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Agriculture.

SEED WHEAT FOR DISPOSAL.

For a number of years wheat-breeding and the evolution and testing of new varieties of wheat have been carried out by the Department of Agriculture and principally at the Roma State Farm.

Comparative tests of standard varieties approved in other States have also been made. A selection from the two groups herein mentioned was made last season; the wheats being tested under field conditions in several districts of the State. Results indicate that these particular varieties deserve attention on the part of wheatgrowers. For this reason it has been decided to offer limited quantities for sale to *bone-fide* growers at 5s. 6d. per bushel (after cleaning and grading), f.o.r., Hermitage.

Orders for the undermentioned varieties (illustrated and described elsewhere in the Journal) should be sent on to the Under Secretary for Agriculture and Stock, Brisbane, accompanied by the necessary remittance. Applications will be treated according to priority, but it has been decided (in order to make the distribution as widespread as possible) to limit the quantity for any one applicant to 9 bushels in all. The grain is to some extent "weathered" through continuous rains interfering with harvesting operations, but official germination tests made show that the quality of the grain in this respect is quite satisfactory.

Crossbred Wheats.—Soutter's Early, BXF 37, BXF 86A, X 343-13, BXD-66, BX1P-12.

Approved Varieties from Other States.—Lotto, Warren.

Of Queensland Origin.—Amby, Piastre, Coronation, Bunge.

Soutter's Early.—A very early though sparse stooling wheat suitable for medium-late and late sowing on rich soils; short strawed and carries very little flag; straw slender but tough; heads medium length, not bearded; compact; glumes very slightly coloured, smooth; grain small, plump, and bright. This variety originated at Roma State Farm, where it has given good results, yielding up to 37½ bushels per acre. Owing to its early maturing habit and freedom from flag it escapes rust to a remarkable degree.

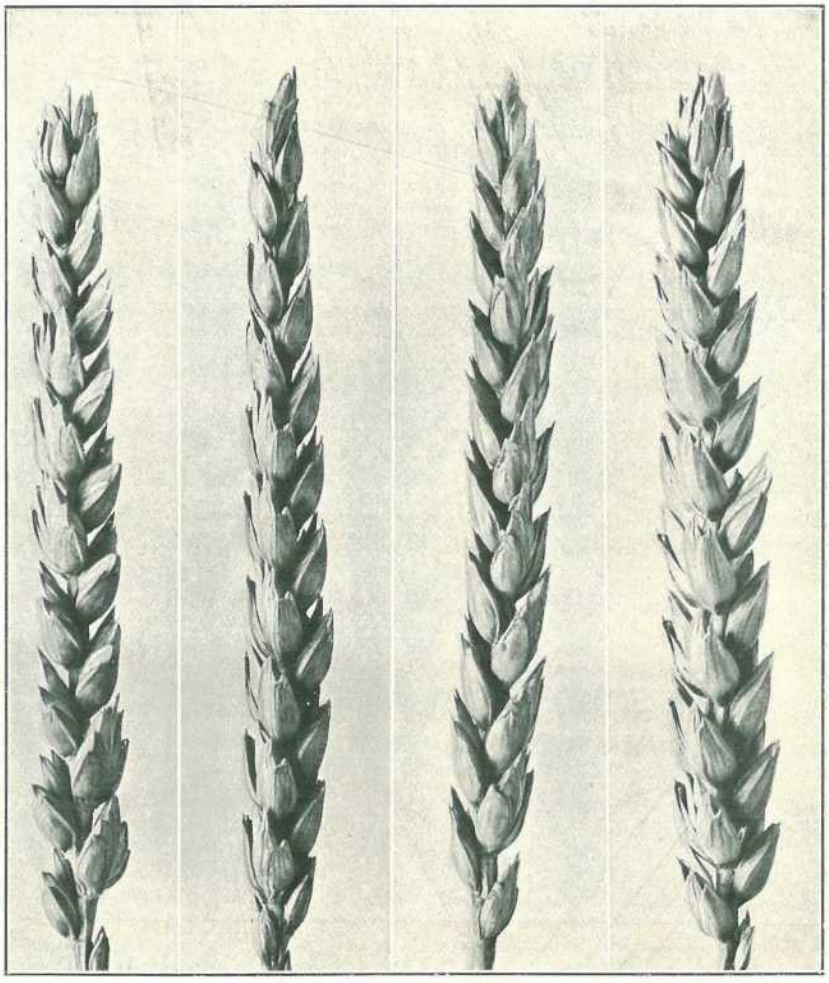
Warren.—A late mid-season variety suitable for early and main sowings, particularly on light soils; carrying a somewhat heavy flag and of fair stooling qualities; straw stout. Chaff smooth, white, and set firmly on the grain. Heads long and compact, slightly tapering, not bearded. Grain white, somewhat soft and starchy, long and rather over medium size when grown under good conditions. Is fairly rust-resistant, but is bunt-liable. An excellent hay wheat, and also of fair milling quality. An average of three years at Roma State Farm gave 22·9 bushels per acre.

BXF 86A.—A selection obtained from crossing Bunge and Federation. A free-stooling variety of medium height, suited for early sowing. Flag somewhat light, straw white, fine, but inclined to toughness. Heads long, closely set, not bearded, chaff smooth and of a delicate brown colour. Grain medium sized, smooth skin, and slightly yellow in colour.

Crossbred 343-13.—A selection made at Roma State Farm from this crossbred. Is a mid-season variety of medium-stooling habits, carrying a moderate amount of flag, suitable for main and medium late sowing. Straw fine, but fairly tough. Heads of medium length, slightly open, non-bearded. Chaff smooth and white in colour. Grain small, bright, and smooth-skinned, shallow crease. This variety gave universally satisfactory results in all test plots throughout the South-Western District. Yielded up to 33·7 bushels at Roma State Farm.

BXD 66.—A selection from a cross between Bunge and Durum which appears to be suited to the conditions of the South-Western District. A mid-season wheat of moderate stooling habits carrying little flag, suitable for main and medium late sowings. Straw fine and of medium toughness. Head compact, of medium length, non-bearded; chaff white. Grain medium length, plump, light brown in colour, and fairly hard.

BXF 37.—A selection from a Bunge-Federation cross. A mid-season variety suitable for early sowing, of moderate stooling habits, carries a medium quality of flag. Straw moderately stout. Head long and compact. Chaff smooth, light brown in colour. Grain medium sized, somewhat rough skinned, white in colour. This variety has given a yield of 37·2 bushels at Roma State Farm.



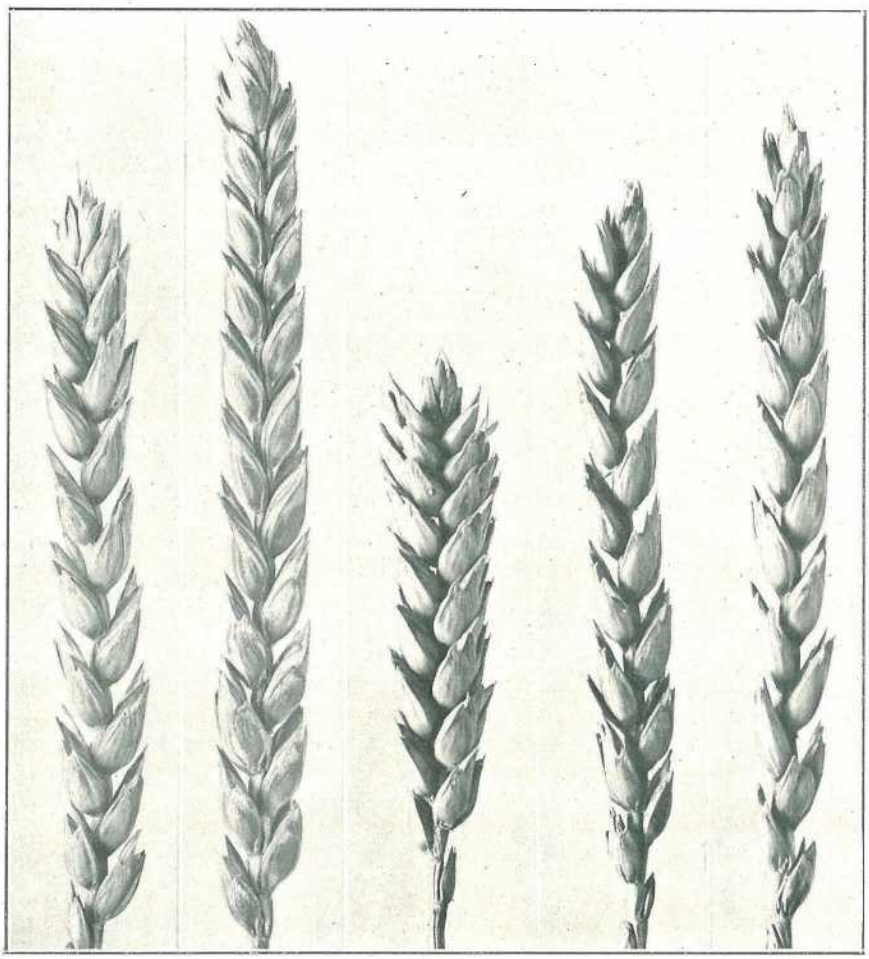
1. 2. 3. 4.

PLATE 10.—1. SOUTTER'S EARLY. 3. BXF 86A.
2. WARREN. 4. CROSSBRED 343-13.

BX1P 12.—A selection obtained from crossing Bunyip and Indian Pearl. A free stooling variety suitable for early sowing, vigorous in growth and carrying a moderate amount of flag, straw tough, but

inclined to fineness. Heads short, compact, and carrying club tips which are semi-bearded. Chaff white, grain small but plump, having the characteristic hardness of the Indian Pearl variety.

