marketable beans.

BANANAS AS A FERTILIZER.

The use of bananas as a fertilizer is something new. A cargo of fruit recently consigned to Britain went bad on the voyage. When the shipment was opened up, the question was what was to be done about it. A Scottish farmer was not long in settling it. He took delivery of thousands of cases of the condemned bananas for manuring his land, a farm alongside the Firth of Forth. No doubt, the new sort of fertilizer proved useful in the production of vegetables for the Navy. Certainly, to a Scotsman waste is a woeful sin.

Incidentally, during the last war we visited a place in Scotland where every farmer had done remarkably well out of supplying green vegetables to the Navy. So, in nature's wonderful way, bad bananas might easily be converted into good cabbage.

THE FRUIT MARKET.

J. H. GREGORY, Instructor in Fruit Packing.

BRISBANE prices for most fruit and vegetables are on a par with Sydney and growers are realising good values for most produce.

Stone fruits are now in full supply and quality fruit is selling readily. These fruits have affected the demand for tropical fruits somewhat, so prices for pineapples and bananas, except for special lines, have eased somewhat.

On the Sydney market "blister" is still prevalent. Why growers do not cut their pineapples for distant markets is a mystery. Cutting with cleanliness and careful handling would go a long way to prevent "blister." The same thing applies to bananas. The best packs in the world are useless if the fruit has been ruined by bad handling before packing. Often excellent packs are badly affected with "black-end" through the necks of the fruit being wrenched while breaking from the hands.

Mangoes are now coming in in increasing quantities. Only special varieties should be sent to Southern markets.

Ruling market prices during the last week of November, 1940, were:—

TROPICAL FRUITS.

Bananas.

Brisbane.—Cavendish: Small, 5s. 6d. to 6s. 6d.; Sixes, 6s. to 10s.; Sevens, 8s. to 14s.; Eights, 10s. to 15s.

Sydney.—Cavendish: Sixes, 6s. to 16s.

Melbourne.—Cavendish: Sixes, 6s. to 9s.; Sevens, 8s. to 11s.; Eights, 10s. to 13s.

Brisbane.—Lady's Finger: ½d. to 7d. per dozen.

Brisbane.—Sugars: 1½d. to 4½d. per dozen.

Pineapples.

Brisbane.—Smoothleaf: 1s. 6d. to 6s. 6d. per dozen; 5s. to 8s. per case. Ripleys: 1s. 6d. to 6s. per dozen; 7s. to 9s. per case. Northern Roughs: 7s. to 10s.

Sydney.—Smoothleaf: 6s. to 10s.

Melbourne.—Smoothleaf: 8s. to 10s.

Papaws.

Brisbane.—Yarwun: 5s. to 6s. tropical case. Specials higher. Locals: 2s. to 3s. bushel. Gunalda, 2s. to 4s. 6d. bushel.

Sydney.—8s. to 12s.

Melbourne.—7s. to 10s.

Mangoes.

Brisbane.—5s. to 8s. bushel.

Avocados.

Sydney.—10s. to 12s. half bushel.

Passion Fruit.

Brisbane.—Firsts, 6s. to 8s.; Seconds, 4s. to 5s.

Sydney.—6s. to 12s.

Melbourne.—14s. to 22s.

CITRUS FRUITS.

Oranges.

Brisbane.—Imported, 7s. to 12s. bushel case.

Melbourne.—Valencia, 6s. to 10s. bushel; Navels, 6s. to 14s. bushel; Common, 5s. to 10s. bushel.

Grapefruit.

Brisbane.—Imported, 11s. to 14s. bushel.

Lemons.

Brisbane.—Gayndah, 15s. to 18s.; Locals, 8s. to 15s.

DECIDUOUS FRUITS.

Apples.

Brisbane.—French Crab, 3s. to 7s.; Yates, 3s. to 10s.; Granny Smith, 8s. to 13s.; Sturmer, 5s. to 9s.; Democrat, 5s. to 12s. Many lines faulty.

Pears.

Brisbane.—Broom Park, 6s. to 10s.; Josephines, 7s. to 15s. Winter Cole, 7s. to 16s.

Peaches.

Brisbane.—Mayflower, 6s. to 8s.; Sneyds, 2s. 6d. to 5s. 6d.

Apricots.

Brisbane.—Stanthorpe, 5s. to 10s.; Warwick, 3s. to 8s.

Plums.

Brisbane.—Wilsons, 8s. to 10s. Patterson, 5s. to 8s.

Cherries.

Brisbane.—Stanthorpe, 8s. to 10s.; New South Wales, 7s. to 10s.

Tomatoes.

Brisbane.—Ripe, 8s. to 10s.; Coloured, 10s. to 13s.; Green, 8s. to 10s.; Inferior down to 3s.

Sydney.—4s. to 8s. per case.

MISCELLANEOUS VEGETABLES, ETC.

Watermelons.—Large, 15s. to 30s. dozen; small, 4s. to 10s. dozen.

Rockmelons.—5s. to 9s. dozen.

Cucumbers.—Locals, 5s. to 10s. bushel.

Pumpkins.—Brisbane, 21s. to 24s. bag. Sydney, 25s. to 30s. cwt. Melbourne, 30s. to 35s. bag.

Marrows.—Brisbane, 8s. to 9s. tropical case. Melbourne, 10s. to 14s. double case.

Lettuce.—1s. to 2s. dozen; 2s. to 4s. case. The tropical fruit case is best for marketing lettuce.

Cabbages.—Locals, 3s. to 10s. dozen Stanthorpe, 10s. to 16s. bag.

Beans.—Brisbane, 6s. to 14s. bag.

Peas.—Brisbane, 6s. to 14s. bag. Melbourne, 12s. to 20s. bag.

Beetroot.—4d. to 1s. bundle.

Parsnips.—9d. to 1s. 6d. bundle.

Carrots.—6d. to 1s. 3d. bundle.

Rhubarb.—1s. to 1s. 3d. bundle.

GOOD SEED MEANS GOOD CROPS.

Successful crop production depends on several important factors, including seed, soil, farming methods, and seasonal conditions. Of these factors the selection of sound seed is entirely in the hands of the grower. The farmer alone is responsible for the quality or character of the seed planted. If the results obtained are not up to expectations, then the farmer must take all the blame. Successful cropping depends on the use of "good, pure seed." This term means seed which is well-matured, large and plump, free from weed seeds, relatively high in germination, and true to variety. The term "good, pure seed" involves, in addition, another factor of vital importance and that is suitability of the locality in which it is planted. It is plainly no use wasting good seed in the wrong paddock.

If any doubt exists in the mind of any farmer as to the quality of the seed he has bought or is thinking of buying, the seed specialists of the Department of Agriculture and Stock are always willing to give him any assistance within their power. All he has to do is to consult them or send a sample of the seed to departmental advisers, who are keen to help the farmer in every way they can.

NEW DIRECTOR OF VETERINARY SERVICES.

Plate 139.
PROFESSOR H. R. SEDDON, D.V.Sc.

Professor H. R. Seddon, who has been appointed Director of Veterinary Services in the Department of Agriculture and Stock, is a native of New Zealand. For three years he was a cadet in the Veterinary Laboratory, New Zealand Department of Agriculture. In 1909 he entered the Melbourne University as a student and graduated four years later with the B.V.Sc. degree. He gained his doctorate from the same University in 1920. From 1913 to 1922—except for a period on active service with the Australian Imperial Force in Palestine and Syria, during which he attained the rank of captain, and six months' special leave study in Great Britain—Dr. Seddon held a lectureship at the Melbourne University Veterinary School and was consulting veterinary pathologist to the Victorian Department of Agriculture. From 1923 to 1936 he was Director of Veterinary Research in the Department of Agriculture, New South Wales, and, for a time, an acting lecturer in the Sydney University.

When the School of Veterinary Science within the University of Queensland was established in 1936, Dr. Seddon was appointed to its first professorship and also Dean of his Faculty. He has occupied the presidential chair of several learned societies, and is a Fellow of the Australian National Research Council and a member of the Queensland Committee of the Council for Scientific and Industrial Research. In 1934 he was chosen to deliver the Kendall Oration at Canberra. Before coming to Queensland he was the Director of the Veterinary Research Station at Glenfield, New South Wales.

Dr. Seddon has been an Australian representative at international conferences on problems of animal health and husbandry, visiting Great Britain, Europe, and South Africa in that capacity. These conferences included the International Veterinary Congress, the World Poultry Congress, and the London Wool Conference.

Possessing a broad and deep knowledge of stock problems and of the progress of veterinary science within recent years—especially through his association, as an officer and otherwise, with the State Departments of Agriculture of the Commonwealth, and also of New Zealand—Dr. Seddon has had published over one hundred papers on a wide variety of subjects in British and Australian scientific journals, to which his most important contributions were on contagious abortion in cattle, the sheep blowfly, botulism and parasitic diseases. He also has undertaken extensive investigations on plants poisonous to stock, on which he is an acknowledged authority.

For four years prior to his present appointment Dr. Seddon was Veterinary Adviser to the Department of Agriculture and Stock.

PROGRESS IN DAIRY RESEARCH.

A new butter-testing laboratory—the third now in operation—has been opened at Hamilton, and is a further indication of continued progress in dairy research. The substitution of a butter improvement service for the standardisation service of former years was another notable advance in the course of the year. The cheese improvement campaign, by which substantial results have been achieved, was continued, and the regular services of the Department, the scope and value of which are widely acknowledged by the dairy industry, were well maintained throughout the year just closing.

Brisbane Show Champions (1940).

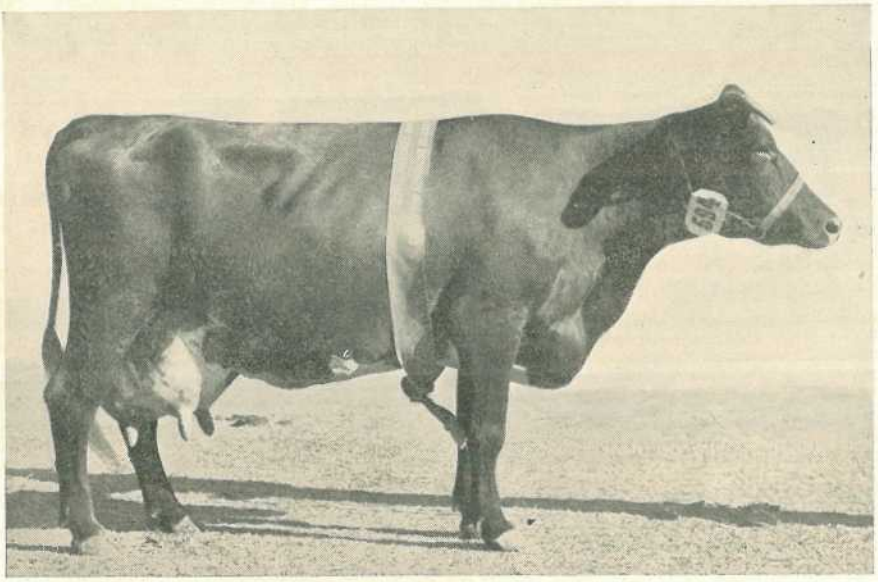


Plate 140.
Champion A.I.S. Cow.—Trevor Hill Princess II., the property of Messrs. J. Phillips and Sons.

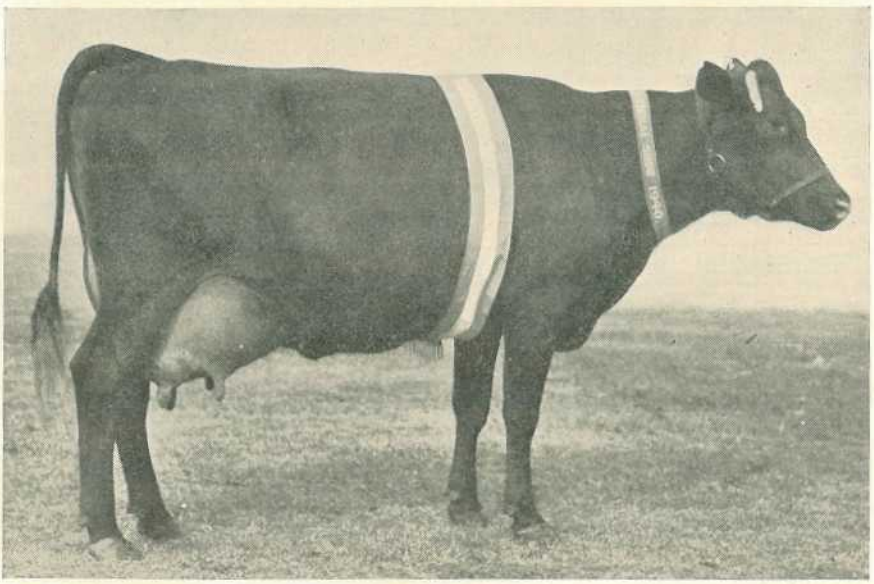


Plate 141.
Champion Butterfat Cow.—Alfa Vale Gentle II., the property of Mr. W. Thompson.

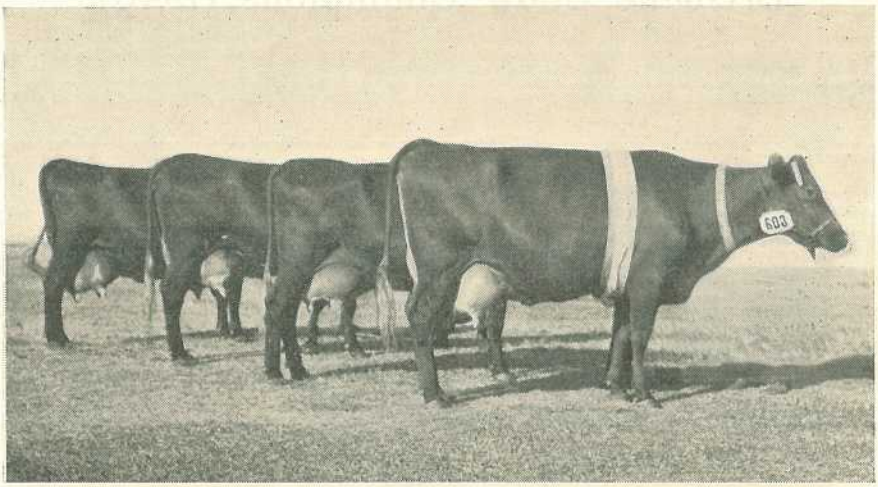


Plate 142.

AUSTRALIAN ILLAWARRA SHORTHORNS, TEAM OF FOUR COWS (A.I.S.).—From right—Alfa Vale Gentle II., Model IV., Model XI., Model II.—the property of Mr. W. H. Thompson.

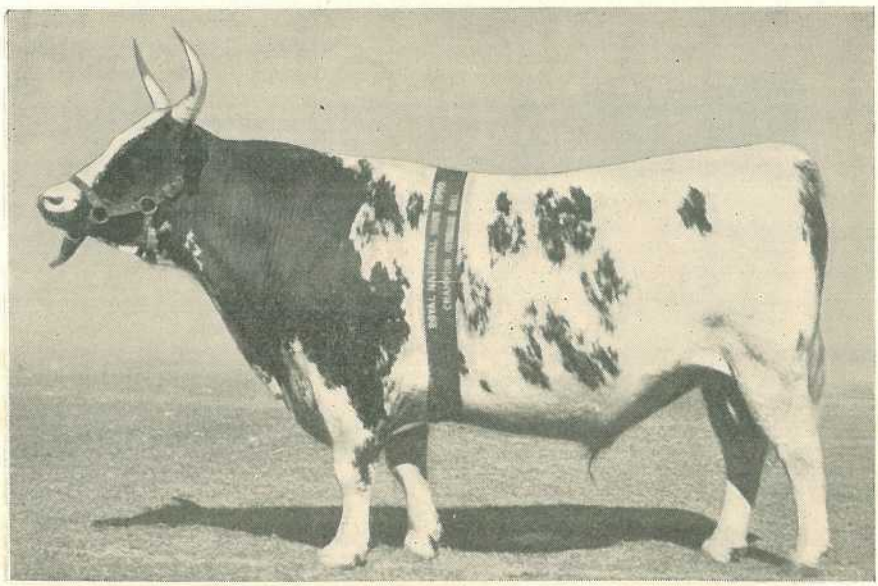


Plate 143.