Piastre.—An early maturing variety suitable for medium and late sowing which has done well in the Downs and Maranoa districts. Is a

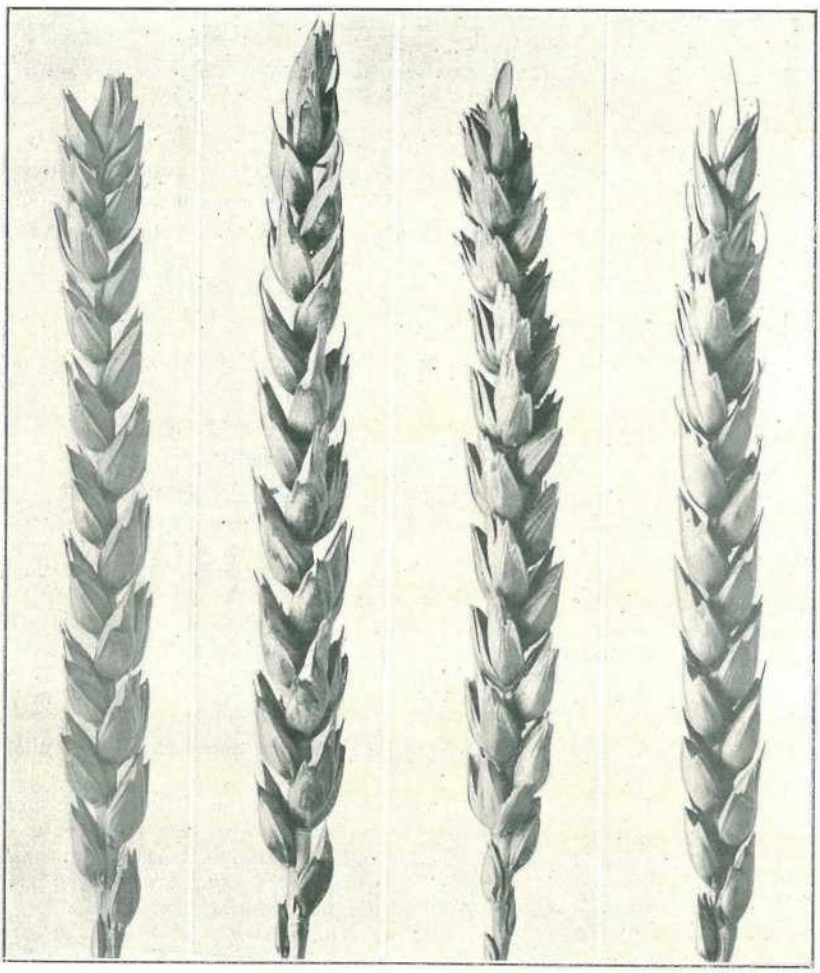


5. 6. 7. 8. 9.

PLATE 11.—5. BXD 66.
6. BXF 37.
7. BXIP 12.
8. PIASTRE.
9. LOTTO.

fairly free-stooling variety having a fine, moderately tough straw. Carrying a small amount of flag. Heads medium length, fairly compact, non-bearded, chaff white. Grain small, plump, and smooth-skinned with shallow crease. Semi-translucent.

Lotto.—A variety which has been introduced from Western Australia. A heavy stooling wheat suitable for medium early and main crop sowings, of average height, carrying a moderate amount of flag. Heads long and compact, non-bearded; chaff smooth and of a pale golden colour. Grain medium sized, plump, and semi-translucent.



10. 11. 12. 13.

Plate 12.—10. Bunge. 12. Amby.
11. Florence. 13. Coronation.

Bunge 1.—A variety suitable for main and medium late sowings that is well and favourably known throughout the wheatgrowing areas of Queensland. An excellent hay and grain wheat, rather a sparse stooler, carries little flag. Straw white and of medium fineness. Highly rust resistant. Heads of medium length, compact, and non-bearded and

inclined to set closely at tip; chaff smooth and white. Grain somewhat long, hard, and translucent. One of the most consistent yielders at

Amby.—A variety suitable for main crop sowing which originated in the Maranoa district. This selected wheat proved to be the best of a number of crossbred wheats tested several years ago at Amby on heavy black soil. It is a hardy mid-season variety and a good stooler, carrying a moderate amount of flag. Ears compact, non-bearded, chaff white and smooth. Grain plump and rather shotty in appearance, semi-translucent. Is an excellent milling wheat and has given good result in the Maranoa district.

Coronation—A mid-season variety suitable for main or medium-late sowing on light country. Grown on heavy soils, it is somewhat inclined to produce flag, and the straw consequently becomes weaker. Is fairly rust resistant and withstands dry weather very well. Is suited to the South-Western District and drier portions of the Darling Downs. Heads of medium length, compact, and tip bearded, chaff smooth and white. Grain small, hard, plump and semi-translucent.

FARMERS AND TAXATION.

Amongst the earliest needs of farmers in any country of the world may be reckoned roads. Roads and bridges and culverts are essentials which cost money, and the money, whether found by the Government or by shire councils, must be raised by some form of taxation, such as rates, for instance. But as it has been the time-honoured privilege of farmers to grumble at the weather, so is it also their privilege to travel on well-made roads, cut them up with narrow-tired wheels, excavate huge ruts with timber wagons, and then to exclaim against the rates by means of which such damages are repaired and the roads kept in good order for their use and benefit. Taxation certainly sits not too lightly on the Queensland farmers since the war began. How would they feel if subjected to the heavy drains to which farmers in Europe are subjected, as described in the following from the "*Oklahoma Farmer*"?:—

"When the American farmer is inclined to feel 'gravely' over the conditions of his life, he will find some consolation in the thought that farmers in other countries are worse off than he is. In England, for instance, farmers are compelled to take out more licenses to conduct their business than any other class of business men. Some idea of the enormous tax on English farming can be had from the following letter written by an English farmer to his brother in Michigan. He says:—'First of all, in January, I had to write to the Excise Officer for a form of exemption to keep my old sheep dog. The form came back in about a fortnight. Then I had to fill it up and return it before I got the license to keep it free of duty. Then I had to visit the post office to get another license, which cost me 7s. 6d.; it is to keep a spaniel, so that I could hunt the rabbits from the hedgerows. Then I had to pay 10s. for a gun license in order to shoot the rabbits, and I had to go to another magistrate's clerk to have another license approved. This was for an assistant to keep the rabbits down on my farm, which adjoins woodlands. As occasionally I drive the missus to market and sometimes ask a friend to ride, I have again to go to the post office to get a 15s. trap license. A couple of months ago I injured my leg and could not climb up into my trap, so I purchased a light-weight four-wheel. A letter from the local officer of Excise pointed out to me the fact that a license of a guinea had to be taken out. Cider running short, I had to provide something for my farm hands to drink, so I thought that I would

obtain a couple of sacks of barley malt—the barley being grown in England—and brew a few gallons of ale. To do this I had to take out another license. I have a traction engine, with which I do my farm work, such as threshing, &c., and between whiles a bit of hauling. This necessitates my taking out the most expensive license of all, a ten-pounder. On the farm there are usually a few partridges and a stray pheasant or two, reared and fed at my expense. To shoot these I have to obtain a game license, which costs me £3. Now, I sell a few gallons of milk, and to do this I have to get my premises registered by the local medical officer of health. This is practically another license. Flowing right through my farm is a splendid trout stream, yet before I can attempt to entice one of the spotted beauties from beneath its surface I have to take out another license. If I send my sow to a neighbour, I have to go to the policeman for a license for her, which he issues on condition that she does not remain away more than four days. You may smile, but it's an official fact. If I sell my neighbour a few pigs, I have to obtain a license to remove them. If I send a lot of fat baconers to town to be killed, another visit to the policeman is necessary. If I decide to have them killed at home, I must have my farm building licensed as a slaughter-house. If I have only to turn my pig across the road to clover, again I have to visit that policeman. As all these licenses have been necessary for my business, and not one of them is for luxury, such as male servants or armorial bearings, I really think that the farmer can justly claim that his business is the most licensed in the kingdom.' ''

MARKET GARDENING.

A GOOD TOMATO FOR HOME GARDENS.

By W. S. CAMPBELL, Sydney.

Of the vast number of tomatoes I have tried from time to time, I find the variety ''Carter's Sunrise'' to be the best of all. It is extremely prolific, free from ''black spot,'' of a fair size, excellent flavour, smooth, of bright, rich red colour, and is well worth the attention of all those who grow some, if not all, of their own vegetables. The fruit is somewhat small for market purposes, where large fruit, no matter of what quality, is in demand.

Some years ago I noticed in an English gardening periodical that the Royal Horticultural Society of England reported that in trials made with tomatoes at the Society's gardens, Carter's Sunrise was proved to be the best tomato raised for growing under glass or in the open garden. I obtained seeds from England, and found it to be so excellent that I have grown this variety only ever since, keeping it up to the mark by careful selection of seed.

Notwithstanding the present abnormal season, with a superabundance of rain, this tomato has not suffered in the least from '' black spot'' or other fungus diseases; and the fruit has been abundant and good. The number of fruit on a bunch generally ranges from seven to nine and more, all of a nice fair size for home use.

During the present season one plant produced a bunch of nineteen fruits, all of a good size, and this same plant has produced a further number of fruits during the past three months. It was planted late.

The best method of growing tomatoes is to train the plants to one stem, planting them 18 in. apart in rows about 3 ft. apart, or in a single row.

I find that rooted cuttings, kept through the winter, produce the earliest fruits. Last season I had a superabundance of excellent specimens of ''Sunrise'' for family use at a time when half-ripe specimens were sold in shops at 2d. each.

Pastoral.

BREEDERS OF PUREBRED STOCK IN QUEENSLAND—BEEF AND DAIRY CATTLE.

The following revised list of breeders of purebred cattle is published for the purpose of informing those who desire to improve their stock where the best cattle can be obtained in the State. The Department of Agriculture and Stock takes no responsibility in relation to the entries in the list; but, when inquiries were first made, the condition was imposed that the entries were to be only of stock that had been duly registered, or that were eligible for registration in the different herd books. The entries received were, in some cases, somewhat too confusing for proper discrimination, it has, therefore, now been decided that only such cattle as have been registered will be included. The lists previously published in the *Queensland Agricultural Journal* have now been withdrawn for revision.

Name of Owner.	Address.	Number of Males.	Number of Females.	Herd Book.
P. Young	Talgai West, Ellinthorp	2	42	Milking Shorthorn Herd Book of Queensland
L. H. Paten	"Jeyendel," Calvert, S. & W. Line	8	21	Ayrshire Herd Book of Queensland
F. C. G. Gratton ..	"Towleston," Kingsthorpe	2	14	Holstein Cattle Club Herd Book
T. Mullen	"Norwood," Chelmer	3	20	Queensland Jersey Herd Book
J. H. Paten	Yandina	6	21	Ayrshire Herd Book of Queensland
Queensland Agricultural College	Gatton	4	38	Ayrshire Herd Book of Queensland
		..	2	Ayrshire Herd Book of Scotland
		2	9	Holstein-Friesian Herd Book of Australia
		2	31	Jersey Herd Book of Queensland
J. W. Paten	Wanora, Ipswich ..	10	42	Ayrshire Herd Book of Queensland
M. W. Doyle	Moggill	4	12	Queensland Jersey Herd Book
G. A. Buss	Bundaberg	1	15	Herd Book of the Jersey Cattle Society of Queensland
W. Rudd	Christmas Creek, Beaudesert	2	10	Milking Shorthorn Herd Book of Queensland
M. F. and R. C. Ramsay	Talgai, Clifton ..	5	27	Herd Book of the Jersey Cattle Society of Queensland
George Newman ..	Wyreema	12	47	Holstein-Friesian Herd Book of Australia
R. Conochie	Brooklands, Tingoora	9	21	Queensland Jersey Herd Book

BREEDERS OF PUREBRED STOCK IN QUEENSLAND—*continued.*

Name of Owner.	Address.	Number of Males.	Number of Females.	Herd Book.
W. J. Barnes	Cedar Grove ..	10	37	Queensland Jersey Herd Book
T. B. Murray-Prior ..	Maroon, Boonah ..	2	37	Queensland Shorthorn and Australian Herd Books
W. J. Affleck	Grasmere, N. Pine ..	6	31	Queensland Jersey Herd Book
A. J. McConnel ..	Dugandan, Boonah	19	36	Australian Hereford Herd Book
A. Pickels	Blackland's Stud Farm, Wondai	4	62	Illawarra Dairy Cattle Herd Book of Queensland
G. C. Clark	East Talgai, Ellinthorp	3	7	New Zealand Herd Book
H. D. B. Cox	Sydney (entered brother's name)	3	16	Commonwealth Standard Jersey Herd Book
J. T. Perrett and Son	Coolabunia	2	36	Illawarra Herd Book of Queensland
State Farm	Kairi	4	8	Ayrshire Herd Book of Queensland
		1	2	Holstein-Friesian Herd Book of Australia
E. M. Lumley Hill ..	Bellevue House, Bellevue	45	127	Australian Hereford Herd Book
W. T. Savage	Ramsay	2	22	Illawarra Herd Book of Queensland
Tindal and Son ..	Gunyan, Inglewood	50	400	Australian Hereford Herd Book
J. N. Waugh and Son	Prairie Lawn, Nobby	3	28	Queensland Jersey Herd Book
J. H. Fairfax	Marinya, Cambooya (2)	9	55	Ayrshire Herd Book of Queensland
C. E. McDougall ..	Lyndhurst Stud, Warwick (2)	25	100	Queensland Shorthorn Herd Book
J. Holmes	"Longlands," Pittsworth	6	20	Ayrshire Herd Book of Queensland
P. Biddles	Home Park, Netherby	1	20	Illawarra Dairy Cattle Association
A. Rodgers	Torran's Vale, Lanefield	1	9	Milking Shorthorn Herd Book
R. S. Alexander ..	Glenlomond Farm, Coolumboola	1	..	Holstein-Friesian Herd Book of Queensland
		2	..	Holstein-Friesian Herd Book of Australia
State Farm	Warren	3	83	Ayrshire Herd Book of Queensland
S. H. Hosking.. ..	Toogooloowah ..	2	15	Holstein Cattle Club Herd Book
W. J. H. Austin ..	Hadleigh Jersey Herd, Boonah	2	11	Queensland Jersey Herd Book
Ditto	ditto	..	6	Commonwealth Standard Herd Book
H. M. Hart	Glen Heath Stud, Yalangur	7	21	Ayrshire Herd Book of Queensland
C. Behrendorff ..	Inavale Stud Farm, Boonah	3	9	Holstein-Friesian Herd Book of Queensland
F. A. Stimpson ..	Ayrshire Stud Farm, Fairfield, South Brisbane	25	77	Ayrshire Herd Book of Queensland
M. L. Cochrane ..	Paringa Farm, near Cairns	5	21	Ayrshire Herd Book of Australia

BREEDERS OF PUREBRED STOCK IN QUEENSLAND—*continued.*

Name of Owner.	Address.	Number of Males.	Number of Females.	Herd Book.
Albert Cook	"Greenmount," Mackay	1	8	A.-A. Stud Book, New Zealand
Thomas Brown ..	"Bellgrove," Kingaroy	1	14	Do.
Higgins Bros. ..	Sandy Creek, Leslie, Q.	6	2	Do.
Calcino Bros.	"Summariva," Charleville	3	4	Do.
W. M. McKelvie ..	"Undulla," Miles ..	5	4	Do.
James Connors ..	"Glen Erin," Nanango	1	2	Do.
J. A. Mackintosh ..	"Yundah," Warwick	2	8	Do.
M. J. Luff	Kaimkillenbun ..	1	1	Do.
A. Spencer	Brisbane	2	1	Do.
Beak Pastoral Co. ..	Rockhampton ..	2	10	Do.
W. Jackson	Central Farm, Savannah, Mackay	1	1	Do.
E. Swayne, M.L.A. ..	West Plane Creek ..	1	2	Holstein-Friesian Herd Book of Queensland
Godfrey Morgan ..	"Arubial," Condamine	3	6	Queensland Shorthorn Herd Book
John Anderson ..	"Fairview," Southbrook	7	34	Ayrshire Herd Book of Queensland

THE BLOW-FLY PEST.

ANOTHER FLY-TRAP.

Mr. H. A. Adams, Yalleroi, sends us the following suggestion for the construction of a fly trap:—

As the blowfly pest is one that many have to deal with, myself included, and many are the devices to cope with them that have been invented, and many are the claims of their respective merits (the "Destructo" fly-trap and many others which are costly), and I do not think they are worth the trouble, from the results obtained, I give you this, if you think it is worth the print. I have tried it, and I believe it outclasses all the other traps I have seen.

Get a kerosene tin, cut it on the two ends and one side, leaving the one side uncut; the cut must be made to allow the right-hand half to be as high as possible above the left-hand half. Having cut the two ends and one side, turn over to the right hand the higher half of the tin, and the uncut side will keep the two firmly together. Put a piece of fine soft wire around the two to keep them from tipping; punch four holes in it, one in each corner, to hang with wire to trees or fence; in the lower half of the tin, put your bait—the best of all, the inside or entrails of a sheep, but they must be green or highly decomposed before using. In the higher half of the tin put your arsenical solution; add to that some sugar; paint the bait with this solution and allow some to remain in the bottom of the bent half, as the fly will go for the moisture in the bottom, it being sweetened. Fill the top half of the tin with arsenical solution, get two strips of flannel, about 2 in. wide and long enough to go to the bottom of the liquid and rest on the bait in the lower tray or half of the tin; the flannel will syphon the liquid from the higher tray to the lower on to the meat, until the whole of the liquid is exhausted, keeping the bait well poisoned. You will have every fly in the vicinity by this simple method.

But do not use any meat or bait unless it is first thoroughly decomposed, as the arsenical solution will to a great extent prevent it from decomposing.

SHEEP MAGGOT FLY PEST.

BY L. G. JONES.

A CRITICAL ESTIMATE OF THE FLOCKMASTERS' PRACTICE IN COMBATING THIS PEST.

After carefully reviewing this subject, I have come to the conclusion that pastoralists are not acting in a right manner when they continue the old-fashioned plan of dagging the sheep. But instead, the dags should be left on the sheep and poisoned by submerging in a very strong arsenical solution.

FORMULAE.

Arsenic, 1 lb.; washing soda, ½ lb. To be prepared in the following manner:—Take rain water 4 gallons, and add to it ½ lb. washing soda. Heat to near the boil (205-206 Fah.). At this point add 1 lb. of arsenic (commercial) and bring as quickly as possible to the boil, and continue to boil for about fifteen minutes (after putting in the arsenic do not stir longer than is necessary to distribute the arsenic). Now, N.B., just as you lift from or draw the fire, have ready 4 pints of *cold water* and drop it into the mixture and stir well for about five minutes. Experience has shown me that after arsenic has been boiled in water it goes more completely into solution when suddenly put off the boil; hence the reason for stressing these directions. If "hard" or creek water is used, proceed as directed for rain water, except use 4 oz. of washing soda instead of 8 oz. If water is "hard," too much washing soda will further harden it.

Then when the fly strikes or lays her eggs in the dags, the dags will be in such a condition as to prevent the maggots coming to maturity. *Don't lay poison baits* or *poison any carcasses*, because the laying of these baits and poisoning of these carcasses are the cause of your troubles, in this direction, being intensified to-day. You have driven the fly from her natural medium, and caused her to go further a-field—to wit, the sheep. A non-poisonous offal fly-trap would be better to use than the poisonous offal trap, and so entice her away from the sheep. This would at least have the advantage of enabling you to burn any carcasses of dead stock that are lying about the paddocks instead of leaving them as an attraction for the fly, and if the offal only of healthy sheep were hung up, no harm could come of it. If this is done, hang your trap low, about 3 ft. from the ground. Blowflies always fly low to the ground. The offal fly-trap is very ingenious and clever, but it is not calculated to work for any length of time, for the reason that the maggot fly has the power of selection very strongly developed, and when she finds that she is getting no results from her industry, she will soon become "fly-trap shy." So, likewise, will she treat the poisoned dags, and so transfer her energies elsewhere, to the relief of the sheep and appreciation of the owner. To follow this article to a proper conclusion, it is necessary that the sheep should have an arsenical salt lick, for which I cannot do better than refer the reader to my article that appeared in the February issue of the *Queensland Agricultural Journal*, which, in my opinion, would lend itself well to this treatment of the fly pest. The doses for a sheep given there would not, in my opinion, be all absorbed into the system of the animal partaking of it. Nor is it necessary that it should be; therefore, they would pass out with the droppings, and the droppings would be in such a condition as to greatly retard the development of the maggots. The maggots thrive or mature only in a suitable medium, otherwise they cease to become active, and the possibilities of the pest would be greatly paralysed. And thus we bring about the altered condition of the medium that brings about the activity of the blowfly.