CHAMPION AYRSHIRE BULL.—Myola Bonnie Duke, the property of Mr. G. Norgaard.

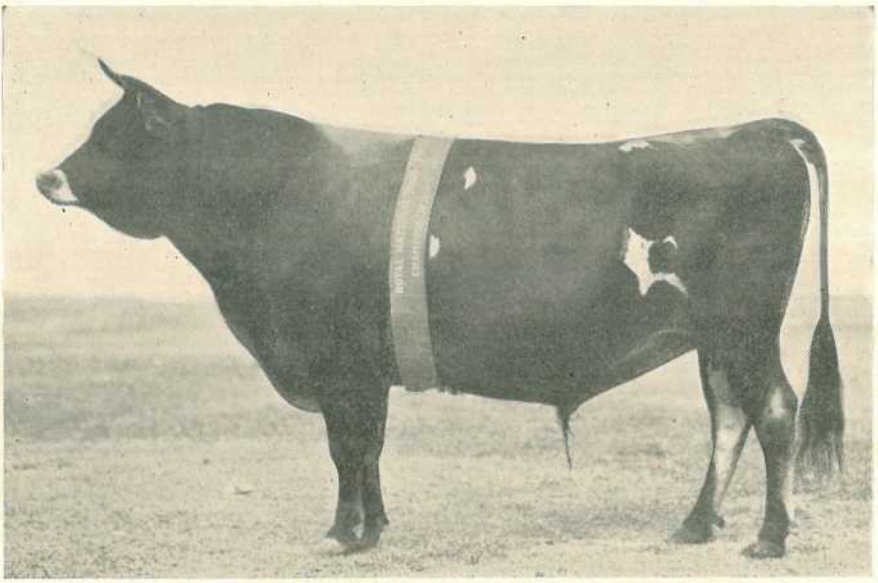


Plate 144.
Champion Jersey Bull.—Oxford Brown Victory, the property of Mrs. M. Stanton.

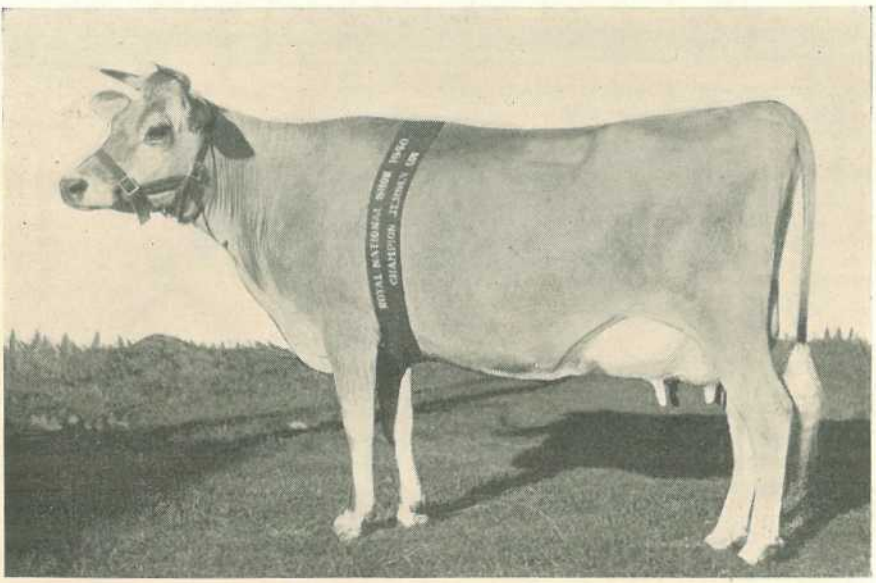


Plate 145.
Champion Jersey Cow.—Rush Princess, the property of Messrs. J. Sinnamon and Sons.

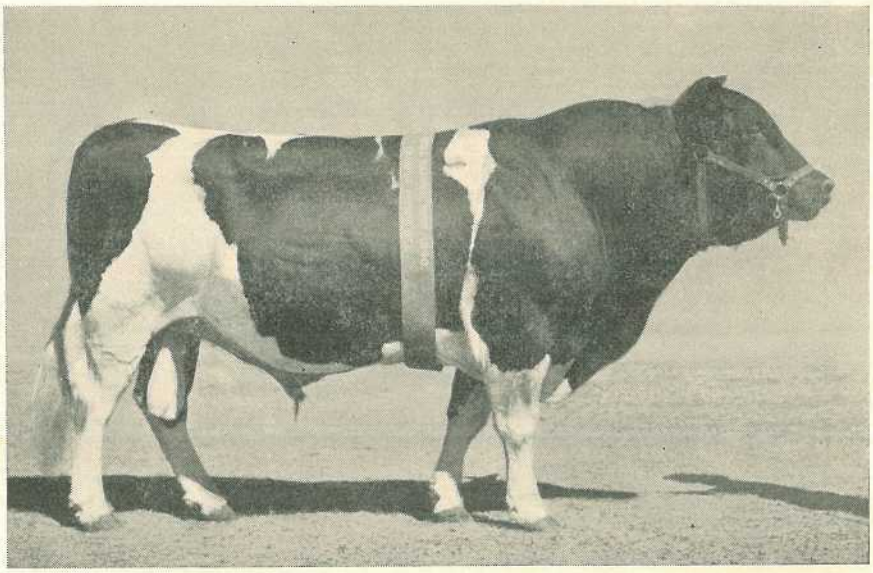


Plate 146.
CHAMPION FRIESIAN BULL.—Burnbrae Joecho Dekol, the property of Mr. M. C. Pearce.

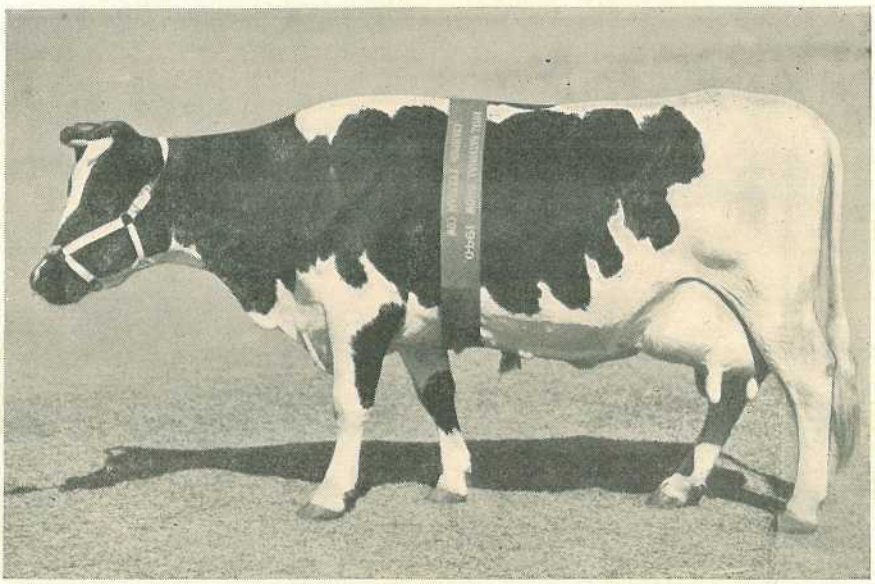


Plate 147.
CHAMPION FRIESIAN COW.—Glendalough Corndale, the property of Hickey and Sons Pty. Ltd.

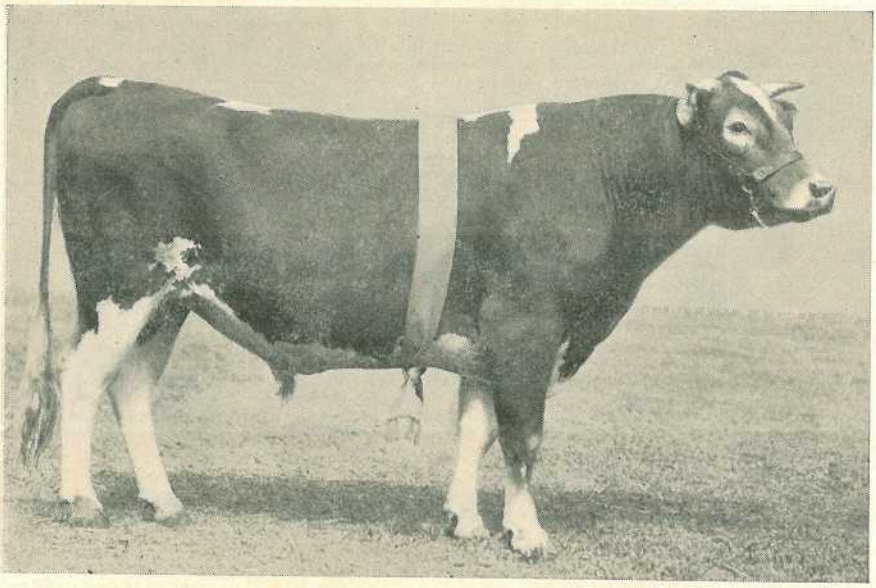


Plate 148.
Champion Guernsey Bull.—Fairfield Martin, the property of Mr. F. A. Stimpson.

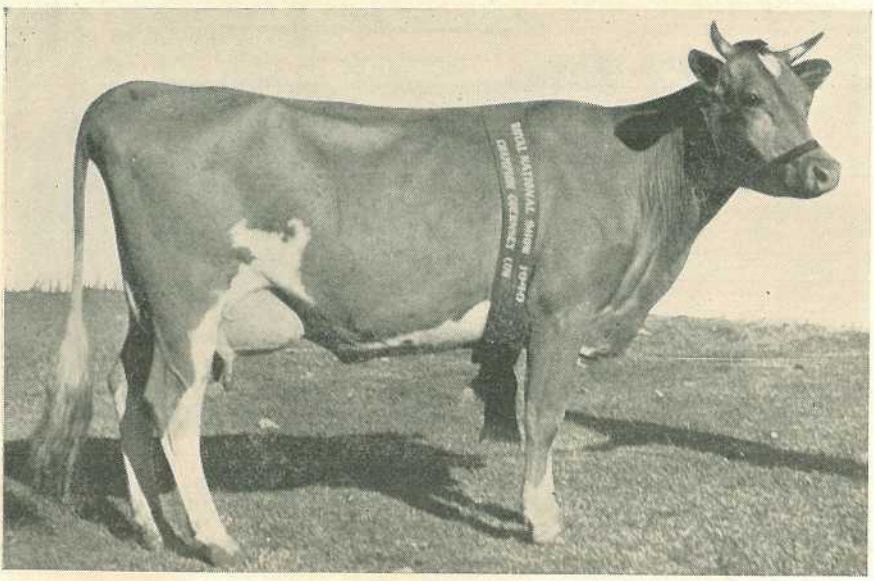


Plate 149.
Champion Guernsey Cow.—Laureldale Poppy, the property of Mr. W. Cook.

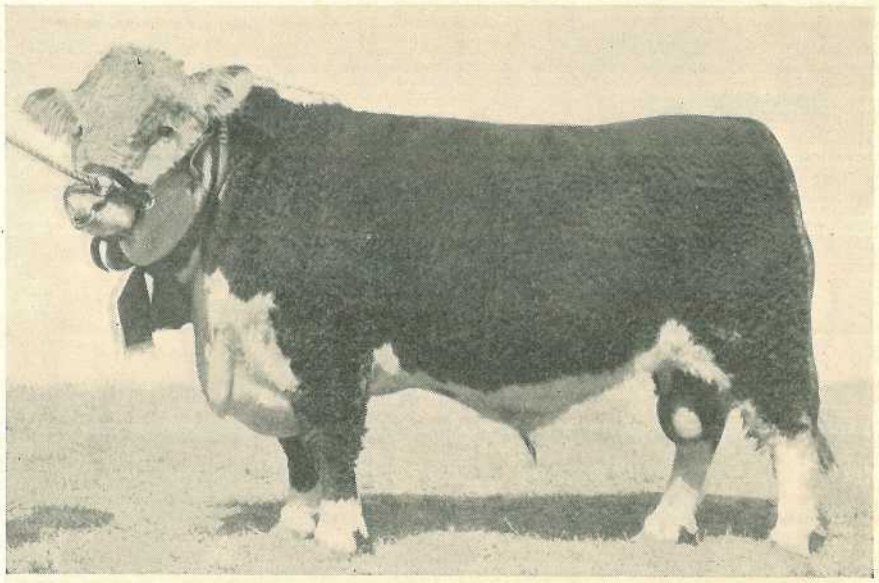


Plate 150.
CHAMPION POLLED HEREFORD BULL.—Milton Ambassador, the property of Mr. J. Sparkes.

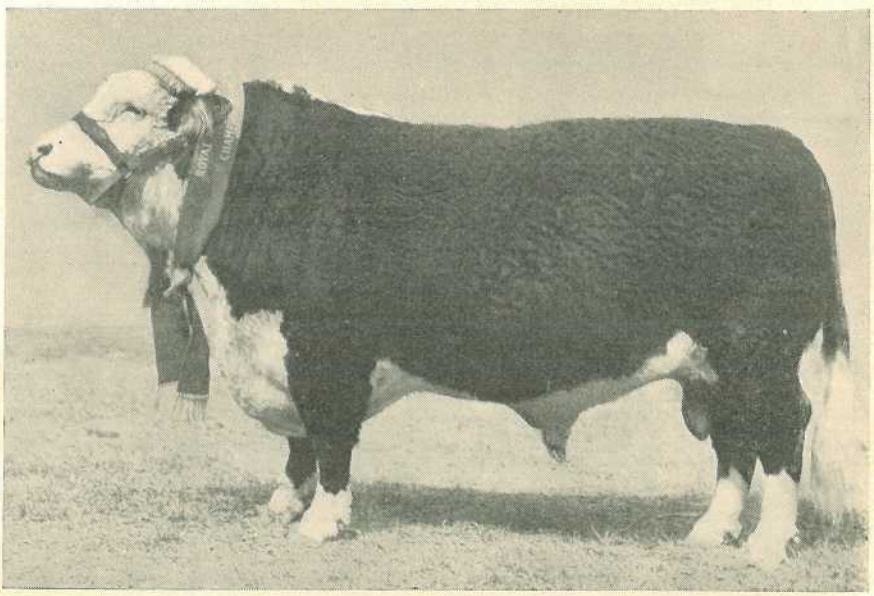


Plate 151.
CHAMPION HEREFORD BULL.—Myall Dreadnought, the property of Messrs. Fenwick Bros.