In further dealing with this pest, an excellent plan is to keep a watchful eye on the sheep's bedding hills, and examine the dung (early morning is the most appropriate time), when the experienced eye will quickly notice if there is anything abnormal about it. If you find liquid manure, immediately muster or gather your sheep and treat them accordingly. When approaching the sheep's camping ground, always remember to do so from a westerly direction, because the sheep invariably move off towards the morning sun, and by so advancing you will not disturb your sheep. Practice these suggestions, and you will not regret it.

If the fly strikes a sheep on any part of the body other than the tail, it is because of the yelk being diseased, that sticky kind that appears in the wool fibre, and has a tendency to stunt the growth, discolour the wool, and always has a damp and sticky feel, and often a bad smell. When this is present the sheep are not in good health; they require medicine. Iron is a very appropriate medicine for sheep, and for its proper form and vehicle, I refer you again to the February issue of the *Queensland Agricultural Journal*, and under the heading of "A Natural Remedy for Worms and Blood Diseases in Sheep," it will be found.

Summed up, it all means: Poison dags *only*, and so make the pest sheep-shy.

Dairying.

THE DAIRY HERD, QUEENSLAND AGRICULTURAL COLLEGE, GATTON.

MILKING RETURNS OF COWS FROM 27TH JANUARY TO 26TH FEBRUARY, 1918.

Name of Cow.	Breed.	Date of Calving.	Total Milk.	Test.	Commercial Butter.	Remarks.
			Lb.	%	Lb.	
Belinda	Ayrshire ...	14 Jan., 1918	988	4·3	49·15	
Mistress Bee ...	Jersey ...	23 Jan. ,,	844	4·8	47·42	
Lady Margaret ..	Ayrshire ...	27 Dec., 1917	903	3·9	41·13	
Violette's Peer's Girl	Jersey ...	26 Oct. ,,	540	6·3	39·90	
Auntie's Lass ...	Ayrshire ...	5 July ,,	656	4·8	37·90	
Leading Lady ...	Jersey ...	26 Dec. ,,	722	4·4	37·10	
Lady Loch II. ...	Ayrshire ...	3 June ,,	493	6·3	35·92	
Jeannie	,, ...	13 Dec. ,,	785	3·9	35·82	
Iron Plate	Jersey ...	14 Oct. ,,	731	4·2	35·52	
Burlesque	,, ...	6 Oct. ,,	481	6·0	33·67	
Leonie	Ayrshire ...	4 Sept. ,,	510	5·7	33·67	
Miss Edition ...	Jersey ...	12 Nov. ,,	715	3·6	33·45	
Comedienne ...	,, ...	13 Dec. ,,	505	5·7	33·33	
Skylark	Ayrshire ...	24 May ,,	488	5·9	33·05	
Thornton Fairetta	Jersey ...	30 June ,,	427	6·6	33·04	
Songstress	Ayrshire ...	1 Oct. ,,	529	5·2	32·15	
Lilia	,, ...	11 July ,,	554	5·0	32·13	
Miss Bell	Jersey ...	27 June ,,	528	5·1	31·68	
Lady Dorset ...	Ayrshire ...	14 Aug. ,,	629	4·3	31·45	
Glow VI.	Guernsey ...	9 Nov. ,,	791	3·4	30·53	
College Bluebell ...	Jersey ...	28 June ,,	581	4·3	30·10	
Miss Edith... ...	,, ...	23 Dec. ,,	702	3·7	30·08	
College Cold Iron	,, ...	7 Dec. ,,	516	5·0	29·94	
College Ma Petite	,, ...	10 Nov. ,,	548	4·6	29·53	
Hedge's Nattie ...	Holstein ...	1 Feb., 1918	586	4·4	29·41	
College Damsel ...	,, ...	12 July, 1917	702	3·6	29·08	
Miss Security ...	Ayrshire ...	27 Mar. ,,	436	5·4	28·99	
Nina	Shorthorn...	6 Sept. ,,	684	3·6	28·76	
Princess Kate ...	Ayrshire ...	28 June ,,	362	6·7	27·85	
La Hurette Hope	Jersey ...	22 Aug. ,,	482	5·0	27·81	
Hedge's Dutchmaid	Holstein ...	9 Sept. ,,	639	3·8	27·70	
Netherhall Queen Kate	Ayrshire ...	30 June ,,	551	4·3	27·55	
Sweet Meadows ...	Jersey ...	8 Aug. ,,	468	4·9	26·86	
College St. Margaret	,, ...	9 Nov. ,,	552	4·2	26·49	
College Mermaid ...	,, ...	21 Aug. ,,	459	5·0	26·43	
Lady Annette ...	Ayrshire ...	19 Oct. ,,	607	3·6	26·30	
Miss Betty ...	Jersey ...	27 Mar. ,,	439	5·0	25·23	
Buttercup	Shorthorn...	2 June ,,	454	4·7	25·15	
Rosine	Ayrshire ...	21 June ,,	522	4·2	24·97	
Glade	Shorthorn...	29 Mar. ,,	363	5·7	24·20	
Netherton Belle ...	Ayrshire ...	17 July ,,	627	3·4	23·98	
Lerida II.	,, ...	2 June ,,	389	5·3	23·56	
Snowflake	Shorthorn...	17 May ,,	391	4·9	22·25	
Hedge's Madge ...	Holstein ...	22 Mar. ,,	415	3·7	21·51	
Confidence ...	Ayrshire ...	25 June ,,	427	4·4	21·36	
Prim	Holstein ...	23 Aug. ,,	605	3·1	21·18	
Lady Mitchell ...	,, ...	26 Sept. ,,	505	3·5	20·20	

Poultry.

REPORT ON EGG-LAYING COMPETITION, QUEENSLAND AGRICULTURAL COLLEGE, FEBRUARY, 1918.

Much better weather has prevailed throughout the month, but it came rather late to cause any noticeable improvement in egg-production after the severe weather we had experienced during the preceding months. A large number of birds are in moult, but it is pleasing to note that many of them are laying and moulting at the same time. Stamina in the stock competing is very easily detected at the present time, and closely-bred birds are showing signs of their weakness. Messrs. C. C. Dennis and J. Zahl each lost a bird during the month. The following are the individual records:—

Competitors.	Breed.	Feb.	Total.
LIGHT BREEDS.			
E. Chester	White Leghorns ...	130	1,514
G. Chester	Do.	103	1,308
Oaklands Poultry Farm	Do.	94	1,270
*G. H. Turner	Do.	98	1,267
W. R. Crust	Do.	92	1,264
W. Becker...	Do.	102	1,259
*J. M. Manson	Do.	95	1,244
F. W. Leney	Do.	73	1,237
Kelvin Poultry Farm	Do. ...	89	1,217
T. Taylor	Do.	97	1,208
D. Fulton	Do.	107	1,198
*A. T. Coomber	Do.	89	1,179
*J. R. Wilson	Do.	76	1,165
T. A. Pettigrove, Victoria	Do.	75	1,164
Chris. Porter	Do.	73	1,149
*J. Zahl	Do.	80	1,143
Moritz Bros., S.A.	Do.	71	1,132
J. G. Richter	Do.	87	1,128
Quinn's Post Poultry Farm	Do.	69	1,111
T. B. Hawkins	Do.	90	1,103
*Mrs. J. R. D. Munro	Do.	76	1,001
Mrs. W. D. Bradburne, N.S.W. ...	Do.	112	1,088
J. L. Newton	Do.	83	1,088
C. Knoblauch	Do.	102	1,087
A. Shillig	Do.	72	1,076
*Dixie Egg Plant	Do.	66	1,071
A. H. Padman, S.A.	Do.	64	1,070
Mrs. S. J. Sear	Do.	101	1,068
J. Holmes	Do.	77	1,065
C. H. Singer	Do.	109	1,050
*A. W. Bailey	Do.	68	1,046
Mars Poultry Farm	Do.	65	1,044
L. G. Innes	Do.	81	1,043
G. J. White	Do.	79	1,037
E. Cross	Do.	64	1,030
F. Clayton, N.S.W.	Do.	53	1,022
S. C. Chapman	Brown Leghorns... ...	85	1,020
C. P. Buchanan	White Leghorns... ...	89	1,019
*T. Fanning	Do.	38	999
E. A. Smith	Do.	80	996
Miss Hinze	Do.	80	987
J. Ferguson	Do.	72	985

EGG-LAYING COMPETITION—*continued.*

Competitors.	Breed.	Jan.	Total.
LIGHT BREEDS—*continued.*			
Geo. Williams	White Leghorns ...	74	982
R. Holmes	Do.	65	977
G. Howard	Do.	65	968
*A. E. Walters	Do.	45	956
Mrs. J. Carruthers	Do.	70	955
*Dr. E. C. Jennings	Do.	76	935
*C. C. Dennis	Do.	0	822
HEAVY BREEDS.			
*R. Burns	Black Orpingtons ...	78	1,350
*Mars Poultry Farm	Do.	112	1,308
W. Smith	Do.	90	1,204
A. E. Walters	Do.	86	1,187
*E. F. Dennis	Do.	78	1,143
W. S. Hanson, N.S.W.	Do.	72	1,118
P. C. McDonnell, N.S.W.	Do.	81	1,115
F. A. Claussen	Rhode Island Reds ...	80	1,100
Mrs. J. H. Jobling, N.S.W.	Black Orpingtons ...	78	1,071
*E. A. Smith	Do.	92	1,071
D. Kenway, N.S.W.	Do.	89	1,040
H. Jobling, N.S.W.	Do.	68	1,034
Cowan Bros., N.S.W.	Do.	62	999
C. B. Bertelsmeier, S.A.	Do.	80	983
King and Watson, N.S.W.	Do.	71	982
*Oakland Poultry Farm	Do.	63	959
*Miss Hinze	Do.	50	957
R. Burns	S. L. Wyandottes ...	87	938
J. M. Manson	Black Orpingtons ...	69	931
E. Morris	Do.	39	890
C. C. Dennis	White Wyandottes ...	83	887
*Kelvin Poultry Farm	Plymouth Rocks ...	78	886
*F. W. Leney	Rhode Island Reds ...	45	748
F. F. Clayton	Do.	45	727
Totals	...	5,657	78,380

* Indicates that the pen is engaged in the single hen test.

RESULTS FROM SINGLE HEN PENS.

Competitors.	A.	B.	C.	D.	E.	F.	Total.
LIGHT BREEDS.							
G. H. Turner	170	192	234	242	201	228	1,267
J. M. Manson	206	220	177	175	219	247	1,244
A. T. Coomber	188	140	232	217	205	197	1,179
J. R. Wilson	208	184	179	203	187	203	1,165
J. Zahl	223	110	234	127	233	216	1,143
Mrs. Munro	244	189	143	153	146	226	1,101
Dixie Egg Plant	175	194	178	219	105	200	1,071
A. W. Bailey	33	193	218	209	210	182	1,046
T. Fanning	137	192	181	146	146	197	999
A. E. Walters	120	130	181	201	170	174	956
Dr. Jennings	127	115	187	167	205	134	935
C. C. Dennis	176	89	77	164	162	184	853

EGG-LAYING COMPETITION—*continued.*

RESULTS FROM SINGLE HEN PENS—*continued.*

Competitors.	A.	B.	C.	D.	E.	F.	Total.
HEAVY BREEDS.							
R. Burns	187	182	245	174	251	311	1,350
Mars Poultry Farm	201	235	212	216	227	217	1,308
E. F. Dennis	228	213	194	254	218	36	1,143
E. A. Smith	181	183	147	194	190	176	1,071
Miss Hinze	161	136	130	171	182	177	957
Oaklands Poultry Farm... ...	213	136	140	124	214	132	959
Kelvin Poultry Farm	137	139	148	191	106	165	886
F. W. Leney	125	147	114	115	114	133	748

A REMARKABLE FOWL FATALITY AND A POISONOUS PLANT.

On the 19th February, 1918, Mr. H. J. Hockings, of Woolloongabba, mentioned the recent occurrence of a remarkable fatality in his fowlyard. During the previous few days, and at the date mentioned, the thirty-seven fowls he had possessed had sickened in a strange manner indeed, and no less than thirty-four of them had died.

The first symptom—as he stated—exhibited by these birds that at the time were well-developed and healthy, was their sudden trembling "like an aspen-leaf," this quivering in their feathers growing in intensity and speedily so. The strongest and most vigorous of them—a greedily-feeding bird—after this phenomenon had occurred for only half a minute, dropped. Some remained trembling for a minute or more and then fell; seventeen thus collapsing at the expiration of three to four minutes. When once they went down they were perfectly helpless, and not only could not stand, but might even roll over on to their sides; whilst at the same time their heads drooped. In fact (as described) they "looked like wet rags." In the case of two birds, they were affected whilst still on the perch; and (as happens with birds when in a condition of rest) their toes kept clinched and so they remained stationary thereon. But their heads and necks, however, meanwhile hung down; although these, when touched, curved slightly and slowly upwards, after the manner of those of an injured snake when its death is coming on. Usually, they lay perfectly still upon the ground where they had collapsed, for three or four days. When touched (kicked) during this time, however, they might utter a low squeaking sound—momentarily; and, at the same time, successive waves of motion, raising up the feathers as they proceeded, would creep over their bodies. They would usually at length thus die, within three or four days, although one had even succumbed in as short a time as three minutes after it had been noticed that it was already sick. Of the two that were fixed on their perches, one had remained in this position for five days, and the other four. They then fell off, and gradually, under treatment—the internal administration of castor oil—

developed the faculty of walking. One of these, when but a day had elapsed since it had thus left its perch, was still quite blind; but during the next day it could partly see, picking up grain and small stones indiscriminately. This convalescent bird, however, still remained timid, and thus on being disturbed quickly scuttled away. Its eyes meanwhile were still half-shut and its face red and congested.

No food was found in the crops of dead birds, but their gizzards were more or less full. Their livers were noticed to be pale, blotched, and spotted, and their hearts and parts adjacent to their hearts much congested.

On inquiry, it was elicited that two strange plants had recently grown spontaneously (seeds without being broken up conveyed by birds) on the land where the fowls had been running—one a creeper with red berries and the other a herb. Moreover, the poultry had been noticed to partake of the fruit (seeds) of both.

Our informant meanwhile submitted samples of the plants referred to, and an examination of them prompted the following memorandum, in which the occurrence under notice is attributed definitely to a special agent:—

"Relative to the fatal sickness that so many of your fowls have recently experienced, and to my suggestion that the symptoms and the history of this occurrence as detailed by you, both indicated the action of a specific poison, I may further add that of the two 'strange plants' whose fruit you have noted as having been recently eaten by the fowls in which this fatality and sickness occurred, and that you have submitted, one is named *Rivina* (*Lævissima*)—Fam. *Phytolacaceæ*—and the other *Solanum jasminoides*—Fam. *Solanaceæ*; the latter being the blue-flowered creeper and the former the herbaceous weed.

"With regard to the possible effect on fowls of feeding on the fruit (seeds) of these, I may state as follows:—

"1. *Rivina.*—Notwithstanding that this plant is a member of a plant family whose roots, leaves, and berries are said to contain 'acrid, vesicant, and drastic substances,' these have for their principal effect, severe purging; but I am not aware, however, of any such property having been discovered as being possessed by any genus of the Phytolacaceæ other than the species of *Phytolacca* itself. Indeed, on the other hand, we are informed by the late Colonial Botanist, Mr. F. M. Bailey, without, however, reference to authority for the statement, that in America the fruit of R. *Lævissima* is actually used as food for birds.

"2. *Solanum jasminoides.*—The berries of this plant were formerly pointed out to me by a Queensland resident as having proved poisonous to fowls; and on examining the seeds of these now placed by you at my disposal, I find, on applying a special test (known as Mandelin's), that the sections show the microchemical reaction for the presence of the toxic principle—*Solanine.*

"And, I may add, the action of this alkaloid, both on warm and cold-blooded animals, has been described as follows:—'Solanine paralyses

the central nervous system without affecting the periphoral and voluntary muscles, slows heart and respiration, lessens sensibility, and causes death with convulsions.' (T. Lauder Brunton in 'Pharmacology.')

"On consideration of the symptoms manifested by your sick fowls, and in view of the fact that they had previously partaken of the Solanine—containing fruit of the Solanum named—I have but little hesitation in concluding, therefore, that the fatality remarked, and the latter event, stand in the relation of cause and effect.

"This conclusion suggests a line of action to be followed that it is not for me to describe.

"(Signed) HENRY TRYON,
"Vegetable Pathologist, &c.

"21st February, 1918."

Addendum.—Subsequent to the receipt of foregoing memorandum Mr. Hockings stated that he had re-examined the gizzard contents of certain of the dead fowls, and that these comprised millions of seeds that he had first taken for grass seeds (*Paspalum dilatatum*), but that he afterwards found, on comparison being made, were actually those of the red-berried creeper (*Solanum seaforthic*). Portions of the flesh of its fruit were also discernible amongst them.

THE POULTRY INDUSTRY.

By J. C. BEARD, Poultry Instructor.

HELPFUL HINTS FOR BEGINNERS.

In selecting ground for the keeping of poultry avoid, if possible, heavy clay or black soils. Light sandy soil or loam is far preferable, making less work with better results.

Choose sheltered ground for poultry-keeping, not exposed to the bleak westerly winds, a mistake so often made at the commencement. All shelters should be placed so as to have a north or north-easterly aspect, and the back and two ends should be boarded close with wire in front.

In taking over a site for poultry-keeping, always see that there is an ample water supply. If outbuildings are already erected, this saves so much capital, as these can be utilised for foodsheds, incubation, and storerooms.

Orchard land is always preferable. The fruit adds to one's income, and the trees do better with poultry running beneath them.

Arrange the floor of the house, even if made up inside with soil, higher than the outside ground, to ensure the same keeping dry. Make all perches movable, and these should be all on one level, not, as in the old style, ladder fashion, and avoid using saplings; sawn timber 3 in. by 1½ in., with top edge a little raised (?). These should be placed on uprights, 2 ft. high, driven into the ground. Cut the head off a 3 in. nail, and drive it in on top of the upright to act as a peg. Bore a small hole through the perch and drop it onto the pegs. These keep the perch in its place, and it is easy to remove the latter when necessary. Keep each end of the perch 1 ft. from the wall.

If fowls will insist on flying out of their pens, cut off short most of the inner flight-feathers on one wing only, leaving the outer flight-feathers intact, otherwise the fowl looks unsightly.

If felt is used on the roofs, this should be tarred once a year, throwing on dust or sand before the tar dries. Creosote is far and away the best preservative for both inside and outside of the houses. No insects can live where this is used, and it acts as a good disinfectant.

Never overcrowd chicken coops, foster-mothers, or fowl-houses, as disease in some form is bound to follow.

When feeding fowls in the morning, care should be taken to give all a portion; those that hang behind and do not readily eat, or remain on the perch, are probably sickening. A careful watch should therefore be kept on them, or disaster may follow.

Rather underfeed birds required for laying and breeding than otherwise. Always remember that overfeeding injures the birds' health, clogs up their system, and prevents all possibility of their producing eggs, as well as unnecessarily robbing your pocket.

Test all eggs, whether under hens or in incubators, on the sixth day, as this saves time in trying to hatch from useless and infertile eggs.

A male bird can always run with a large number of hens when an unlimited run is provided. But when penning is necessary, for heavy breeds from six to eight and of light breeds eight to ten hens are quite sufficient to breed from with good results, provided there is perch room.

Always place the rearers and chicken-coops in a sheltered position (on short grass), moving the coops every day.

See that chicken-coops and houses are free from draughts and are rainproof, otherwise colds, roup, or other diseases will soon make themselves evident.

Never allow chickens of different ages to run together; the largest are sure to rob the younger ones of their food, and the latter then weaken, droop their wings, and die.

In many cases large clusters of white nits will be found at the root of the feathers around the vent; these should be pulled out, burnt, and carbolic oil applied to the parts.

If a hen or pullet will persist in going into the nest-box, not wanting to lay, nor being broody, it is a sure sign she is ailing.

A fowl moping away from others in a secluded corner should be caught and examined for the cause.

Cleanliness is the keynote to success in the management of poultry.

REPLENISHING THE STOCK.