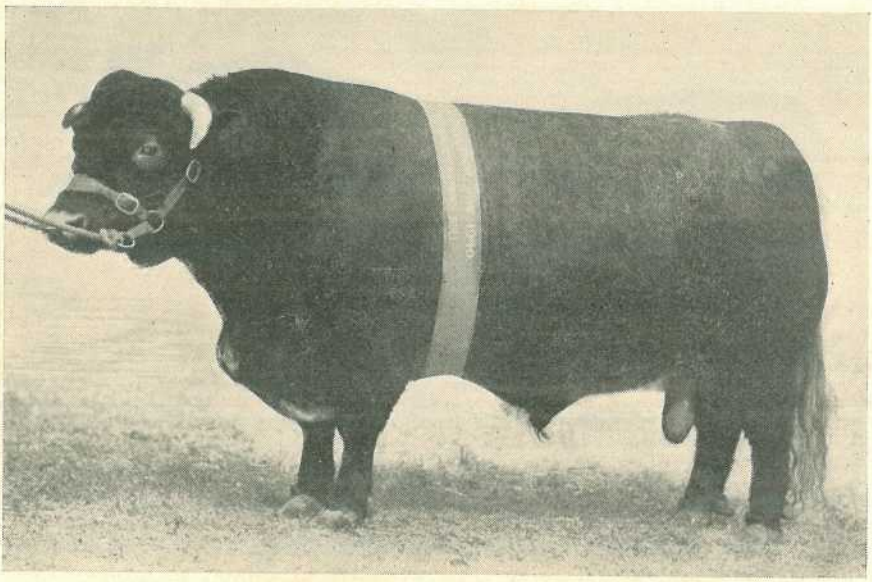


Plate 152.
CHAMPION SHORTHORN BULL.—Calrossie Masterpiece, the property of Mr. H. C. Taylor.

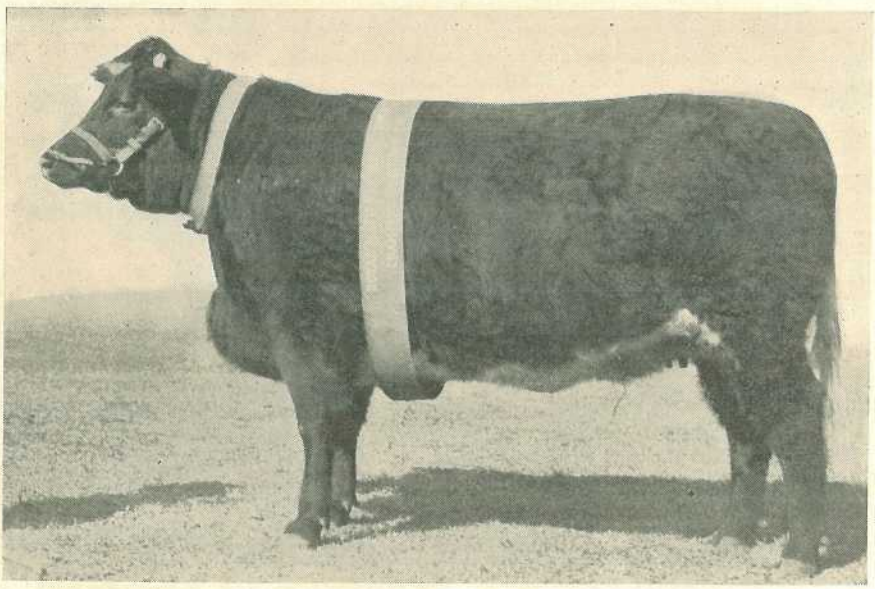


Plate 153.
CHAMPION SHORTHORN COW.—Peel Fairy, the property of the Peel River Land and Mineral Co. Ltd.

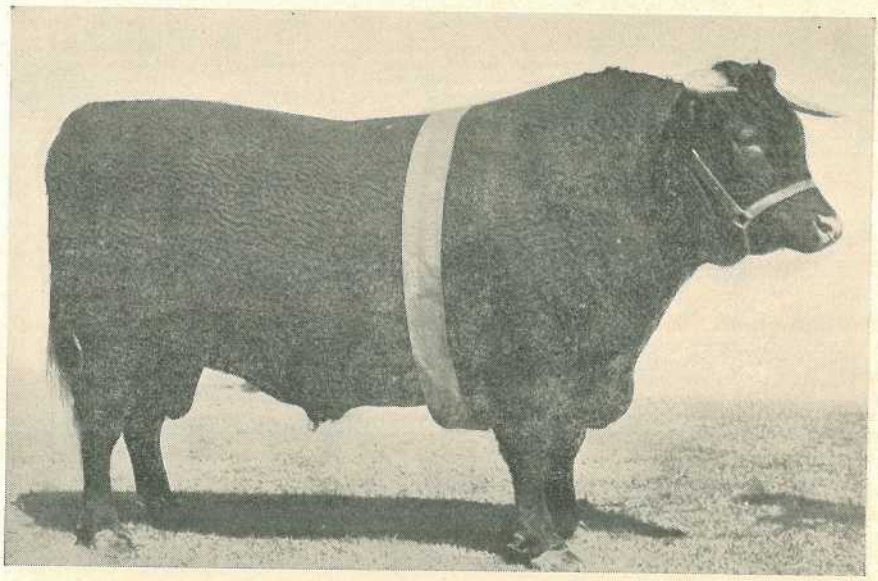


Plate 154.
CHAMPION DEVON BULL.—Devon Court Snug 1661st., the property of Mr. R. A. Howell.

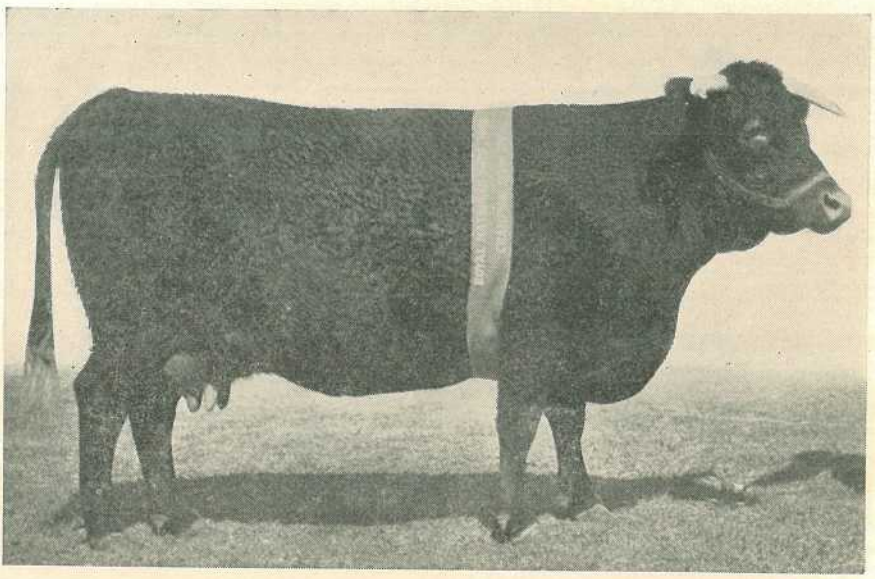


Plate 155.
CHAMPION DEVON COW.—Devon Court Lusty 1105, the property of Mr. R. A. Howell.

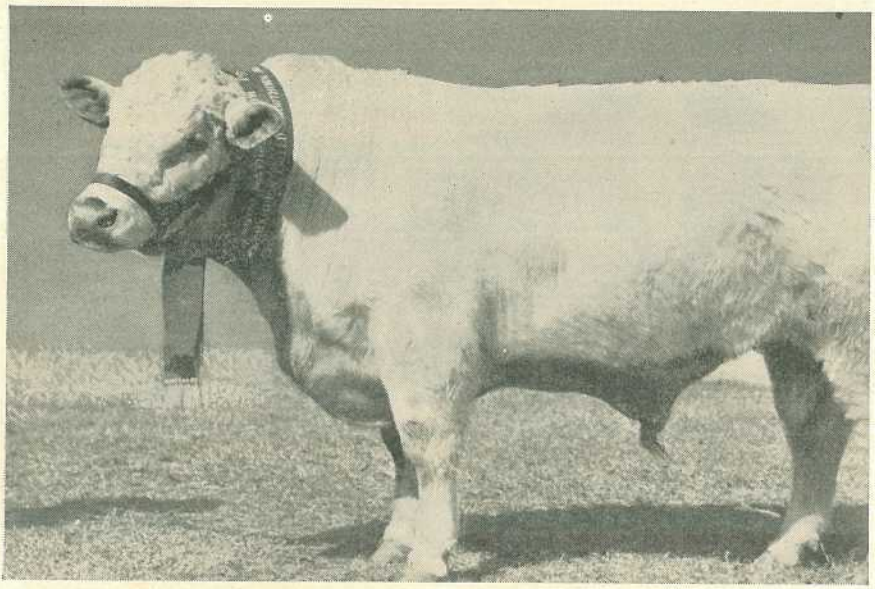


Plate 156.
Champion Polled Shorthorn Bull.—Gundibri Laddie II., the property of Gundibri Estate Co. Pty. Ltd.

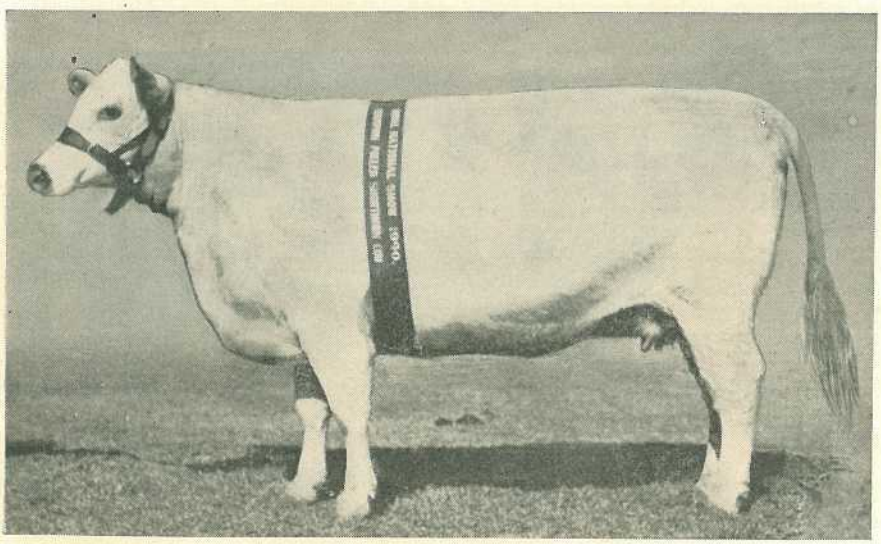


Plate 157.
Champion Polled Shorthorn Cow.—Milton's Cumberland Bess, the property of Mr. T. J. Scrymgeour.

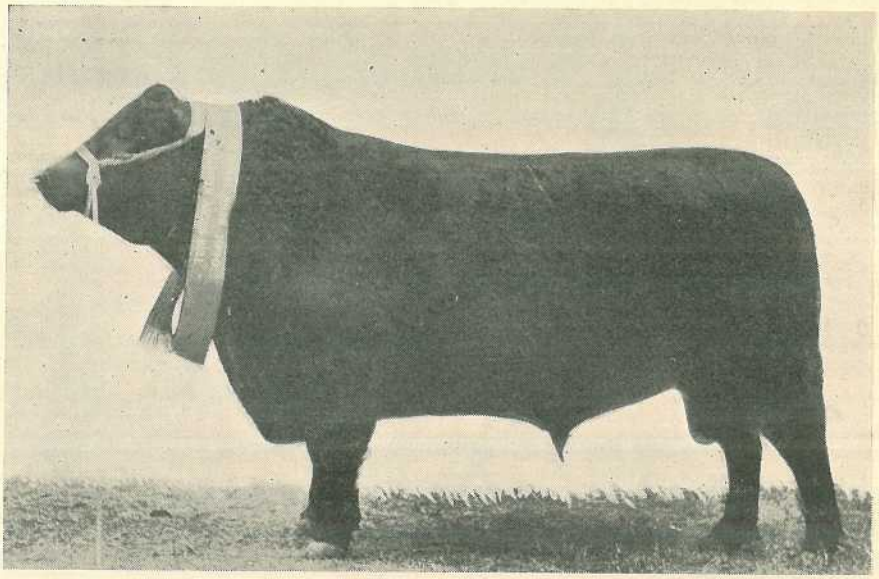


Plate 158.
CHAMPION ABERDEEN ANGUS BULL.—Booroomooka Hector, the property of Mr. H. G. Munro.

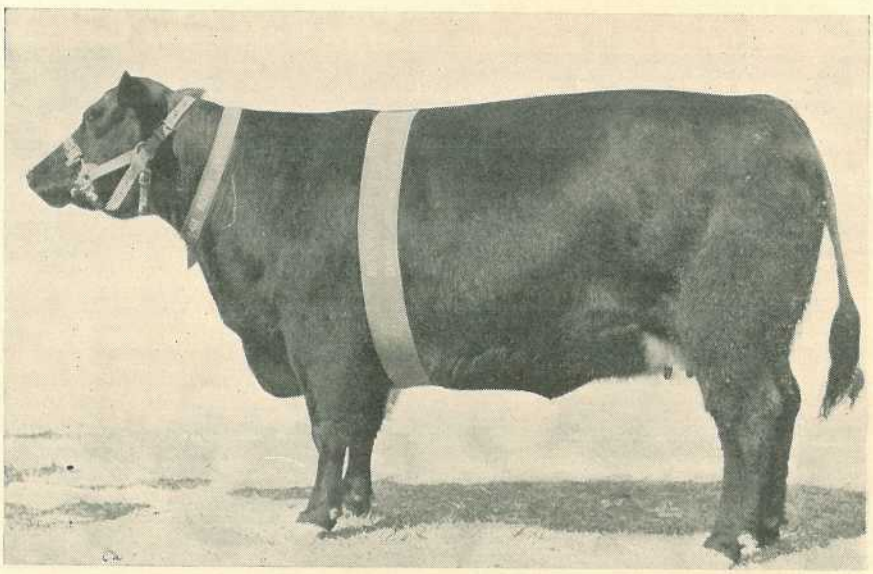


Plate 159.
CHAMPION ABERDEEN ANGUS COW.—Elegosa of Ballindalloch, the property of Mr. J. M. Newman.

Registered Stallions.

Subjoined is a list of stallions in respect of which Certificates of Registration were issued under "*The Stallions Registration Acts,* 1923 *to* 1934," during the year 1940-41:—

BLOOD STALLIONS CERTIFICATED FOR LIFE DURING YEAR 1940-41.

Name.	No.	Age.	Colour.	Owner.
Acolite	2689	Aged	Bay	C. K. Shannon, Theresa Downs, Capella
Acorban	2626	5	Bay	W. F. James, Coorparoo
Air Pilot	2690	Aged	Bay	Dennis Bros., Epping Forest, Clermont
Apple Snow	2541	6	Bay	E. L. Ramsay, Cambooya
Assegai	2627	6	Bay	E. L. Ramsay, Cambooya
Balamar	2507	5	Chestnut	Mrs. R. J. Toohey, Calingunee, Goondiwindi
Black Beau	2519	5	Black	M. J. Stenzel, Mt. Alford, Boonah
Black Buck	2542	5	Brown	E. F. Postle, Southbrook
Blackthorn	2628	5	Black	M. Kenny, care of C. Smithson, Manson road, Hendra
Boy Circle	2657	5	Chestnut	W. Squire, Box 12, P.O., Ravenswood
Bright	2616	5	Bay	C. Hopf, Wolvi
Brownlock	2691	Aged	Brown	W. R. Tindale, Monteagle, Clermont
Bulltop	2631	6	Brown	C. McConachy, Herries street, Toowoomba
Cannon Fly	2543	5	Chestnut	J. McGreevy, Anduramba, Crow's Nest
Cannon's Pride	2544	5	Chestnut	G. V. Hess, Kaimkillenbun
Capple Bar	2574	5	Bay	H. G. Stockhill, Corrunovan, Proston
Carradale	2692	Aged	Brown	Logan Downs Pastoral Co., Logan Downs, Clermont
Cathartes	2693	Aged	Bay	Clark and Tait, Gordon Downs, Capella
Charcoal	2694	Aged	Brown	Drynan Bros. Disney, Clermont
Cinzano	2518	Aged	Bay or brown	A. Fitzgerald, Mangle, Boggabilla
Clansman	2597	5	Bay	Cook and Cook, Wandoo, Koumala
Coolwood	2630	6	Bay	P. P. Venaglia, Rous street, Hendra
Coonam Valley	2575	6	Bay	C. E. K. McCord and Co., Eidsvold
Corn Dag	2695	5	Chestnut	C. F. Milliken, Idermeer, Dilly Siding, Mail Bag, Rockhampton
Courtcraft	2696	6	Brown	S. R. MacDonald, Highland Plains, Clermont
Demon	2697	6	Bay	D. D. Logan, Warrinilla, Rolleston
Deveiled	2658	5	Bay	Gunnawarra Pastoral Co., Mt. Garnet
Diobaix	2659	5	Chestnut	L. D. Lucey, Mt. Garnet
Dromos	2698	Aged	Bay	Peak Downs Pastoral Co., Capella
Duke	2699	6	Brown	W. J. Dahtler, Nagoorin
Echo	2700	6	Bay	W. J. and W. D. Murphy, Birimgan, Blair Athol
Ellington	2701	Aged	Bay	E. D. Wells, Early Storms, Rolleston
Elogist	2660	5	Bay	H. W. Kirkwood, Ingham
Field O'Mine	2576	Aged	Brown	D. A. Proctor, Byrnestown
First Edition	2545	Aged	Bay	O. G. Ridge, Argyll Stud, Toowoomba
First Glen	2661	Aged	Bay	D. J. and P. McGrath, Mareeba
Fly Field	2702	Aged	Chestnut	E. H. Faint, Pioneer, Clermont
Foreign Scholar	2662	Aged	Bay	Queensland Stations Pty., Ltd. Wandovale, Charters Towers
Forty First	2703	Aged	Bay	J. Sullivan, Turkey Creek, Springsure
Fox Tar	2704	Aged	Black	Friend and Co., Springwood, Springsure
Glarrydon	2632	5	Chestnut	W. H. Reynolds, Winchester street, Hamilton
Gold Cob	2705	5	Chestnut	J. H. Wells, Rolleston
Gold Dust	2520	5	Bay	A. H. Kunde, Hazeldean, Kilcoy
Golden Grain	2707	6	Bay	N. G. Walker, Stanmere, Bororen
Gold Fish	2546	6	Brown	A. M. McAlpine, Eureka, Cambooya
Gold Hunter	2547	5	Brown	B. H. Brown, Wandoan
Gold Ore	2706	5	Brown	Thos. Borthwick and Sons, Banchory, Clermont
Graffmore	2708	6	Brown	Donkin Bros., Meteor Downs, Springsure
Great Felt	2633	5	Brown	T. J. O'Brien, Crossdale, *via* Esk.
Gun Craft	2709	Aged	Bay	M. Ryan, Arcturus, Springsure
Hebray	2634	5	Bay	A. Payne, Eidsvold
Hendra Lad	2635	5	Bay	W. Hennessey, Harding street, Hendra
High Monash	2617	6	Bay	W. A. Hart, P.O., Surfer's Paradise
Home Fire	2663	5	Bay	A. Wienholt, Carse-o-Gowrie, Ravenswood
Hybol	2502	6	Bay	J. A. A. McColl, Marshall street, Goondiwindi
Ike McCarthy	2710	5	Bay	Mrs. M. J. Faint, Karmoo, Clermont
Iliad (Imp.)	2548	Aged	Chestnut	W. Glasson, care of Queensland Club, Brisbane
Jazz Light	2711	Aged	Brown	E. A. Templeton, Huntley, Clermont
Jerval	2503	Aged	Bay	W. H. Anderson, Warwick
Jester	2578	Aged	Grey	Barton and Elliott Pastoral Co., Moolboolaman
Kialla King	2664	5	Brown	W. C. Storer, Upper Barron
Kingfisher	2712	6	Brown	A. Jackson, Yarraman Vale, Springsure
Kingfisher	2713	Aged	Bay	Donkin Bros., Meteor Downs, Springsure
King Rufus	2550	5	Bay	F. J. Turner, Irvingdale, Chinchilla
Kingsmond	2714	Aged	Chestnut	J. W. King and Co., Bulliwallah, Clermont
King's Own	2598	6	Bay	J. B. Shannon, Tooloombah, *via* Rockhampton
Lap Astre	2551	Aged	Chestnut	P. H. Wormwell, Bendee West, Meandarra
Last Eiffel	2504	Aged	Dappled grey	S. L. Moore, Merinda, Goondiwindi
Lavadon	2715	Aged	Bay or brown	Albro Pastoral Co., Albro, Clermont
Limoux	2636	Aged	Brown	M. Noonan, Tenterfield
Little Poitrel	2716	Aged	Chestnut	E. H. Faint, Pioneer, Clermont
Lord Tennyson	2505	6	Bay	J. S. Keen, Retreat, Goondiwindi

BLOOD STALLIONS CERTIFICATED FOR LIFE DURING YEAR 1940-41—*continued.*

Name.	No.	Age.	Colour.	Owner.
Mannar	2579	5	Chestnut	W. Titmarsh, Yerra
Medal Fair	2717	5	Chestnut	A. C. McLaughlin, Buckleton, Springsure
Medanui	2718	Aged	Chestnut roan	D. Williams, Florence Vale, Ruby Vale
Merry Moo	2719	5	Bay	A. E. Hopkins, Sapphire
Miles Falcon	2637	5	Brown	Mrs. D. A. Winten, Rosalie Plains
Millie's Hope	2638	6	Bay or brown	S. G. Morrow, Ascot street, Hendra
Monash Star	2639	5	Black	J. Gault, Edward street, Brisbane
Mt. Carmel	2506	Aged	Grey	Stokes and McCarthy, Mt. Carmel, Goondiwindi
Muddy Spot	2665	Aged	Grey	J. Rollinson, Allandale, Homestead
Musk	2521	5	Bay	J. R. Gloag, Joanda, Linville
Natural Silver	2522	Aged	Chestnut	P. M. Ryan, Viewland, Gatton
Nivetts	2666	6	Chestnut	Estate H. S. Williams, Yungaburra
No Name	2583	Aged	Brown	A. R. Atthow, Kandanga
Nonette Lad	2720	Aged	Chestnut	W. V. Finger, Hillview, Clermont
Nosegay	2580	5	Bay	Barton Elliott Pastoral Co., Moolboolaman
Oleora	2721	Aged	Bay	H. Carlisle and J. Corbett Taylor, Cullen-la-ringo, Emerald
Orphan Boy	2667	5	Brown	P. McDonagh, Mt. Molloy
Pasha Boy	2722	Aged	Fleabitten grey	Coreena Pastoral Co., Pasha, Clermont
Pashet	2723	Aged	Brown	E. T. Homer and Sons, Planet Downs, Rolleston
Pat. Clyde	2581	Aged	Bay	J. Staunton, Kammil, Emerald
Pen-Scribble	2724	Aged	Brown	F. Hebbel, Murgon
Pentator	2552	5	Bay	J. Banks, Wandoan
Phar Pal	2668	5	Brown	J. Rollinson, Allandale, Homestead
Power Chief	2523	5	Grey	J. C. E. Cork, Fordsdale, Grantham
Rallywin	2758	Aged	Bay	F. Trembath, Ingham
Red Duke	2725	6	Bay	Elgin Downs Pastoral Co., Clermont
Red Eagle	2641	5	Bay	G. F. W. Goodrich, Waroo, Inglewood
Roman Emblem	2582	5	Brown	E. C. Zillmann, Wallaville
Rosante	2642	6	Brown	Geo. H. Bignell, Widgegoora street, Cunnamulla
Rosette	2669	5	Dark-brown	V. H. Alford, Rangeview, Ravenswood
Royalburn	2643	5	Brown	J. F. Schmidt, Long Avenue, Hendra
Royal Mace	2524	5	Bay	Collins Bros., Mt. Surprise, *via* Cairns
Saracen	2599	5	Iron grey	W. H. Gillham, Suttor Creek, Nebo
Sarchedon	2726	Aged	Fleabitten grey	Logan Downs Pastoral Co., Clermont
Sarchette	2727	Aged	Fleabitten grey	W. Leahy, Ruby Vale
Sardyke	2728	5	Chestnut	Kavanagh Bros., Vandyke, Springsure
Scholar Cap	2729	5	Bay	Mackay and Co., Huntley, Clermont
Seducer	2553	5	Chestnut	Estate Dr. R. Macdonald, Coalbah, Meandarra
Serocold	2731	6	Chestnut	J. G. H. Wilson and Sons, Orion Downs, Springsure
Silver Charm	2732	6	Bay	F. J. C. Brown, Bombandy, Clermont
Sir Geraint	2733	Aged	Bay	McKenzie Bros., Coolarah, Alton Downs
Sir Nezd	2554	6	Iron grey	P. S. Cooper, Zilzie, Warra
Sir Ranian	2734	Aged	Bay	A. E. M. Baker, Malthoid, Capella
Smart Guy	2644	5	Chestnut	C. Davey, Rockhampton
Souvenir	2600	Aged	Brown	R. E. Muller, Proserpine
Starmint	2645	6	Brown	J. Y. Shannon, Rodney Downs, Ilfracombe
St. Aubin	2646	6	Chestnut	P. P. Venaglia, Rous street, Hendra
Sunbeam	2618	6	Bay	C. W. Schultz, Advancetown, Nerang
The Albatross	2647	5	Bay or brown	P. J. O'Shea, River road, Toowong
Tetraban	2648	5	Brown	R. P. Williams, Valera Vale, Charleville
Tommy	2735	6	Brown	N. G. Walker, Stanmere, Bororen
Tommy	2736	Aged	Brown	Bigge and McConnell, Consuelo, Rolleston
Top Up	2649	6	Chestnut	J. Griffiths, Gill street, Charters Towers
Vain Duke	2650	6	Bay	J. B. Shannon, Toolcombah, Rockhampton
Valight	2737	Aged	Chestnut	C. Pownall, Carfax, Clermont
Wearwell	2759	Aged	Bay	Natal Downs Pastoral Co., Charters Towers
Willwear	2651	6	Brown	I. Abrahams, Racecourse road, Ascot
Withjoy	2653	5	Chestnut	D. H. Robertson, Albinia Downs, Springsure
Wykeham	2738	Aged	Bay	H. C. and J. C. Taylor, Cullen-la-ringo, Emerald
Young Globe	2739	5	Chestnut	Mrs. A. B. McDonald, Degulla, *via* Clermont
Young Poy	2654	5	Brown	A. J. Fisher, Harding street, Hendra

PONY STALLIONS CERTIFICATED FOR LIFE DURING YEAR 1940-41.

Bon Saada	2555	5	Cream	G. McCorry, Peranga
Cabulcha Cinnabar	2585	5	Chestnut	B. J. Morris, Teddington road, Tinana
Dickie Boy	2526	5	Black	B. J. Friske, Blenheim, Laidley
General Gordon	2655	6	Grey	C. P. Edwards, Abingdon Downs, Georgetown
Gold Cuffs	2508	5	Taffy	E. E. Belford, Wilga Park, Texas
Jack	2687	Aged	Bay	W. F. James, Bathampton, Clermont
Jeepers Creepers	2601	5	Brown	Mrs. R. S. Geddes, Glen Geddes
Jubilee	2527	5	Black	E. Clarke, Thornton, Laidley
Little Cobber	2609	Aged	Creamy	J. Rickuss, Broadwater road, Mt. Gravatt
Little Tartar	2610	6	Brown	C. Steinhardt, Hillview
Master Don	2556	5	Black	W. J. Smith, Murray street, Pittsworth
Model	2528	5	Bay	E. Hansen, Laidley
Playfair	2529	5	Brown	J. Harris, Tara
Redcliffe's Pride	2611	Aged	Chestnut	J. J. Grant, Redcliffe Parade, Redcliffe
Rocket	2612	5	Bay	A. S. Markwell, Box 26, Beaudesert
Sheik	2586	5	Grey	G. Palfrey Miva
Smokey	2602	Aged	Bay	H. Kaddatz, Homebush

PONY STALLIONS CERTIFICATED FOR LIFE DURING YEAR 1940-41—*continued.*

Name.	No.	Age.	Colour.	Owner.
The Imp	2509	5	Dappled grey	A. J. Savage, Cooinoo, *via* Gore
Tim	2587	5	Grey	B. N. Trott, Mundubbera
Verne Sensation	2613	6	Brown	J. A. Rudd, Yeerongpilly
Warpaint	2530	5	Skewbald	H. Badrick, Oak Villa Stud, Forest Hill
Wee Macgregor	2557	5	Cream	H. G. Ruhle, Millwood, Milmerran
Young Ludo	2688	5	Creamy	J. M. Roy, Glenroy, Thangool

TROTTER STALLIONS CERTIFICATED FOR LIFE DURING YEAR 1940-41.

Billy Wilkes II.	2614	6	Bay	M. Simpson, Cedar street, Cannon Hill
Black Jewel	2615	Aged	Black	E. C. Stevenson, Beechmont
Marble Jewel	2558	7	Black	W. F. Werth, Devon Park, Oakey
Master Nepean	2559	6	Bay	W. Sullivan, Pittsworth
Nan's Derby	2525	Aged	Bay	B. O. Stephan, Templin, Boonah
Sparkling Arrow	2560	5	Black	Theo Walker, Bell

DRAUGHT STALLIONS CERTIFICATED FOR LIFE DURING YEAR 1940-41.