Few breeders realise the need for renewing the stock from year to year, and they wonder why the chickens do not come out strong and healthy. It is impossible to go on from one year to another without a change of blood, as something injurious is sure to result. The subject of breeding and reproducing species is the most complex question which any breeder has to face; but if it is tackled in the right way there need be no fear, either from loss of quality or stamina.

Nearly every breeder has his own method of getting at results, and many of the old hands get there, while some of the novices fail, and then blame the industry. Now it is usual to use pullets for the earliest breeding pens, not because they are most suitable, but because they come on to lay earlier and produce more eggs than the old birds. But if you want thoroughly reliable chickens, with the strongest stamina, they must be bred from hens in the second season. Many people will not buy these birds, and yet, if they want to breed the best chickens, they must use these, with a vigorous cockerel. To use youngsters on both sides may be one way of getting chickens, but it is better to hatch fifty chickens and rear the lot than to hatch a hundred and only raise fifty.

The best exhibition stock will be reared from hens one year or two years old, even if a cockerel is used; the right thing is to use a male which is full of vigour and fully developed. To breed from immature stock is but to court failure from the start, and have a lot of trouble in the raising. The eggs from the second-year birds will do better and make larger birds, and will be more suitable for breeding another year. I have known good results from cockerels and pullets when these birds have been bred from old stock, which proves that the vigour is handed down for at least the first generation.

There is often failure in using the same cockerel too long in the same pen, and though he may fertilise the eggs, the germ is not strong enough to hatch out a vigorous chick. The subject of breeding needs more care and thought than is usually given by the novice. What you need are chickens, and it is not enough to get fertile eggs, for if the germ therein is weak, the chick will probably not hatch out; and even should it do so, it will only live a short time. Now, by the keeping of the one cock in the pen all the season, this is what happens: He is worked too long and gets weaker as time goes by; hence the breeding results are far from satisfactory.

If you use one male bird for a month, it will be all the better to give him a rest; but as this means two cockerels for each pen, the small breeder cannot carry out the idea. But he must do the next best thing. Supposing he has only one cock, and that it is from him that he has to get all his chickens, then the cock must be kept in good form, and this can best be done by generous feeding. I have known of the method of driving the hens into the house and giving the cock an extra feed outside; but then he should not be kept in the pen too long. To keep setting eggs without raising chickens is so much waste of time and labour, and the object should be to only set the number required and to see that each egg produces a chick.

The ordinary farmer has a very good way of dealing with his stock if he would only keep it up and just breed when the male birds are at their best. As a rule, the hens all run loose round the farm, and roost together; hence there is no attempt at a breeding-pen, but what chickens are hatched must come from this one lot. When there is a number of hens, he buys, say, three male birds just when he is ready for breeding, and if these have run together there will not be any fighting when they are all put down with the hens, which use the one roost. By this means the whole of the eggs collected are fertilised, and any of them will be good enough to set. Probably his hatching extends over a period of two months, and then it is over. During this time all the eggs should be fertile and the chicks come out healthy and strong. After this time the male birds are killed off, and the next season a fresh lot is got in and the same procedure gone through. As these birds live under the healthiest conditions, with plenty of exercise, both adults and youngsters should do well, and at least 90 per cent. of the eggs be fertile, hatch out, and grow into good adult stock.

All breeds are not alike, and some varieties are more active than others; these, consequently, will take more hens than breeds like the Orpington or Asiatic varieties. Any of the Leghorn family will be more fertile with twelve hens than some Black Orpingtons will be with only three, although, as a rule, Buff and White Orpingtons are more vigorous, and a good cockerel will fertilise all the eggs from eight hens. Wyandottes are fairly active, and the best laying sorts are small birds, which prove fertile up to ten hens, though, if left too long together, the hens should be reduced, or the cockerels should be given a rest. The safest rule for breeding is to use present-year males with two-year hens, and then good results may reasonably be expected.

SUGAR AS A MEAT PRESERVATIVE.

There is nothing new in the idea of employing sugar instead of salt as a preservative for meat. We have in past years had frequent opportunities of noting the effects of sugar on hams. The hams were placed in a pickle, if we may so call it, of sugar and molasses. The fresh hind quarters of the pig were first well rubbed with powdered sugar, and were then placed in the saccharine solution and left undisturbed for some weeks. When cooked, the meat did not present that red and white appearance of the brine-cured article, but more resembled fresh pork. Yet the taste was precisely the same as that of ham, albeit a little sweeter. In connection with this, we learn that experiments have been made under the direction of the French Minister for Agriculture, which demonstrate that sugar is a good agent for meat preserving, and possesses some advantages over salt. It is pointed out that the latter absorbs a portion of the nutritive substances and of the flavour of the meat. When an analysis is made of a solution of salt dissolved by water contained in meat, albumenoid bodies, extractive substances, potassa, and phosphoric acid are found. Salt deprives meat of these substances so much the more readily in proportion as it enters the tissues more deeply or acts for a longer time. The result is that the meat, when taken from the saline solution, has lost nutritive elements of genuine importance. Powdered sugar, on the contrary, being less soluble, produces less liquid. It forms round the meat a solid crust, which removes very little water from it, and does not alter its taste. Thus preserved it is sufficient that the meat be immersed in water before using it. The report declares that although this treatment costs a little more than preservation by salt, account must be taken of the final result, and of the loss prevented, which offsets the difference in cost between the two preservatives.

The Orchard.

PICKLING OLIVES IN ITALY.

The great cost of picking olives in Australia would appear to bar olive-growing in Australia. But why should not the Italian method be tried? In Calabria, in Italy, where there are very extensive olive groves, the proprietors dig out a kind of huge saucer round the trees, about 1 ft. deep towards the centre, sloping up to the surface. The ripe olives, as they drop from the trees, roll down the sides of the depression, and are daily shovelled out with wooden shovels. This process might overcome the picking difficulty in Australia. In Italy the trees are also beaten, when a whole army of women and children is employed picking them up. Of course, in Italy, wages are very low. Women earn 6d. per day; boys 4d., without rations; ordinary farm labourers are paid 7d. per day; and a shepherd will work for 4s. a month and rations of rye bread and skim milk, from dawn to dark. We would like to see the cultivation of olives established in Queensland, but would rather be without Queensland-grown olives than see them grown for what can but be starvation wages.—[Ed. "Q.A.J."]

At Mildura, Victoria, a few years ago, 25 tons of olives produced 875 gallons of oil, worth at the time 7s. per gallon, and pickers received 3s. per 112 lb. The profit amounted to £8 6s. 3d. per acre. Pickers, since the war, were paid £6 to £10 per ton, but the price of olives and oil also advanced, the manufacturers paying £13 per ton for olives. The price of olive oil in the United States in July, 1917, was 6s. 8d. per gallon.

Mr. Beaumont, Manager of the Government Orchard, Blackwood, South Australia, writing on diseases of the olive, says:—

"As far as disease goes, the olive is a very hardy tree, and is not easily injured, but its greatest scourge is the olive scale, which undoubtedly spoils the beauty and usefulness of the tree, but it is easily dealt with, and I think it is to be regretted that trees, even within the parks of Adelaide, are allowed to go uncared for, and thus to spread the trouble far and wide. On the secretions from the olive scale, the "sooty fungus" which we are all so familiar with, exists. Unfortunately, this scale and the fungus frequently attack other fruits and flowering shrubs. An occasional spraying with kerosene soap wash will clean the trees effectively.

The curculio beetle is fond of the olive, but it may be checked with arsenate of lead 1 lb. to 5 gallons to 10 gallons of water."

He further gives the following figures as to production, consumption, etc., in Australia: "One ton of olives should yield 35 gallons to 45 gallons of oil. A grove of 14 acres of trees, now 30 years old, has averaged 450 cwt. of olives per acre for 20 years, the annual yield varying, of course, with the seasons. Simply let me tell you that the olives are crushed thoroughly so as to free all the oil contained, the crushed product is placed in mats of esparto grass, and subjected to pressure, say about 300 lb. The mass is then broken up, and warm water added, and is again pressed, perhaps three or four times, and up to a pressure of 1,000 lb. The oil and water are separated as soon as possible after being released, and the oil is either filtered or allowed to settle, according to the method adopted at the various factories.

"Our consumption of oil is at present about 60,000 gallons, and we produce about 14,000 gallons, so there is room for improvement, and when we allow for the further fact that we import about 300,000 gallons of cheap cotton seed and colza oil, we will find even a greater reason for extending the culture of the olive. Then there is the preparation of the ripe olive as a food, and the green olive as an appetizer. Here again is great scope for enterprise. Olive oil is a powerful food, and is a splendid substitute for animal fat, and has practically no waste. There is nothing better for the frying of foods. It is a fine preservative; we are all acquainted with its use in tinning fish, etc.

"As a medicine it is most useful, either internally or externally; it will heal cuts and prevent chapping; it is a true remedy for constipation; it is of great assistance to anæmic people in forming new blood, and has been strongly recommended as a food to persons suffering from diabetes, who are not able to assimilate starchy foods; in fact, olive oil and ripe olives are invaluable, though little understood, adjuncts to health, and when the price charged is reduced to something within reason, there is no doubt they will come into general use."

Botany.

WEEDS AND POISONOUS PLANTS OF THE ATHERTON TABLELAND.

By C. T. WHITE, Government Botanist.

In January last, following instructions received from the Minister for Agriculture (Hon. Wm. Lennon), I paid a visit to the Atherton Tableland area, at the request of the Eacham Shire Council, for the purpose of inspecting properties where losses amongst stock had occurred, supposedly from eating poisonous weeds or scrub, and at the same time to make as complete a collection as possible of all plants known to be or suspected of being poisonous to stock; also all noxious weeds growing in the Shire, for exhibit at the next show to be held at Malanda under the auspices of the local Agricultural, Pastoral, and Industrial Society; hence specimens of most of those here noticed will be later forwarded on for that purpose.

The following is a list, with brief notes attached, of all weeds observed, and which were thought worth bringing under notice.

In all newly opened or comparatively new scrub areas, losses amongst stock from eating poisonous plants are likely to occur, especially where the secondary scrub growth has not yet been got rid of. Owing to the difficulty of accurately determining such growth, and our lack of knowledge on the properties of so many of our native plants, the subject is an exceedingly difficult one to handle.

It will be seen from the following list, however, that the area dealt with does not contain any very great number of definitely known poisonous plants, and the majority of those noticed, such as Bean-tree, Peach-leaf Bush, &c., being ones well known to stockowners.

Where reference is made to articles in the "Queensland Agricultural Journal," these can generally be had in reprint form from the Department upon application to the Under Secretary.

Apart from its local interest the following list will be found to have several records that will be of interest to the systematic botanist:—

1. *Stephania hernandiæfolia* (Tape Vine).—A common climber; all parts contain a poisonous alkaloid; an illustrated article with full information will be found in this Journal for October, 1917.

2. *Legnephora Moorei.*—On the Atherton Tableland this vine is known as "Native Grape," owing to the similarity in appearance of the carpels (fruit) to ordinary table grapes. It is closely allied to Stephania, and Dr. T. L. Bancroft found the root-bark to contain an active poisonous principle. The plant is often eaten by cattle and, as in Stephania, the poisonous principle probably extends through the whole plant. I am informed that children have been made violently ill through eating the fruit.

3. *Lepidium ruderale* (Pepper Grass or Wild Cress).—A rather common herb, with a strong biting cress or turnip taste; a bad weed to taint milk.

4. *Portulaca oleracea* (Pig Weed).—A common garden and cultivation weed; a useful fodder and pot herb; seed ground up into flour was at one time largely used by the inland aborigines for food.

5. *Malvastrum tricuspidatum.*

6. *Sida rhombifolia* (synonym—*Sida retusa*).

7. *Sida acuta.*

These three plants are all very common. No. 6 is the one generally known as *Sida retusa* and is the only one that should be properly so-called; Nos. 5 and 7 are commonly known as bastard *Sida retusa.* The Malvastrum is a lower-growing weed than the two Sidas, with rough stems, and is useless as a fodder; it is very common in cultivation paddocks, calf-pens, &c.

8. *Sida cordifolia* (Flannel Weed or White Burr).—Recently gazetted as a noxious weed throughout the State; occurs here and there, but not seen in any great quantity; it is one of the commonest and worst weeds about the Northern coastal towns, such as Townsville, Cairns, &c. An illustrated article on it will be found in this Journal for August, 1917.

9. *Urena lobata* (Chinese Burr or Pink Burr).—Probably the commonest weed; a native plant, but is widely spread over the tropical countries of the world.

10. *Triumfetta nigricans* (Black Burr).—I only saw one or two clumps of this. It can be distinguished by its small yellow flowers and by the carpels or "burr" having long, rather soft processes.

Triumfetta rhomboidea, which is the common Chinese Burr of the coast, I did not notice; but it probably occurs here and there. *Urena lobata* also occurs on the coast, and is also known as Chinese Burr. In Western Queensland the name of Chinese Burr is given to a totally different plant—*Bassia Birchii,* which is not found outside of Australia.

11. *Zanthoxylum veneficum* (Prickly Ash).—A common tree with a bright yellow wood, prickly stem, and glossy leaves, often with a reddish tinge. Commonly comes up in paddocks as scrub undergrowth and often simply known as "Prickly Bush." Dr. T. L. Bancroft, writing on this species, stated that the bark contained a poisonous principle as toxic as strychnine. As this probably extends to the leaves and as, moreover, cattle seem to readily eat them, the plant should be destroyed where seen.

12. *Oxalis corniculata* (Wood Sorrel or Sour Grass).—A little creeping clover-like plant with small yellow flowers; of no particular importance.

13. *Castanospernum australe* (Bean-tree, or Moreton Bay Chestnut).—The large brown seeds found lying under the tree are often the cause of mortality amongst stock. According to Dr. Greshoff the leaves contain

the same poisonous principle as the seeds, viz., saponin, and are likewise harmful to stock.

14. *Phaseolus semierectus.*—Was introduced as a fodder plant. I noticed a few plants about Atherton; of no particular importance.

15. *Crotalaria Mitchellii.*—A Rattlepod. A native plant more or less of a weed in many localities. Has been suspected of poisoning stock; but seldom, if ever, seems to be touched by them.

16. *Cassia laevigata* (Arsenic Bush).—One of the commonest weeds of the tableland; probably not poisonous, but would purge stock if eaten; but seldom, if ever, touched by them. It is a native of tropical America and tropical Africa, but has been established in Queensland for some years and is now a common weed of scrub areas from the Tweed northwards. This is different from the "Arsenic Plant" of Irvinebank and adjacent country, which is *Hibbertia Bennettii.*

17. *Cassia occidentalis* (Coffee Senna).—One of the commonest naturalised species of Cassia. An illustrated article dealing with it will be found in this Journal for January, 1916.

18. *Passiflora fœtida.*—"Love-in-a-mist" Passion Flower.

19. *Passiflora Herbertiana.*—Native Passion Vine.

Both these contain prussic acid and are therefore poisonous. The former can easily be told by its white flower and from the fruit being enclosed in a feathery calyx; the native one is a more robust, stronger-growing species with green fruit about the same size as or often a little bigger than the common passion fruit (*Passiflora edulis*).

20. *Bryonia laciniosa* (Bryony or Wild Melon).—A common vine in secondary growth and on the edge of scrubs; can easily be recognised by its red fruit with white, wavy streaks; the vines have often been accused of poisoning stock, and cases are on record where children have eaten the fruit with fatal results.

21. *Richardsonia scabra* (Mexican Clover).—A useless plant; has been praised as a fodder, but our experience with it in Queensland points to it being one of the most aggressive of pests. On the Atherton Tableland it goes under the name of "Fodder weed," the belief being that it was imported there with fodder imported during the last dry spell. Mr. Chas. Hampden informs me that it even got ahead of Paspalum on his place, which gives some idea of its pertinacity.

22. *Dichrocephala latifolia.*—This small native plant is a common weed on scrub tracks, roadsides, &c.; of no particular importance.

23. *Ageratum conyzoides* (Billygoat Weed or Blue Top).—Very common everywhere; introduced as a garden plant.

24. *Erigeron canadensis* (Canada Fleabane).—A North American plant; a very common weed in Queensland; in appearance very similar to the preceding.

25. *Erigeron linifolius* (Rag Weed).—A very tall-growing weed of ragged appearance; in some places known as "Cobbler's Pegs" owing to

the sharp woody stumps left after mowing the plant down having power enough to penetrate boot leather. This latter name is, however, almost universally given to *Bidens pilosa*. These species of Erigeron are especially weeds of cultivation.

26. *Bidens pilosa* (Cobbler's Pegs).—A very common weed.

27. *Siegesbeckia orientalis*.—A very prevalent weed; about Yungaburra called "Bastard Nettle" on account of the leaf bearing some slight resemblance to the small stinging nettle (*Urtica incisa*). On the Northern Rivers of New South Wales, I am informed, it goes under the name of "Pitchfork." It belongs, of course, to a very different family from the nettles and possesses no stinging properties.

28. *Acanthospermum hispidum* (Star Burr).—Too well known to need description; first made its appearance about Townsville about fourteen years ago; now one of the most troublesome pests of the North.

29. *Galinsoga parviflora* (Yellow Weed).—A South American plant which is now a common weed in the Australian States, principally of garden and field cultivation; an excellent green food for poultry.

30. *Erechthites valerianæfolia* (Federal Weed or Commonwealth Weed).—So called because it first made its appearance about the first year of the Australian Commonwealth; now a common weed of scrub land from the Tweed to the Cairns and Atherton districts; a pest sometimes, on account of its rapid and dense growth in new clearings preventing a good burn off; an excellent fodder; native of South America.

31. *Erechthites Atkinsonæ*.—A native plant somewhat resembling the Federal Weed, very common in New South Wales and Southern Queensland; not previously recorded from the North; often comes up very thickly in newly felled scrub, and has no advantages as a fodder to recommend it like the Federal Weed; by some, it is called "Rag Weed," a sobriquet applied to several different plants in Queensland.

32. *Emilia sonchifolia*.—A small weed with purple flower-heads, otherwise resembling a small growth of the common Sow or Milky Thistle; of no particular importance.

33. *Sonchus oleraceus* (Sow Thistle or Milky Thistle).—A cosmopolitan weed.

34. *Cnicus lanceolatus* (Spear or Scotch Thistle).—Getting a good hold here and there; one of the worst of our introduced pests. The true heraldic thistle of Scotland is *Onopordon acanthium*, a species which, so far, has not made its appearance in Queensland, though naturalised in the Southern States.

35. *Scaevola enantophylla* (Snake Vine).—Several residents pointed this out to me as a plant poisonous to stock, and Mr. C. Hampden, of Rockley's Pocket, told me that he had more than once noticed its effect on stock. I brought down a quantity, but owing to the hot, moist weather experienced it did not reach Brisbane in a condition suitable for chemical examination. It is a very different plant to those which go under the name of "Snake Vines" in Southern parts, and which belong to the genus Hibbertia.

36. *Asclepias curassavica* (Red Head or Milky Cotton Bush).—Rather common here and there; generally regarded as poisonous to stock. An illustration and full account of this weed will be found in this Journal for December, 1898.

37. *Gomphocarpus physocarpus* (Wild Cotton).—A tall-growing aggressive weed, only noticed in one or two places; easily recognised by its balloon-like pods full of dark-brown seeds, with a tuft of fine, silky cotton attached; when broken, any part of the plant exudes a milky juice. Another species of Gomphocarpus commoner in Queensland, but which I did not see on the tableland, is *G. fruticosus*. An illustrated article on these two weeds appeared in this Journal for August, 1916.

Asclepiadeæ.—Belonging to the same natural order or family (Asclepiadeæ) as the two last-mentioned plants. Asclepias and Gomphocarpus are a number of scrub vines often seen in paddocks climbing over fallen logs, large stumps, &c. These vines, though not definitely known to be poisonous, should be destroyed where seen, as the family is a dangerous one, containing a number of poisonous plants. They can generally be distinguished by the following characteristics:—The leaves are opposite on the stem; the stem and often any parts of the plants readily exude a milky juice when cut; the seed-pods (follicles) are full of seeds with long tufts of silky white hairs attached.

38. *Cynoglossum australe* (Forget-me-not).—A native herbaceous weed; fairly common; bears long branches of white or bluish forget-me-not-like flowers, followed by small 4-lobed burrs; though a burr plant, not a particularly aggressive species.