Abbey's Gift	2561	5	Bay	J. V. Willis, Meringandan
Admiral Gaiety	2531	5	Bay	C. Boyle and G. Winks, Harrisville
Alta Craig's Lustre's Dignity	2510	5	Brown	J. Hardy, Parkfield, Eukey
Balmedie Superb	2562	5	Roan	Mrs. R. V. Breydon, Brooklyn, Djuan
Black Boom	2588	5	Black	E. B. Pickels, Brigooda, *via* Proston
Blighty Bombardier	2596	Aged	Bay	A. Kubler, Boonah
Bold Dignity	2563	5	Bay	G. and H. Tews, Springside, Pittsworth
Bonny Charlie	2564	6	Brown	E. H. Barrett, Bruan Park, Tara
Bonny Tide	2670	6	Bay	Natal Downs Pastoral Co., Charters Towers
British Prince	2589	5	Bay	W. J. Brims, Blackmount
Browndale	2603	6	Bay	P. Matsen, Sarina
Bruce	2590	5	Bay	W. H. Roberts, Anderleigh
Bruce	2671	5	Bay	H. H. Steinhardt, Tarzali
Bundabaroo	2740	6	Bay	Hook and Co., Moray Downs, Clermont
Carlyle Dobbin	2565	5	Brown	A. J. Peake, Wandoan
Castlemaine	2566	6	Bay	L. Hogarth, Stonehenge, *via* Milmerran
Cereblue	2741	Aged	Dappled blue grey	A. R. Fletcher, Hebron, Springsure
Champion	2742	Aged	Bay	A. Jackson, Yarraman Vale, Springsure
Clyde	2743	Aged	Brown	E. and C. Goodwin, New Caledonia, Bluff
Comet	2744	6	Bay	J. G. H. Wilson and Sons, Orion Downs, Springsure
Craighill Holmar	2532	Aged	Bay	P. Truloff, Minden
Cristy	2672	5	Bay or brown	A. Black, Pajingo, Charters Towers
Don	2673	5	Bay	W. G. Soper, Home Hill
Donald Intent	2533	5	Brown	J. J. Coyne, Grandchester
Douglas Best	2745	Aged	Bay	J. H. Hofmeister, Norwood, Springsure
Dragon	2746	6	Bay	Donkin Bros., Metecr Downs, Springsure
Dunure's Delight	2674	5	Brown	B. A. Lynn, Ingham
Enchanter	2567	5	Bay	I. Evans, Jarail Creek, *via* Kingaroy
Fairholme Eclipse	2591	5	Bay	A. and J. Sippel, Murgon
Fairval Gaiety	2675	5	Bay	P. White, Tully
Fairval Noble	2592	5	Bay	Atherton Bros., Manar, Proston
Foxlow	2676	5	Dark grey	E. E. D. White, Toomba, Balfe's Creek
Foxlow Lord Trevor	2604	Aged	Grey	H. Rowe, Mirani
Fyvie Ideal	2625	Aged	Brown	W. Spray, Guyra
Gay Lad	2747	Aged	Bay	C.Q.M.E. Co., Avon Downs, Clermont
Glenmore II.	2568	6	Bay	G. Lucht, Kulpi
Grey Peter	2677	5	Roan	C. Brownson, Slogan Downs, Charters Towers
Heir's Like	2511	5	Bay	N. McMahon, Wheatvale
Irton Choice	2619	5	Bay	J. Drynan, Telemon Crossing
Kelso Surprise	2748	Aged	Bay	L. C. Walker, Box 136, Bundaberg
Kerrston's Joker	2534	5	Bay	H. M. Chaille, Esk
Kimberley	2678	6	Bay	F. R. B. Anning, Cargoon, Pentland
King Lustre	2537	5	Bay	A. Kanofski, Yarraman
King's Heir	2512	5	Bay	M. Long, Elsmere, Yelarbon
Kirkcaldy Flash Len	2569	5	Bay	H. Fischer, Mountain View, *via* Bowen
Knight Gown	2749	5	Dappled blue grey	R. K. Scantlebury, Theodore
Lion	2593	5	Bay	W. J. Patteson, Mundubbera
Lloyd George	2750	Aged	Brown	G. Matthews, Glen Franklin, Clermont
Lochiel	2679	5	Bay	S. W. Smith, Ravenshoe
Lord Nelson	2570	5	Brown	E. M. Schefe, Coalbank, Wutul
Major	2681	Aged	Bay	W. H. Jonnson, Millaa Millaa
Major	2680	5	Bay	A. G. Spotswood, Home Hill
Meditation (Imp.)	2571	6	Bay	L. H. Corser, Fairymeadow, Goombi Siding
Noble	2751	5	Bay	W. Leahy, Ruby Vale
Noble	2620	5	Bay	M. J. Mills, Gilston, Nerang
Pine Vale Knight	2757	Aged	Dappled grey	A. C. Williams, Homevale, Nebo
Prince	2621	5	Bay	E. G. Burnett, Rathdowney
Prince	2605	5	Bay	D. R. McGregor, Kungurri
Prince	2682	5	Chestnut	P. Svanosio, Kairi
Prince Intent	2513	5	Bay	J. F. Ryan, Borgers, Clifton
Prince Laddie	2683	Aged	Bay	P. White, Tully
Puzzle	2606	6	Bay	Mrs. J. Bracken, Goorganga Creek, Proserpine
Rare Gaiety	2535	5	Black	R. Harsant, Warrill View, Harrisville
Rex	2536	5	Bay	S. Walker, Woodford
Robin Hood	2594	Aged	Bay	G. J. Kennedy, Cloyne, *via* Goomeri
Robin Hood	2514	Aged	Bay	G. Stevenson, Craigie, *via* Tenterfield

DRAUGHT STALLIONS CERTIFICATED FOR LIFE DURING YEAR 1940-41—*continued.*

Name.	No.	Age.	Colour.	Owner.
Rose Farm Kerrston's Pride	2595	5	Bay ..	F. Benson, Gundiah
Rose Farm Regal Lustre	2515	5	Bay ..	S. O. Mears, Cunningham
Royal Flush ..	2684	Aged	Bay ..	Natal Downs Pastoral Co., Charters Towers
Royal Prince	2516	5	Bay ..	S. Ryan, Massie
Royal Reserve ..	2538	5	Bay ..	Jas. Morrow, Peak Crossing
Royal Robin	2572	6	Bay ..	R. S. Storey, Kingsthorpe
Royalty	2752	Aged	Bay ..	T. Kolna, Woorara, Springsure
Sir Dale	2539	5	Bay ..	Mrs. Ivy May Arndt, Rosewood
Skipper	2517	Aged	Grey ..	Geo. Palmer, Pratten street, Warwick
Squire Dale	2573	Aged	Bay ..	D. Gadsby, Jandowae
St. Helen's Major Dignity	2685	5	Bay ..	L. Storer, Atherton
St. Hilda's Nuggett ..	2622	5	Bay ..	W. Drynan, Glenapp
Surbiton	2753	Aged	Bay ..	M. J. Salmond, Brewery Springs, Clermont
Tamar Kerr	2607	5	Bay ..	N. Richards, Carrinyah, Nebo
Thorn Print	2518	5	Bay ..	Estate late Scott McLeod, Terrica, Inglewood
Top Boundary ..	2540	5	Bay ..	A. Wienholt, Kalbar
Valetta Horoscott ..	2608	5	Bay ..	A. H. W. Cunningham, Strathmuir, Collinsville
Vice Regal	2623	5	Bay ..	Miss A. Fleming, Kingston
Wheatley Lustre's Pride	2686	5	Brown, roan hairs	L. Favier and Sons, Kairi
Whiskers	2754	6	Bay ..	R. Benney, Blair Athol
Wolsingham Imperialist	2755	5	Bay ..	T. Clark, Bororen
Young Douglas ..	2624	5	Bay ..	J. Martin, Tambourine

BLOOD STALLIONS CERTIFICATED FOR THE YEAR 1940-41.

Adjutor	2019	4	Bay ..	T. J. Turkington, Pilton
Air Cadet	2028	4	Chestnut ..	C. A. Heaton, Glenmore Downs, Clermont
Beauforce	1978	4	Bay ..	E. N. Blomfield, Meenawarra, Cecil Plains
Blazer	1976	3	Brown	H. V. Littleton, Hillview, Crow's Nest
Calm Simon	1991	4	Bay ..	J. Kennedy, Kumbia
Canning Gold ..	1946	4	Chestnut ..	J. E. Carey, Monaro, Warwick
Child Chimes ..	2015	3	Chestnut ..	J. Sharrocks, Chelona, Mackay
Dandy	1977	4	Bay ..	H. G. Wood, Kupunn
Eureka Pride ..	1992	4	Bay ..	A. B. Peatey, Bundaberg
Feltlad	1959	3	Bay ..	M. Laffey, Mt. Sylvia
Flametto	2038	Aged	Bay ..	J. M. MacDonald, Raglan (Provisional)
Harir's Image ..	2012	4	Bay ..	J. R. Perrett, Mt. Hope, Booie
High Spear	2029	3	Chestnut	E. H. Faint, Pioneer, Clermont
Incurius	2020	4	Brown ..	J. B. Shannon, Tooloomba, St. Lawrence
Leading Lad	2030	4	Bay ..	C. A. Barnard, Coomooboolaroo, Duaringa
My Toy	2018	4	Chestnut ..	G. Miller, Chamber's Flat, *via* Kingston
Rex Mont	2021	4	Brown ..	H. M. Warneminde, Royal Exchange Hotel, Albert street, Brisbane
Royal Spear	1960	3	Bay ..	A. Heit, O'Bum O'Bum, Roadvale
Sarab	2031	4	Iron grey ..	O. J. Salmond, Lestree Downs, Clermont
Sir Percy	1961	4	Bay ..	P. Parcell, Radford
Some Fire	1993	4	Brown ..	J. Pownall, Mundubbera
Swift Lad	2032	3	Bay ..	D. H. Robertson, Albinia Downs, Rolleston
Tieson	2033	4	Bay ..	Canal Creek Pastoral Co., Marrawing
Trafalgar	1994	4	Brown ..	H. S. Bloxsome and Co., Mundubbera

PONY STALLIONS CERTIFICATED FOR THE YEAR 1940-41.

Abdulla	2037	4	Bay ..	N. G. Walker, Stanmere, Bororen
Alladin Son	1996	4	Grey ..	L. C. Walker, Bingera Station, Bundaberg
Black Prince	1962	4	Black ..	J. C. Davey, Abbeystead, Gatton
Boonah Joy	1963	4	Taffy ..	W. Coyne, Grandchester
Bright Gay Lad ..	1964	4	Bay ..	F. Huth, Haigslea
Cabulcha Quicksilver..	2022	4	Bay ..	J. M. Newman, Caboolture
Don	1979	4	Bay ..	J. C. Naumann, Frogmore, Pittsworth
Gay Lad	1980	3	Brown ..	L. Henschell, Yarranlea, Pittsworth
Patch's Pride ..	1947	4	Skewbald ..	F. Hill, 34 Dragon street, Warwick
Playboy	1981	4	Piebald ..	Miss J. E. Taylor, Kulpi
Quicksilver	1982	3	Chestnut ..	L. R. Martin, Kumbarilla
Rocket	1948	4	Grey ..	H. Wagland, Wonga, Goomburra
Sonny Boy	2027	4	Chestnut ..	F. Williams, Box 166, Ingham
Storm	1965	4	Piebald ..	A. D. Watherston, Cliffdale, Withcott
Walker's Pride ..	1966	4	Brown ..	Mrs. E. C. Hayes, Harrisville
Young Cygnet ..	1949	4	Bay ..	P. H. Elks, Reeve's Ferry, Stanthorpe

TROTTER STALLIONS CERTIFICATED FOR THE YEAR 1940-41.

Edward Harem ..	2017	4	Black ..	G. O. G. Kriedemann, Upper Coomera
Joker's Pride ..	1995	4	Bay ..	W. H. Meyers, Box 98, Maryborough

DRAUGHT STALLIONS CERTIFICATED FOR THE YEAR 1940-41.

Banker	1997	4	Bay ..	W. Taylor, Barambah Creek, Gayndah
Canaga's Duke ..	1983	3	Bay ..	M. H. Pickthorpe, Canaga, Chinchilla
Captain	2034	4	Bay ..	C. R. Ambrose, Marmor
Captain Starlight ..	1967	4	Bay ..	C. Brown, Linville (Provisional)
Caringal Craighurst ..	1950	3	Black ..	W. Evans, Greenmount

DRAUGHT STALLIONS CERTIFICATED FOR THE YEAR 1940-41—*continued.*

Name.	No.	Age.	Colour.	Owner.
Caringal Kerr Gay ..	1958	3	Black ..	W. Evans, Greenmount
Chief	1984	4	Bay ..	L. S. Gordon, Broxburn, Pittsworth
Crystalene	1951	3	Bay ..	T. M. Brown, Willowvale
Crystal Hope ..	1952	3	Bay ..	N. D. Nicholls, Pratten
Crystal Intent ..	1953	3	Black ..	V. C. Cutmore, Swanfels
Crystal Prince ..	1954	3	Black ..	N. D. Nicholls, Pratten
Dignity's Lad ..	1985	4	Brown ..	J. H. L. Von Pein and Sons, Quibet, Pittsworth
Everton Duke ..	1986	4	Bay ..	A. Tuppack, Jimbour
Fairymead Loyal Knight	1998	3	Bay ..	Fairymead Sugar Co., Bundaberg
General Chancellor ..	1999	4	Brown	J. A. Heading, Murgon
Glengoon Chancellor	2000	3	Bay ..	F. E. Mitchell, Byee
Glengoon Hiawatha ..	2001	5	Brown ..	F. E. Mitchell, Byee (Provisional)
Ideal Tim	2002	5	Bay ..	W. E. Sauer, Gayndah (Provisional)
Irton Pride	2003	4	Bay ..	E. J. Keys, Proston
Joker	1987	3	Brown ..	J. H. Brown, Wutul
King Donald ..	1955	4	Brown ..	N. A. Pollock, Araluen, Goondiwindi
Kirkcaldy Journalist..	2004	4	Roan ..	R. Ewart, Nanango
Kirkcaldy Preference	1968	4	Bay ..	W. Profke, Glamorgan Vale
Lustre's Perfection ..	1969	4	Brown ..	Mrs. A. R. Elliott, Laidley South
Mailboy Royal Prince	2005	4	Bay ..	Mrs. W. J. Lye, Monto
Majuba Lord Nelson	2023	4	Bay or brown	P. J. Daley, Millaa Millaa
Majuba Rex	1988	3	Black ..	S. O. Mear, Carrington road, Toowoomba
Mountain Chief ..	2035	4	Bay ..	A. Marlow, Thangool
Pine Vale Darnley ..	2016	4	Bay ..	State Prison Farm, Palen Creek
Pride	1956	4	Bay ..	C. H. Kedwell, care of S. Sweedman, Post Office, Texas
Prince	2013	4	Bay ..	H. B. Lott, Kensington, Bowen
Punch	2014	3	Bay ..	A. W. Skewes, Maroomba, Marlborough
Rhodesia Chieftain ..	2006	3	Bay ..	Roy H. Lochran, Cloyna, *via* Murgon,
Rose Farm Lord Lustre	1970	3	Bay ..	R. Drew, Rose Farm, Forest Hill
Royal Add	1989	4	Bay ..	W. T. Gillies, East Cooyar
Royal Dignity ..	2007	4	Bay ..	E. Reinbott, Kingaroy
Royal Duke	2008	5	Bay ..	A. H. Lowe, Kandanga (Provisional)
Royal Lustre	1971	4	Bay ..	H. A. Stuhmcke, Glenore Grove
Royal Tenor	1990	3	Brown ..	S. Otto, Bum Bum Creek, Crow's Nest
Sudbourne Esquire ..	2024	4	Chestnut ..	P. Kidd, Malanda
Surradene Marquis ..	1972	3	Brown ..	J. Lehmann, Coolana, Rosewood
Talgai	2036	4	Bay ..	Chalk and Son, Dooruna Downs, Clermont
Talgai Streamline ..	2025	4	Bay or brown	J. Tate, Tolga (Provisional)
Tent Hill Fashion Lad	1973	3	Bay ..	W. H. Grams, Upper Tent Hill, Gatton
Terang Duke ..	1937	4	Bay ..	C. Head, Swanfels
The Iron Duke ..	2009	4	Bay ..	C. A. Kington, Monto
Toomba	2026	4	Bay ..	S. J. Haughtey, Ingham
Trementheere Royal	2010	5	Bay ..	A. H. Tanzer, Abercorn (Provisional)
Vamphire Heir ..	1974	4	Bay ..	F. H. Hahn, Coulson
Willowbank Skipper ..	1975	3	Black ..	T. D. Gnech, Mt. French road, Boonah
Wyoming Final Tide..	2011	4	Brown ..	Fairymead Sugar Co., Bundaberg

AN OLD HINGE AS A GATE LATCH.

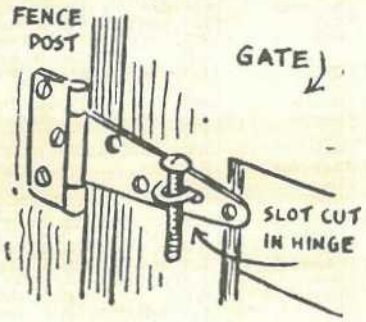


Plate 160.

Old hinges make good gate latches when used in the way shown here. After being slotted with a cold chisel the hinge is mounted on either the gate or the post and a good heavy staple provided to hold the latch bolt. Fasten the bolt to the gate or the post with a bit of string, and all risk of dropping it is avoided.

REJECTED STALLIONS.

List of Stallions in respect of which Certificates of Registration were refused on account of lack of type and/or conformation, lack of size or unsoundness, during the year 1940-41. These horses are prohibited from service, either public or private:—

BLOOD STALLIONS REJECTED DURING THE YEAR 1940-41.

Name.	Age.	Colour.	Reason for Rejection.	Owner.
Barfield	Aged	Brown	Spavin	E. T. Homer and Sons, Barfield, Banana
Baytie	5	Bay	Ringbone	P. Knudsen, Theodore
Gloveman	6	Bay	L.C.	T. W. Lewis, Moolboolaman
Golden Summit	5	Chestnut	L.T. and C.	A. W. N. Stone, Emerald
Kerman's Pride	3	Bay	L.C.	H. Kerle, Booral, *via* Nikenbah
Land Night	6	Chestnut	L.T. and C.	C. Jansen, Clermont
Modesto	Aged	Bay	L.T. and C.	T. Mullins, Wheatvale
Pavokoff	5	Bay	Spavin	W. H. Bell, Strathdee, Nebo
Regular	6	Bay	Unicrypt	Mrs. C. E. Goodenough, Bulliwallah, Clermont
Rex	4	Bay	L.T. and C.	G. M. Pedersen, Wiseby, Rolleston
Rivory	4	Bay	Spavin	H. A. Burgess, Miriam Vale
Royal Ship	6	Bay	L.T. and C.	C. B. Atthow, Imbil
Royal Thorn	5	Bay	L.C.	G. Stehbens, Kingaroy
U.I.	5	Bay	L.T. and C.	W. O'Sing, Bullyan, *via* Gladstone
War Paint	Aged	Bay	Unicrypt	P. Carsberg, Allora
Warwick	5	Bay	Crypt	E. E. D. White, Toowoomba
Wee Lu	6	Bay	L.C.	T. O'Doherty, Goombungee
Yendor	5	Brown	L.T. and C.	E. Y. Shannon, Tierawoomba, Nebo
Unnamed	3	Brown	L.T. and C.	P. M. Smith, Kerry, Beaudesert

PONY STALLIONS REJECTED DURING THE YEAR 1940-41.

Airzone	6	Skewbald	L.T.	R. W. Guppy, Eastwood, Tara
Black Pepper	5	Black	L.T. and C.	W. C. H. Pohlmann, Pallas street, Maryborough
Gay Lad	4	Grey	L.T. and C.	C. S. Gordon, Tiaro
Khedive	5	Grey	L.C.	R. B. Jefferies, Murgon
Warwick Boy	Aged	Brown	L.T. and C.	J. Mullins, Mill Hill

TROTTER STALLION REJECTED DURING THE YEAR 1940-41.

Ronnie Wilkes	Aged	Brown	Unicrypt	G. Nutley, Raceview, *via* Ipswich

DRAUGHT STALLIONS REJECTED DURING THE YEAR 1940-41.

Afton	Aged	Bay	L.T. and C.	H. Siemon Pty. Ltd., Charters Towers
Argyle Revenue	Aged	Bay	S.B. and R.B.	A. Smoothy, Mirani
Bald Ker	5	Brown	S.B.	H. D. Reisenleiter, Mt. Sylvia
Ben Lomond	6	Bay	L.C.	C. B. Atthow, Imbil
Bill	Aged	Bay	L.T. and C.	J. F. Pengelly, Ruby Vale
Black Prince	Aged	Brown	L.T. and C.	G. Ellrott and Sons, Sliepner Junction
Boomer	4	Bay	L.C.	F. Brazier, Jua, *via* Tingoora
Douglas Credit	5	Brown	S.B.	W. G. Frey, Inglewood
Duke	4	Bay	L.C. and Size	C. W. King, Imbil
Duke	6	Bay roan	Cataract	G. C. Seirup, Gracemere
Gaiety	4	Bay	L.T. and Size	R. A. Shelton, Monto
Glen Wallace	5	Bay	S.B.	S. B. Trigger, Biggenden
Grey Ker	4	Grey	S.B.	H. D. Reisenleiter, Mt. Sylvia
Jimmy	Aged	Grey	L.T. and C. and S.B.	G. A. Kelly, Biboohra
Jondaryan Cheers	5	Brown	S.B.	Logan Downs Co., Clermont
Kerwonga	4	Bay	L.C.	E. Geitz, Middle Park, Allora
King	Aged	Bay	L.T. and C.	T. Mullins, Wheatvale
King	4	Bay	L.C.	W. R. Nichol, Biggenden
Larundel Magic	Aged	Bay roan	S.B.	W. J. Edwards, Mirani West
Lightfield Chief	5	Bay	L.T.	J. A. Reibel, Sexton
Lion	5	Grey	L.T. and C.	A. E. M. Baker, Malthoid, Capella
Major Wiley	Aged	Bay	S.B.	E. H. Faint, Pioneer, Clermont
Noble	6	Chestnut	L.T. and C.	W. J. Croydon, Orange Grove, Clermont
Pretty Robin	4	Bay	S.B.	R. Hamilton, Southbrook
Prince Charlie	Aged	Chestnut	L.T. and C.	H. G. Walters, Proserpine
Prince Fashion	Aged	Bay	L.T. and C.	J. Mullins, Mill Hill
Prospect	5	Bay	S.B.	R. E. Gillespie, Junabee
Ranger	5	Bay	L.T. and C.	H. C. Taske, South Kalkie, Bundaberg
Royal Prince	4	Brown	L.C.	W. H. Litzow, Hunter street, Brassall
Scotland Yet	5	Bay	L.T. and C.	A. Smith, Koonandah, Bowen
Sonny Baronet	Aged	Bay	Stringhalt	C. K. Shannon, Theresa Downs, Capella
Star Lad	5	Brown	S.B.	J. C. Sam, Narrien, Clermont
Tony	Aged	Grey	S.B.	G. W. James, Bathampton, Clermont
Volunteer	3	Bay	L.T. and C.	Queensland Stations Pty. Ltd., Wandovale, Charters Towers
Wadeleigh, General Intent	6	Bay	L.C.	R. W. Innes, Wadeleigh, Boompa

Plate 161.

An Access Road to Newly-Settled Country, Innisfail District, North Queensland.

[*Photo.: Lands Department.*

PRODUCTION RECORDING.

List of cows and heifers officially tested by officers of the Department of Agriculture and Stock which have qualified for entry into the Advanced Register of the Herd Books of the Australian Illawarra Shorthorn Society and the Jersey Cattle Society, production charts for which were compiled during the month of October, 1940 (273 days unless otherwise stated).

Name of Cow.	Owner.	Milk Production.	Butter Fat.	Sire.
		Lb.	Lb.	
AUSTRALIAN ILLAWARRA SHORTHORNS.				
MATURE COW (STANDARD, 350 LB.).				
Sunnyside Gentle 20th (365 days)	Paul Moore, Sunnyside, Wooroolin	15,472·45	660·075	Bruce of Avonel
Sunnyside Honey 8th	Paul Moore, Sunnyside, Wooroolin	13,235·65	479·299	Bruce of Avonel
Pet of Pinelands	R. Ashford, Pinelands, Springside	10,806·08	407·758	Governor of Durham Park
Braemar Patsy	R. Ashford, Pinelands, Springside	10,605·36	373·506	Braemar Keeper
SENIOR, 4 YEARS (STANDARD, 330 LB.).				
Springlands Myrtle	V. A. Wyvill, Yarralea, Upper Yarraman	8,164	334·503	Gordon of Swanlea
SENIOR, 3 YEARS (STANDARD, 290 LB.).				
Navillus Princess 4th	C. O'Sullivan, Navillus, Ascot	9,911·8	390·865	Parkview Mars
JUNIOR, 3 YEARS (STANDARD, 270 LB.).				
Valera Milkmaid 2nd	R. Ashford, Pinelands, Springside	9,413·07	358·241	Kilbirnie Royalist
Navillus Vision 3rd	Con. O'Sullivan, Navillus, Ascot	9,029·75	345·665	Parkview Mars
SENIOR, 2 YEARS (STANDARD, 250 LB.).				
Oakvale Young Rapture	Con. O'Sullivan, Navillus, Ascot	7,723·1	289·605	Chatham of Raleigh
Ethel XIth of Blacklands	A. Pickels, Proston	6,848·6	252·695	Limelight of Parkview
JUNIOR, 2 YEARS (STANDARD, 230 LB.).				
Carn Brae Cherry	A. T. Paull, Bowenville	6,135·31	295·288	Laguna Emblem
Murray's Bridge Dina	A. T. Paull, Bowenville	6,721·56	264·594	Murray's Bridge De Valera
Ardilea Gwen 2nd	W. Hinrichsen, Ardilea, Clifton	6,437·25	260·129	Midget Sheik of Westbrook
Navillus Vera 8th	Con. O'Sullivan, Navillus, Ascot	6,015·75	248·885	Alfa Vale Prince Henry
JERSEY.				
MATURE COW (STANDARD, 350 LB.).				
Glenmoore Gentle Jean (365 days)	S. H. Caldwell, Walker's Creek, Bell	13,925·54	786·327	Glengarry Lord Dictine

	Senior, 4 Years (Standard, 330 Lb.).			
Narcissus of Windyway	Wakefield Bros., Upper Barron, Atherton ..	6,153·2	367·872	Royal Emblem 2nd of Rosedale
	Junior, 4 Years (Standard, 310 Lb.).			
Trinity Bright Girl	G. Champney, Wooroolin	9,224·4	490·026	Trinity Nobly Born
Oxford Rillaa	J. Sigley, Millaa Millaa	6,222·55	335·079	Oxford Peer
	Senior, 3 Years (Standard, 290 Lb.).			
Elladale Bravo's Marie	G. Champney, Wooroolin	8,084·4	404·847	Rosecliff Flowers Bravo
	Junior, 3 Years (Standard, 270 Lb.).			
Keystone Goldenia 2nd	E. J. Keys, Keystone Stud, Proston	7,625·5	414·651	Gunawah Gamboge Prince
Oxford Snow Flake 2nd	Farm Home for Boys, Westbrook	6,367·8	308·9	Oxford Peer
Westbrook Bells 4th	Farm Home for Boys, Westbrook	6,213·95	299·524	Oxford Gem's Ambassador
Glenview Delight	F. P. Fowler and Son, Glenview, Coalstoun Lakes	6,097·95	283·314	Trinity Governor's Hope
	Junior, 2 Years (Standard, 230 Lb.).			
Lermont Peg	J. Schull, Lermont, Oakey	5,835·55	304·783	Woodside Golden Volunteer
Trecarne Graceful 3rd	P. H. Schull, Woodview, Oakey	4,552·3	264·684	Trinity Some Officer
Strathdean Princess (242 days)	S. H. Caldwell, Walker's Creek, Bell	4,909·68	237·248	Landside Noble Dreamer

General Notes

Staff Changes and Appointments.

Mr. T. A. Smith (Toowoomba) has been appointed an honorary fauna protector.

Sergeant G. Schmidt (Morven), Sergeant J. W. Elstob (Pomona), Sergeant D. Spada (Monto), Sergeant A. A. Zeller (Howard), and Constable F. J. McNeven (Leyburn) have been appointed also inspectors under *The Slaughtering Act.*

Mr. A. G. Dougall, of Wadeleigh, Miriam Vale, has been appointed an honorary fauna protector.

Constable J. Moran (Glenmorgan) has been appointed also an inspector under *The Slaughtering Act.*

Wild Life Sanctuary at Miriam Vale.

Wadeleigh, the property of A. G. Dougall, Miriam Vale, has been declared a sanctuary under and for the purposes of *The Fauna Protection Act of* 1937.

Fruit and Vegetable Levy.

The Executive Council has approved of an extension for a further twelve months of the Stanthorpe Fruit and Vegetables General Levy Regulation which has been in operation for a number of years.

This regulation empowers the Committee of Direction of Fruit Marketing to levy on growers of fruit and vegetables in the Stanthorpe area, the sums raised thereby being used—firstly, in payment of expenses of collection of the levy; and, secondly, for administrative purposes of the Deciduous Sectional Group Committee. The levy is at the rate of 3s. 4d. per ton of fruit and/or vegetables consigned or despatched in the process of marketing; or a proportionate part of this amount for any portion of a ton.

Grading and Packing of Dried Fruits.

The Dried Fruit Grading and Packing Regulations of 1940 have been issued under *The Fruit and Vegetables Acts,* 1927 *to* 1939.

These regulations provide that no person shall pack or sell any dried fruit unless such dried fruit is graded in accordance with the standards prescribed, and unless the case or package containing such fruit is clearly and legibly stencilled or labelled on the outside with the name and address or brand of the packer and the name of the dried fruit and its appropriate grade description.

The dried fruit in any one package must be of uniform grade; it must be prepared from sound, naturally ripened fruit and possess the flavour characteristic of its respective kind, and must be thoroughly cured and free from disease.

Wild Life Preservation—A Boyne Valley Sanctuary.

Glengarry, the property of Messrs. Dickinson Bros., Boynedale, Boyne Valley Line, has been declared a sanctuary under *The Fauna Protection Act of* 1937.

Sale of Poultry.

The Minister for Agriculture and Stock (Hon. F. W. Bulcock) announced recently that under *The Diseases in Poultry Acts,* which were amended during the last session, provision was made for a system of delivery notes in connection with the sale of poultry, and the Act has now received Royal Assent.

The Act provides that no person shall sell for human consumption any poultry or the carcass of any poultry obtained from any other person unless he has received a delivery note for such poultry. All delivery notes must be in writing, and signed by the person making the sale, containing his name and address and the number and species of poultry delivered. If the person from whom the poultry were obtained was not the owner of such poultry, then, in addition to his name and address, the name and address of such owner and, in the case of delivery on sale, the purchase price.

Inspectors of poultry are empowered to enter the premises where poultry are being sold for human consumption and inspect poultry or carcasses of poultry offered for sale and delivery notes. These delivery notes must be retained for a period of three months.

Answers to Correspondents

BOTANY.

Replies selected from the outgoing mail of the Queensland Botanist, Mr. C. T. White, F.L.S.

A North Queensland Cycad.

E.G.G. (Mount Molloy)—

The specimen forwarded is *Bowenia spectabilis,* a cycad, and a native of North Queensland. The genus is represented by two species, the one you sent, which is fairly widely spread in North Queensland, and another, *Bowenia serrulata,* which is confined to the Byfield district in Central Queensland, and is sold as an ornamental plant under the name of "Byfield Fern." This plant belongs to the Zamia family, and in North Queensland is commonly called Zamia Fern. The male and female plants are distinct. Your specimen is very acceptable for our collection, and represents a nearly ripe female cone. The plant also produces a large underground tuber.

Bindweed—A Serious Pest.

H.S. (Blenheim, via Laidley)—

The specimen is the Bindweed (*Convolvulus arvensis*). This weed made its appearance on the Darling Downs some years ago, and is now much on the increase. It is a very serious pest, particularly in the Southern States. They have had more experience with it than Queensland, and a booklet issued by the Department of Agriculture, New South Wales, makes the following recommendation:—"Where the land is suitable for lucerne, the weed can be controlled by laying the land down to this crop for a period of years. The continual mowing of lucerne eventually kills out the Bindweed. If it is not desirable to sow the land with lucerne, it is recommended that land be deeply ploughed about September and frequently cultivated deeply with a tined cultivator in order to dry the land as much as possible, and to bring the roots to the surface. If dry weather is experienced, much of the weed will be destroyed in this way. Spraying with sodium chlorate, 1 lb. to 1 gallon water, applied at the rate of 300 gallons per acre, is recommended for destruction on a small scale." If you have only a small patch of the weed spraying with weak arsenical solution is satisfactory, but this has to be done several times before the weed is finally destroyed.

Trees for the Central-West.

K.G.S. (Dartmouth)—

Trees suitable for your district are:—Bottle Tree—both the narrow-leaved variety (*Sterculia rupestris*) and broad-leaved variety (*Sterculia trichosiphon*). The latter is the commoner one in the Central West and North, but the former makes far the better "bottle." If you have difficulty in obtaining it from nurserymen, we think the Curator of the Botanic Gardens, Rockhampton, has a stock of the broad-leaved variety, and the Curator of the Brisbane Botanic Gardens a stock of the narrow-leaved variety. The latter charges 2s. per plant for seedling trees distributed. Trees are issued by the Brisbane Gardens mainly to schools and public bodies, but plants unobtainable through the ordinary commercial channels could be supplied. Portugese Elm (*Celtis sinensis*), obtainable from Botanic Gardens, Brisbane; Citron Gum, obtainable from most nurserymen and from Botanic Gardens, Rockhampton; *Schotia brachypetala,* a tree with bright red flowers, should do well with you. The Botanic Gardens, Rockhampton, could supply Queensland Nut (*Macadamia ternifolia*).

If you wish to grow palms the common Date Palm (*Phoenix dactylifera*), the Canary Palm (*Phoenix canariensis*), the Cotton Palm (*Washingtonia*), and Wine Palm (*Cocos Yatay*) are all hardy growers in the West.

You are advised to get in touch with Mr. H. G. Simmons, Curator of the Botanic Gardens, Rockhampton. He could tell you what he has on hand in his nursery collections, and those suitable for planting in your district.

Rural Topics

Farmers to be "Mentioned in Despatches."

"By their works ye shall know them!" is surely a fitting motto for the system which has been set up in Nova Scotia in Canada by the Department of Agriculture there which provides special recognition each year of men, farmers and others, who have not only given outstanding service to agriculture and to their respective communities, but who also by their faithful efforts and adherence to sound farming practices have made a success on the soil and have set an example to others. In other words, if such worthy citizens do not get a decoration they will, at least, be mentioned in dispatches.

Water Meters for Dairy Cows.

Some years ago meters were placed on the individual drinking troughs of ten cows at Michigan State Agricultural College, U.S.A. The heaviest drinker consumed a gallon of water for every 2¾ lb. of milk produced, drinking an average of a little more than 20¼ gallons of water a day. Dr. Morrison, the author of "Feeds and Feeding" tells us that on a ration of silage, hay, and concentrates cows will drink in ordinary weather from about 2½ to 4½ lb. of water for every 1 lb. of milk they produce, in addition to the water in their feed. These figures furnish a definite reminder of the importance of plenty of water in milk production. Best results are obtained, of course, when the milkers have water of moderate temperature handy to them all the time.

Rubber Lugs for Steel Tractor Wheels.

Solid rubber lugs designed to take the place of steel angle cleats or spade lugs on tractors, thrashing machines and combines is a new American idea. "Bar-cleats" is the name given to them, and they can be used on any steel wheel with a face width of from 4 to 24 inches, being quickly and easily bolted on. Their use, it is claimed, serves to modernise steel tractor wheels with rubber; thus, any tractor may be converted to an up-to-date machine for the low price of the lugs.

Creosote for Soft Woods.

The life of any timber underground can be extended with the use of creosote, and on many farms in New Zealand pine and other soft woods are being used for fencing and so are being treated with creosote. At Rotorua, the State Forest Department has a creosoting plant in which straight unsplit saplings of pine are being treated as fence posts, and it is expected that this treatment will give them a life underground of up to thirty years.

Hurdles.

Here is a bit of interesting philosophy from a thoughtful farmer. The talk was about the things that prevent the primary producer from getting too rich—the hurdles we all have to get over some time or other in our lifetime: "We ought to be thankful," said our philosophical friend, "for the fact that there are hurdles in life, instead of moaning about it. We really ought to be glad that they are higher than most of us like to jump. We ought to be grateful, too, that there are so many of them. It is those hurdles that give you your chance to work your way to the front. Without hurdles, we'd all be in a flat race in which cunning rather than character would count most—at least for a time. The hurdles of life are set out for a purpose. They are part of the grand scheme of things. Take them as they come, with a prayer for the nerve-power, the heart-power, and the leg-power to get over each of them as you come to it."

The Best Test of Milk Yield.

Practical men have rightly come to the conclusion that the only infallible tests of the milking qualities of a cow are the milk scales and the Babcock tester, and that the quality and capacity of the udder itself are the most important indications of milking qualities. Authorities tell us that we should beware of the fleshy udder, because if we judge by outward appearance it looks good to the eye but never fails to disappoint. The perfect udder has a fine elastic skin, and, when empty, hangs in loose folds; but the fleshy udder looks almost as full after milking as before. It is a remarkable fact that the udder with a fine elastic skin and loose folds after milking is, as a rule, the easier of the two to milk, a good flow being obtained with comparatively little effort on the milker's part.

A Lamb-Tailing Experiment.

Here is the story of an interesting experiment in tailing lambs: On a well-known station property at lamb-marking time last year some ewe lambs had their tails docked very short; in another large group the tails were left about 2 inches long; and in another similar group the tails were left 4 inches long. Each group was kept under close observation, and it was found that the longest tailed group was much freer from fly strike than the other two groups. The percentage of fly strike in the long-tailed group (that is, the lambs left with 4-inch tails) was less than half that of the very short-tailed group, and appreciably less than the percentage of strikes in the medium length (2 inches) tailed group. In other words, tails left 4 inches long proved best in practice. All the lambs were run together, and a record of all fly strikes was kept.

Research for the Citrus Grower.

Growers of citrus fruits will be interested in this news item from California:—

"The future of the citrus industry will depend largely on dietetic research. There is a growing acceptance by the medical profession of the importance of citrus juices in the prevention and cure of disease. Naturally, such knowledge proceeds slowly, but it is gaining momentum. Much more must be done.

"During the world war it was noted that soldiers who convalesced in the south of France where they were given citrus fruits and vegetables were discharged from hospitals quicker than those in other parts of France. Experiments at the University of California suggests the same thing—that vitamin C is an important influence in the rapid healing of wounds.

"There is considerable significance in this under war-time conditions, but there is a much greater potential in the peace-time problems of healing the sick and wounded."

Rubber Tyres Save Time.

Confirmation of the advantages of pneumatic tyres on tractors, which have also become so noticeable to tractor users in Queensland, is provided by an investigation in the State of Iowa (U.S.A.). In the first place, there was found to be an average saving of 22 per cent. and a time saving of 23 per cent.

Out of 200 farms on which investigations were conducted, only three showed unsatisfactory results. The hours of use of tractors amounted to an average of 984 each year, and the useful tyre life ranged from three to fifteen years, with an average of seven years.

To get the best out of rubber tyres, users are advised to adopt the highest practicable speed, the widest implement that can be pulled satisfactorily at that speed, and adequate wheel weight.

The Economy of Flesh and Blood Horsepower.

The economy of the use of either the horse or the tractor on the farm continues as an evergreen "top rail" argument. All sorts of factors come into the discussion. Among other things, horse costs depend on the individual and his fondness for and management of horses, the nature and extent of the work that has to be done, efficiency of the equipment used, and what the farm can produce in the way of horse feed.

Tractor costs are not so tangible, but here again the individual comes into the argument. Much will depend on the user of the tractor and whether he is mechanically minded, and whether he is able to get all the power he can out of the machine without breaking things. The size of the farm, the nature of the farming, and general managerial efficiency also affect tractor costs.

On some farms it has to be granted that the tractor as we know it to-day has a definite place that cannot be challenged; on other farms it is a doubtful proposition, and on on many it should have no place at all. The principal factor in the economical use of the tractor is the size of the farm, especially where wheat is the chief crop cultivated.

When the Cow Looks for a Lick.

If a lick is needed at any time of the season it is at the stage when the dairy herd is dried off and the cows are preparing for their next season of production. The production of a calf takes a heavy toll from the mineral reserves in a cow's system, and if she is to be kept healthy and have a well-developed calf, a suitable lick should be provided so that she may replenish those mineral reserves.

Farm Notes

JANUARY.

THE heaviest rains of the year occur usually during the January-March period, and, weather conditions permitting, the main field activity for the month will be the preparation of land for autumn and winter crops, together with the scarifying and chipping required for existing row crops.

In all districts where wheat, barley, canary seed, and oats have been harvested, ploughing should be continued in order to conserve moisture for the succeeding crop, and to eradicate troublesome summer weeds.

Early ploughing ensures the accumulation of subsoil moisture, which is invaluable in promoting the growth of winter cereals at a time when seasonal rainfall is often deficient. The practice of early ploughing is recommended, especially to dairymen outside the wheat areas who normally sow oats, barley, and wheat for green feed.

Land intended for the February potato planting will now be in an advanced stage of preparation. The selection of whole seed from disease-free crops is recommended for autumn planting, as losses may occur from rotting if hot, wet conditions prevail after the planting of cut sets. Very small whole potatoes, less than 2 inches in diameter, are not likely to give the same results as more robust potatoes.

Succession sowings of summer fodder crops—such as sorghum (saccaline, white African, and imphee), Sudan grass, white panicum, Japanese millet, and cowpea may be continued where land is available. Maize sowing may also be completed in districts where early frosts are not the usual experience, but preference should be given to early-maturing or mid-season varieties.

Full advantage should be taken of the opportunity to arrange for the adequate conservation of fodder during the summer growing season, when the production of bulky, green crops presents no great difficulty.

Well-grown crops of maize and the sweet sorghums cut at the right stage of growth and before full maturity will make excellent silage which may be economically conserved in pit, trench, stack, or overhead silo. Surplus green grass, and many other green crops also, will make satisfactory silage for winter feed, and as a reserve for dry periods. Many dairy farmers prefer to rely on a continuity of green fodder crops throughout the year, but provision also should be made for conservation, for if pastures are scarce because of dry conditions, crop growth is then also at a minimum.

January is usually a favourable month for the sowing of paspalum, Rhodes, and other summer grasses in districts suitable for their growth. Recently burnt scrub land or thoroughly cultivated areas provide a good seed-bed, given sufficient moisture, but care should be taken to ensure that the germination standard of the seed is sufficiently high, as a good cover and rapid early growth is the principal factor in keeping weeds and undergrowth in check.

All harvesting machinery should be placed under cover. Repairs and adjustments may be regarded as wet-day jobs.

FILMS FOR THE FARMER.

An example which might well be followed by interested organisations in Australia was set recently by the United States Department of Agriculture. A two-reel sound film, showing proper methods of trucking and railing live stock, was produced and distributed to various responsible bodies on application. Included in the precautions presented on the screen were the removal of nails or other projecting objects in trucks and yards, and the use of canvas slappers instead of whips and prod-poles for driving animals along a race.

The possibilities of such a form of visual education are immense.

Orchard Notes

JANUARY.

THE COASTAL DISTRICTS.

ORCHARDS and plantations should now be carrying a good cover crop, which will help to check erosion during the wet season and, when cut and turned under, maintain the soil in good physical condition.

Pineapple plantations should be kept well worked.

Bananas and pineapples may still be planted, although it is somewhat late for the former in the southern parts of the State. It would be wise to keep a good lookout for pests of all kinds, including maori on citrus trees, scale insects, leaf-eating insects, borers, and fungus pests generally, using the remedies recommended by the Department of Agriculture and Stock.

Care is advised in handling and marketing of all kinds of fruit.

Grapes are in full season, and in order that they may be sold to advantage they should be very carefully handled, graded, and packed, as their value depends on the condition in which they reach the market. Well-coloured, mature fruit, with the bloom on and without blemish, always sells well. One of the greatest mistakes in marketing grapes is to send the fruit to market before it is properly ripe. A maturity standard for grapes is now in force, and immature grapes are liable to condemnation.

Bananas for the interstate trade should be well filled, but showing no sign of ripening. The fruit should be carefully graded and packed and the cases marked in accordance with the prescribed regulations and despatched without delay.

THE GRANITE BELT, SOUTHERN AND CENTRAL TABLELANDS.

JANUARY is a busy month in the Stanthorpe district, and orchardists will be fully occupied gathering, packing, and marketing the crop of mid-season fruits.

Much of the fruit may not carry far beyond the metropolitan market, but firm-fleshed plums, clingstone peaches, and good firm apples should stand the journey to the Central District; and, if they are carefully selected and properly graded and packed, they should carry as far as Cairns.

Points to remember—

Fruit should be fully developed, but quite firm when gathered.

It should be handled carefully. Bruised fruit is spoilt fruit.

Only one-sized fruit, of an even degree of ripeness and colour, should be packed in a case.

Fruit should be so packed that it will not shift, for if it is packed loosely it will be so bruised when it reaches its destination that it will be of little value. At the same time, it must not be packed so tightly as to crush the fruit.

MEN OF WAR PRACTISE THE ARTS OF PEACE.

Diggers of the New Zealand forces now in Egypt have formed a young farmers' club, which has taken on well and provides, in the words of one Digger in a letter home, "a wonderful respite from the army and war talk." Over 100 members have been enrolled; most of them were members of farmers' clubs before they enlisted. So, notwithstanding the need for learning all about the arts of modern war, the Anzac Farmers' Club has been able to arrange visits to research stations and agricultural colleges in the Nile Valley and so make the best of an opportunity of observing agricultural practice in a country where farming has been a chief industry since the days before Moses was found in the bulrushes to lead, in later years, his people to the Promised Land where to-day Australian Diggers, like their New Zealand cobbers, are seeing the strange contrasts of ancient and modern methods of extracting wealth from God's Good Earth.

Maternal and Child Welfare.

Under this heading is issued each month an article, supplied by the Department of Health and Home Affairs Maternal and Child Welfare Service, dealing with the welfare and care of mother and child.

CARE OF MOTHER AND CHILD.

CHILDREN AND THE HOLIDAYS.

PATRICIA, aged five years, whose home is in the country, is quite excited! She and her family have been invited to spend the Christmas holidays at the seaside. Patricia has never see the sea, but for a long time she has been interested in looking at pictures of children building castles and making gardens on the sand. Her mother has talked to her, too, about the happy days she used to spend at the seaside when she was a little girl. Patricia has a baby brother, Peter, who is five months' old. One day she asked her mother what they were going to do with Peter, for she did not think that he could travel so far from home.

Preparation for Travelling.

For mother, the preparation for the journey entails much thought, time, and work. The only opportunity she gets is when the children have been put to bed.

Baby and His Food.

Travelling should make little or no difference to the daily habits of baby in regard to sleeping and feeding. Peter is breast-fed, so there is no difficulty about his food. Their neighbour, who is to accompany them for part of the journey, is not so fortunate. Her baby, who is a few weeks younger than Peter, is bottle-fed on a cow's milk mixture. It will not be safe to feed him on cow's milk while he is travelling, particularly as the weather will probably be hot. Germs multiply most rapidly when milk is lukewarm. Ice boxes can be obtained from the Railway Department, but unless the milk can be brought to the station in a chilled condition and packed in ice immediately, it will not be safe to use it. It is not wise to rely on milk procured from refreshment-rooms for baby.

On any journey lasting more than three or four hours it will be safer to carry some form of dried milk or milk powder. In this case all that is required is a standardised measure to measure the powder, boiling water, and a cup or small jug

in which the food can be mixed. It is advisable to give the food rather less than full strength, and at the end of the journey to return to baby's usual food. For very young babies who are being fed artificially it is often convenient to use a condensed milk mixture.

It is a good plan to have two or more feeding bottles and teats in case there is difficulty in washing the used ones. A biscuit tin in which to keep the bottles and teats is useful. These should be wrapped in old clean linen or butter muslin. Milk which baby leaves in the bottle should be thrown away immediately, and the bottle washed if possible; otherwise, this milk will become contaminated and dangerous. An ample supply of clean drinking water should be carried in order to quench baby's thirst.

Patricia's Food.

It will be inadvisable to rely on food purchased from restaurants or refreshment-rooms for Patricia. A tin of twice-baked wholemeal bread will be found useful. Sandwiches made of stale wholemeal bread, cut thin and buttered, should be prepared. Fillings may consist of grated cheese or hard-boiled egg with or without lettuce, extract of yeast, such as Marmite or Vegemite, &c., finely grated carrot or peanuts, peanut paste, minced currants, raisins (seeded), prunes, sliced tomato, banana, or pineapple, minced meat or poultry, fish, such as salmon. Some uncooked fruit, such as apple, orange, pear, peach, banana, and papaw should be carried. A tin or two of full cream dried milk will be useful. Orange or pineapple juice added to the water and slightly sweetened with home-made lemon syrup, will make a pleasant and wholesome drink.

Clothing and Wraps.

Railway carriages are apt to be draughty. If the windows are closed they become stuffy. The child's position should be arranged so that the wind will not blow directly on to him. He should not be allowed to become overheated by being overclad. A plentiful supply of napkins will be necessary. A mackintosh bag makes a good receptacle for these when they are wet. If this is not procurable, tight little parcels may be made by wrapping them in several thicknesses of newspaper. A bundle of old newspapers and pieces of old linen (damp or dry) will be found useful in more ways than one. A little enamel chamber should be provided. In addition to the light clothing suitable for the season of the year, a woollen jacket and shawl for Peter, and a light coat and rug for Patricia should be included for use in the evenings.

Dress Basket.

A dress basket is invaluable when travelling with a young baby. It provides not only a receptacle for his clothes, but also a comfortable bed. When baby has to be nursed for long both mother and child become overheated, overtired, restless, and irritable.

Sleep.

It is important that sleep should be ensured for all young children who are travelling if over-fatigue and fretfulness are to be avoided. For a child of Patricia's age a bed may be improvised on a seat or, if the train is crowded, a light board, which has a number of uses, may be placed between the seats and pushed against the side of the carriage. A cushion and a rug placed upon it make a comfortable bed.

Toys and Picture Books.

Most children of Patricia's age will divide the time between sleeping and watching the novel sights out of the window. A few simple toys and picture books may be provided with advantage.

Control.

If their children have been well managed, parents will be well repaid while travelling. Children who have been badly managed will be a source of endless worry, and before the end of the journey the whole family will be in a state of fatigue and upset—a bad beginning for a holiday.

You may obtain information on all matters concerning infant and child welfare by visiting the nearest Maternal and Child Welfare Centre (Baby Clinic), or by writing to the Sister in Charge, or by communicating direct with the Maternal and Child Welfare Centre (Baby Clinic), Alfred Street, Fortitude Valley, N. 1, Brisbane.

DRINKS FOR SUMMER DAYS.

Barley Water.

Wash barley very well, taking care to remove all the starch. It is a good idea to rub it well with the hands in the water in which it is washed. Allow 1 tablespoon barley to each quart boiling water and boil rapidly for twenty minutes, adding a few slices of lemon during the boiling. Allow to cool, add fruit juices and sugar to taste. Chill before serving.

Fruit Punch.

Make some China tea and measure 1 pint. Strain into a basin into which you have measured ½ lb. sugar, stir until sugar is dissolved. Allow it to become quite cold. Place a block of ice, if available, in punch bowl and strain over the tea 1 pint orange juice and ½ pint lemon juice. Add 4 tablespoons maraschino, 2 pints ginger ale, 2 pints soda-water, and 1 pint lemonade. Decorate punch bowl with thin slices of orange and fresh sprigs of mint.

Orange Milk Shake.

Mix together 3 cups orange juice, 2 cups grapefruit juice, 1 cup water in which ½ cup castor sugar has been dissolved, a pinch salt, and, if liked, a few drops almond essence. Lastly add 1½ cups evaporated milk and 2 cups ice, broken into very small pieces. Place into a large jar and mix well. This is a delicious hot-day drink.

Ginger Punch.

Boil for twenty minues 1 quart water, 1 cup sugar, and ½ cup ginger syrup. Allow to become quite cold, then add the following:—One cup orange juice, ½ cup lemon juice, ½ cup finely chopped preserved ginger (optional), 1 bottle lemonade, and 2 pints soda-water. Serve cold.

Claret Punch.

Place ½ packet raisins in a saucepan with 1 quart water and boil for twenty minutes. Remove raisins and add 2 cups sugar, the thinly peeled rind of 1 lemon, and about 3-in. stick cinnamon. (Do not use ground cinnamon.) Boil for another five or six minutes. Cool a little, then add 2 cups orange juice, ½ cup lemon juice, and ½ cup grapefruit juice. Cool thoroughly, then strain over a block of ice, if available, with 1 pint bottle claret.

Grape-Juice Punch.

To each bottle grape juice add 4 tablespoons sugar, half cup limejuice, 1 pint bottle lemonade, and 2 pints soda-water. Pour contents over a large block of ice, if available, and serve thoroughly cold.

Pineapple Cup.

Mix together 4 cups cold strained tea, the juice of 6 oranges and 6 lemons. Boil together 1 medium-grated pineapple, 4 level cups sugar, 8 cups water for twenty minutes. Allow to cool, then add fruit juices, tea, &c. Pour over a block of ice, if available, and decorate with slices of fruit.

Fruit Cup.

Mix together 2 pints cider, the juice of 2 lemons, 2 oranges, and 2 cups pineapple juice. Stir in 2 pints grape juice and 1 cup sugar; allow to stand for about one hour. Now add 3 or 4 sliced oranges, 1 sliced apple, 2 or 3 slices lemon, a sliced banana, a few maraschino cherries or strawberries, and 2 or 3 passion-fruit. Add a piece of ice and serve very cold.

NOTICE TO READERS.

Because of the present necessity for strict economy in the use of paper, readers are requested to renew their subscriptions promptly. If renewals are unduly delayed, it may be impossible to supply back numbers of the Journal.

Address all renewals and other correspondence to the Under Secretary, Department of Agriculture and Stock, Brisbane.

RAINFALL IN THE AGRICULTURAL DISTRICTS.

TABLE SHOWING THE AVERAGE RAINFALL FOR THE MONTH OF OCTOBER IN THE AGRICULTURAL DISTRICTS, TOGETHER WITH TOTAL RAINFALL DURING 1939 AND 1940, FOR COMPARISON.

Divisions and Stations.	Average Rainfall.		Total Rainfall.		Divisions and Stations.	Average Rainfall.		Total Rainfall.	
	Oct.	No. of years' records.	Oct., 1940.	Oct., 1939.		Oct.	No. of years' records.	Oct., 1940.	Oct., 1939.
North Coast.	In.		In.	In.	*South Coast—contd.*	In.		In.	In.
Atherton	2·67	39	0·22	5·59	Gatton College ..	2·90	41	0·58	3·54
Cairns	3·87	58	1·68	3·53	Gayndah	3·01	69	0·08	3·41
Cardwell	4·17	68	0·30	4·97	Gympie	3·30	70	0·29	3·27
Cooktown ..	2·49	64	0·83	0·56	Kilkivan	2·65	61	1·30	1·43
Herberton ..	2·65	54	0·08	4·35	Maryborough ..	3·23	69	0·62	2·83
Ingham	3·80	48	0·28	1·93	Nambour	4·27	44	0·95	4·09
Innisfail	6·35	59	1·83	5·55	Nanango	2·82	58	0·93	2·48
Mossman Mill ..	4·77	27	0·89	10·16	Rockhampton ..	2·49	69	0·16	4·66
Townsville ..	2·56	23	0·18	1·43	Woodford ..	3·28	53	1·15	2·07
Central Coast.					*Central Highlands.*				
Ayr	1·73	53	..	0·52	Clermont ..	2·07	69	..	1·94
Bowen	1·28	69	0·24	2·61	Gindie	2·21	41	..	1·39
Charters Towers ..	1·43	58	..	0·18	Springsure ..	2·32	71	0·02	2·78
Mackay P.O. ..	3·07	69	0·04	1·59	*Darling Downs.*				
Mackay Sugar Experiment Station	2·81	43	0·16	1·33	Dalby	2·89	70	0·50	2·05
Proserpine ..	2·85	37	0·92	0·69	Emu Vale ..	2·79	44	0·90	2·97
St. Lawrence ..	2·40	69	0·06	2·34	Hermitage ..	2·58	33	..	..
South Coast.					Jimbour	2·61	52	0·13	2·00
Biggenden ..	2·86	41	0·28	4·49	Miles	2·63	55	0·96	0·87
Bundaberg ..	2·79	57	0·50	5·41	Stanthorpe ..	2·73	67	1·17	1·74
Brisbane	3·77	88	1·97	2·54	Toowoomba ..	3·35	68	0·75	3·93
Caboolture ..	3·65	53	3·25	4·18	Warwick	2·65	75	0·94	2·26
Childers	2·86	45	0·92	5·25	*Maranoa.*				
Crohamhurst ..	4·61	47	1·71	3·02	Bungeworgorai ..	2·18	26	..	0·82
Esk	3·29	53	1·43	2·41	Roma	2·16	66	0·24	1·58

A. S. RICHARDS, Divisional Meteorologist.

CLIMATOLOGICAL TABLE—OCTOBER, 1940.

COMPILED FROM TELEGRAPHIC REPORTS.

Divisions and Stations.	Mean Atmospheric Pressure at 9 a.m.	Shade Temperature.						Rainfall.	
		Means.		Extremes.				Total.	Wet Days.
		Max.	Min.	Max.	Date.	Min.	Date.		
Coastal.	In.	Deg.	Deg.	Deg.		Deg.		Points.	
Cooktown	..	83	71	86	31	64	2	83	5
Herberton	..	79	55	91	29	48	1, 9	8	2
Rockhampton	30·12	87	63	101	28	55	1, 4	16	1
Brisbane	30·17	78	61	94	28	53	2	197	7
Darling Downs.									
Dalby	..	86	55	100	23	38	1	50	3
Stanthorpe	..	78	49	93	23	32	1	117	3
Toowoomba	..	78	54	92	23, 24	43	4	75	3
Mid-Interior.									
Georgetown	30·03	95	64	102	22, 23, 29	48	3	..	..
Longreach	30·04	97	63	107	23	47	1, 2	..	..
Mitchell	30·07	90	56	104	23	37	1	26	2
Western.									
Burketown	..	91	67	102	25	55	1, 2	..	..
Boulia	29·96	97	67	109	23	48	1	8	2
Thargomindah ..	30·03	91	62	107	23, 30	51	2	17	2

ASTRONOMICAL DATA FOR QUEENSLAND.

TIMES COMPUTED BY A. K. CHAPMAN, F.R.A.S.

TIMES OF SUNRISE, SUNSET, AND MOONRISE.

AT WARWICK.

MOONRISE.

	December, 1940.		January. 1941.		Dec. 1940.	Jan., 1941.
	Rises.	Sets.	Rises.	Sets.	Rises.	Rises.
					a.m.	a.m.
1	4·49	6·34	5·0	6·50	6·29	8·3
2	4·49	6·35	5·1	6·50	7·27	8·58
3	4·48	6·35	5·2	6·50	8·25	9·52
4	4·48	6·36	5·2	6·50	9·22	10·44
5	4·48	6 37	5·3	6·50	10·17	11·35
					p.m.	p.m.
6	4·48	6·38	5·4	6·50	11·11	12·26
					p.m.	
7	4·49	6 39	5·4	6·51	12·2	1·17
8	4·49	6·39	5·5	6·51	12.53	2·9
9	4·49	6 40	5·6	6·51	1.44	3·1
10	4·49	6·41	5.7	6·51	2·35	3·54
11	4·50	6·41	5·7	6·51	3·27	4·47
12	4·50	6·42	5·8	6·51	4·18	5·38
13	4·50	6·43	5·9	6·51	5·11	6·29
14	4·50	6·44	5·10	6·51	6·4	7·17
15	4·51	6·44	5·10	6·51	6·56	8·3
16	4·51	6·44	5·11	6·51	7·47	8·47
17	4·51	6·45	5·12	6·51	8·35	9·29
18	4·52	6·46	5·12	6·51	9·21	10·11
19	4·52	6·46	5·14	6·51	10·5	10·53
20	4·53	6·47	5·15	6.51	10·47	11·37
21	4·53	6·48	5·16	6·51	11·28	..
						a.m.
22	4·54	6·48	5·17	6·50	..	12·22
					a.m.	
23	4·54	6·48	5·17	6·50	12·9	1·11
24	4·55	6·49	5·18	6·50	12·52	2.4
25	4·55	6·50	5·19	6·50	1·37	2·58
26	4·56	6·50	5·20	6·49	2·26	3·55
27	4·56	6·50	5·20	6·48	3·17	4.53
28	4·57	6·51	5·21	6·48	4·12	5.50
29	4·57	6·51	5·22	6·48	5·10	6·46
30	4·58	6·51	5·22	6·47	6·8	7·40
31	4·59	6·51	5·23	6·47	7.7	8·34

Phases of the Moon, Occultations, &c.

7th Dec.	☽	First Quarter	2 1	a.m.
15th ,,	○	Full Moon	5 38	a.m.
22nd ,,	☾	Last Quarter	11 45	a.m.
29th ,,	●	New Moon	6 56	a.m.

Apogee, 9th December, at 6.0 p.m.
Perigee, 25th December, at 4.0 p.m.

Mid-summer will arrive in Queensland on 22nd December, when the sun will reach his farthest south; Rockhampton, Longreach, and Emerald will then pass under his vertical rays.

The summer night sky is more thickly star-strewn with faint and brilliant stars than at any other time of the year. About Christmas the moon will be absent and the Milky Way will span the eastern heavens like a mighty arch. The South Celestial Pole is a point in the sky which is the same number of degrees above the south point on the horizon as the latitude of the place the observer is in. Near this point is, what appears to be two island-like pieces of the Milky Way, at a distance from the main arch. These are the Megellanic Clouds, the largest is 112,000 light years while the smaller is 95,000 light years from us; a light year is about six billion miles. The smaller cloud is so large that light, travelling at the rate of 186,000 miles per second, takes 6,000 years to pass from one edge to the other. These figures are accurately known.

In the Milky Way the Southern Cross may be seen rising in the south-east after an absence from the evening sky. In line with the Megellanic Clouds, toward the Milky Way is Canopus in Argo, the Ship, the second brightest star in the sky. The brightest of all stars is Sirius, the Greater Dog Star, which is still higher and on the western edge of the Milky Way. This is a neighbouring sun, it being but nine light years away. Bright stars must not be confused with the planets Jupiter and Saturn, which are near each other but much farther west. Across the Milky Way but higher than Sirius is Procyon, the Lesser Dog Star. These two dogs attend Orion, the giant, which is well known with his belt of three stars and sword hanging therefrom.

Away in the northern part of the Milky Way the brilliant Capella shines. Not far from Capella is a small star which was recently found to be a remarkable binary. One of the components is a giant red, and the other an extremely hot, blue star. Every 972 days the red giant takes 30 days to pass between us and the brighter blue star.

5th Jan.	☽	First Quarter	11 40	p.m.
13th ,,	○	Full Moon	9 4	p.m.
20th ,,	☾	Last Quarter	8 1	p.m.
27th ,,	●	New Moon	9 3	p.m.

Perigee, 19th January, 6.0 p.m.
Apogee, 6th January, 3.0 p.m.

For places west of Warwick and nearly in the same latitude, 28 degrees 12 minutes S., add 4 minutes for each degree of longitude. For example, at Inglewood, add 4 minutes to the times given above for Warwick; at Goondiwindi, add 8 minutes; at St. George, 14 minutes; at Cunnamulla, 25 minutes; at Thargomindah, 33 minutes; and at Oontoo, 43 minutes.

The moonlight nights for each month can best be ascertained by noticing the dates when the moon will be in the first quarter and when full. In the latter case the moon will rise somewhat about the time the sun sets, and the moonlight then extends all through the night: when at the first quarter the moon rises somewhat about six hours before the sun sets, and it is moonlight only till about midnight. After full moon it will be later each evening before it rises, and when in the last quarter it will not generally rise till after midnight.

It must be remembered that the times referred to are only roughly approximate, as the relative positions of the sun and moon vary considerably.