Solanum.—A very large genus of plants widely distributed over the world; contains such well-known plants as the Potato, Egg Fruit, &c. On the tableland I noticed as weeds about half a dozen indigenous species; quite a number of our native species are more or less troublesome weeds in different parts of the State, and often go under the vernacular of "Potato Bushes."

39. *Solanum nigrum** (Blackberry or Black Currant).—A common weed; the green plant suspected as being poisonous to stock, but seldom touched by them; the fruits are often eaten cooked without any ill effects.

40. *Solanum aviculare* (Kangaroo Apple).—A large, succulent species with berries about the size and shape of a pigeon's egg; a handsome plant in its young stage, bearing large deeply-lobed leaves; hence on the tableland and elsewhere it commonly, though of course erroneously, goes under the name of "Castor Oil Bush." Dr. T. L. Bancroft found the plant to contain a volatile alkaloid poison.

41. *Solanum verbascifolium* (Wild Tobacco).—A tall much-branched shrub with densely hairy leaves, white flowers, and bunches of round berries; a common weed of practically all coastal scrub country in Queensland; contains a poisonous alkaloid; generally goes under the

* According to a recent research by Mr. E. Cheel, there are three distinct species or subspecies which have gone under the name of *Solanum nigrum* in Australia; according to his classification, the common species that occurs on the tableland would be *S. pterocaulon*.

local name above given, though we have several sorts of Nicotiana (true tobaccos) native to Queensland; it is these latter that are so often recorded as poisoning stock on the Downs and Western country.

42. *Solanum aculeatissimum* (Devil's Apple).—A very thorny species with white flowers followed by bright scarlet fruits about 1 in. in diameter.

43. *Solanum viride.*—A very common shrub in the scrubs, especially along the edges and roadsides where clearings have been made; attains a large size.

44. *Solanum sporadotrichum.*—A very prickly species; common.

45. *Solanum species* (Dirran Curse).—About Tarzali and the Dirran, a large, scrambling prickly Solanum is very common. My specimens do not allow me to make it out specifically, and it is quite possible that it is an undescribed species.

46. *Physalis peruviana* (Cape Gooseberry).—Very common.

47. *Physalis minima* (Wild Gooseberry).—This species is a native, and the fruit, though not known to possess any harmful properties, is very disagreeable in flavour.

48. *Capsicum fastigiatum* (Common Chilli).—One of the commonest naturalised weeds on the tableland.

49. *Duboisia myoporoides* (A Corkwood).—Seldom touched by stock, but supposed to cause blindness and death when eaten; an extract from the leaves has been used in ophthalmic surgery for the purpose of dilating the pupil of the eye, and before the war the leaves were an article of export to Germany, though not, I believe, in any great quantity. J. H. Maiden, Government Botanist of New South Wales, in an article on the plant, stated: "The leaves are poisonous (though not violently so), but accidents from them are rare. Last year, however, two children in the Richmond River district chewed them and suffered from general nervous and muscular derangement accompanied by delirium. They recovered."

50. *Verbascum virgatum* (Twiggy Mullein).—A native of Southern Europe; a naturalised weed in many parts of the State; of no particular importance. An illustration and description are given in this Journal for January, 1918.

51. *Scoparia dulcis.*—A very common weed.

52. *Lantana camara.*—I am informed that Lantana has made its appearance in one or two places, but, so far, has been destroyed wherever seen; I did not see any on the tableland myself.

53. *Verbena bonariensis* (Purple Top).—A native of South America; now one of the commonest and most aggressive weeds in Queensland.

Amarantus.—Of this genus we have seven native and two naturalised species. They are all more or less common weeds; form perfectly wholesome fodder, and the young tops of the shoots can be used as a pot herb as a substitute for spinach.

54. *Amarantus spinosus* (Needle Burr).—One of the commonest and most troublesome weeds on the tableland.

55. *Amarantus paniculatus** (Fat Hen).—Very common in cultivation; a large succulent weed, growing to a great height, and commonly known on the tableland as "Fat Hen," a local name applied in Queensland to a great many plants of the *Amarantaceæ* and *Chenopodiaceæ*.

56. *Amarantus interruptus.*

57. *Amarantus viridis.*

These two species are common weeds of cultivation.

58. *Chenopodium carinatum.*—A strongly scented, low-growing weed generally found in cultivation areas, alongside of fallen logs, in calf-pens, and, in fact, anywhere where the ground has been broken.

59. *Phytolacca octandra* (Ink Weed).—Common everywhere.

60. *Rivina lævis.*—A fairly common weed of the ink weed family, of no particular importance.

61. *Daphnandra repandula.*

62. *Daphnandra aromatica.*—Yellow Sassafras.

In the bark of these two species Dr. T. L. Bancroft found a poisonous principle which possibly extends to the leaves, and as, with other scrub trees, sucker growth may sometimes be seen in paddocks it is perhaps as well to include them in this list.

63. *Euphorbia pilulifera* (Asthma Plant).—A weed of cultivation; tea made from the dried plant gives great relief to people suffering from asthma.

64. *Ricinus communis* (Castor Oil Plant).—A naturalised weed in many parts of Queensland. Persons have been known to have been made violently ill from eating the seeds under the impression that it would have the same effect as castor oil; in addition to the oil, however, the seeds contain a poisonous albuminoid-ricinin.

65. *Homalanthus populifolius* (Bleeding Heart or Native Poplar).—Can hardly be termed a weed, but is noticed here as for some years it was looked upon as poisonous to stock, and the vernacular of "Bulli Poison Bush" was attached to it. Feeding experiments carried out in New South Wales, however, have proved the plant to be in no way harmful, and on the Atherton Tableland it is looked upon as an excellent fodder, several dairymen telling me that they had cut down large supplies of it for their cattle during the last dry spell, and that the stock did well on it.

66. *Trema aspera* (Peach-leaf Poison Bush).—A common shrub. As far as I observed this typical or shrubby form appears to be limited to the forest country; bears small, rough, hairy leaves.

67. *Trema aspera,* var. *viridis* (Peach-leaf Poison Bush).—This form is very common in the scrub country; it can be distinguished by its light-green, thin, almost membranous leaves, and is regarded by many

*I am not too sure as to the plant that is such a common weed in Queensland, and which has always gone under this name, does not better belong to *A. retroflexus.* The two are very closely allied, and I am not absolutely certain to which species our plant more rightly belongs.

dairymen as the worst of the three forms that occur on the tableland. It is worth recording here that H.C.N. has been recorded from the closely allied East Indian *Trema virgata*. Several tests have been made by Mr. F. Smith, B.Sc., and the writer with the different forms in Queensland, but with negative or doubtful results. It is generally conceded that the bad effects are worse in a dry time when other feed is scarce, and it is more than likely that the action of the plant is a mechanical one, causing severe constipation.

68. *Trema amboinensis* (Peach-leaf Poison Bush).—This form attains tree size. It can usually be distinguished by its large, thick, densely hairy leaves, sometimes measuring nearly 1 ft.

69. *Urtica incisa* (Stinging Nettle).—Common on the edge of scrubs, roadsides, new clearings, &c. A native plant; generally known in Queensland (erroneously) as the "English Nettle."

70. *Laportea gigas* (Stinging Tree).—Very common; though apparently the same species as occurs in New South Wales and Southern Queensland, in the tableland area I never saw any that attained a size bigger than what one could call a large shrub; in the South it grows to a tree of about 100 ft. high. Dr. J. L. Petrie, working on the stinging property of this plant, stated that the sting was undoubtedly due to free acid existing in a concentrated form in the hairs. He further states: "Common nettle plant contains 0·002 per cent formic acid; nettle tree contains 0·179 per cent. free acid (0·002 per cent. formic acid and 0·179 acetic)—that is, *Laportea gigas* contains 90 per cent. more free acid than *Urtica urens*. The amount of strong acid injected under the skin by one of the large hairs is quite a sufficient cause for the severe shock which follows the sting." The common nettle he refers to would probably possess similar stinging properties to those of *Urtica incisa*.

71. *Laportea photiniphylla* (Glossy-leaf or Shining-leaf Stinging Tree).—Often called "Mulberry-leaf Stinging Tree" on account of the similarity of the leaves to those of the common mulberry.

72. *Laportea moroides* (Gympie Nettle).—Very similar in general appearance to *Laportea gigas*.

73. *Cycas media* (Zamia Palm).—Practically all the Australian members of the order Cycadaceæ are looked upon as the cause amongst stock of the complaint known as "Rickets."

74. *Bowenia spectabilis* (Zamia Fern or Ricket Fern).—Very common in places, and looked upon as decidedly harmful, having the same effect on stock as other members of the family Cycadaceæ.

75. *Alocasia macrorrhiza*.—Cunjevoi.

76. *Colocasia antiquorum*.—Taro.

These two Aroids are common in wet scrub localities; though eaten after being cooked by the natives, they possess, in addition to a cyanogenetic glucoside (prussic acid), an extremely acrid principle that has a most unpleasant effect on the mouth and throat when the thick root-stock or any other part of the plant is tasted in a raw state.

77. *Paspalum Galmarra* (Russell River Grass).—Very common on the tableland, and generally looked upon there as almost worthless as a fodder; at one time was praised as a dairy grass and introduced into the South, but now never seen there.

78. *Paspalum platycaule* (Carpet Grass).

79. *Paspalum conjugatum* (Johnstone River Grass).

I draw attention to these two grasses, not because they can be termed weeds in the ordinary sense, but owing to the confusion between them. They are to be seen, more often than not, growing intermixed, and no distinction is made between them by dairymen, both going under the name of Johnstone River Grass, and being looked upon more as weeds than useful pasture grasses. This is rather strange, as *Paspalum platycaule* is regarded as one of the best pasture grasses for the tropics.

80. *Panicum sanguinale* (Summer Grass).—A weed of cultivation.

81. *Tricholæna Teneriffæ* (Red Natal Grass).—Introduced as a fodder grass, but only of poor value; it is often listed in seedsmen's catalogues as an ornamental species.

82. *Cenchrus australis* (Scotch Lice).—A pestilential burr grass; common along the edge of scrubs, roadsides, &c.; gazetted a noxious weed within the Eacham Shire. The local name is misleading, as the grass is a native of Australia, not an introduction.

83. *Cenchrus echinatus* (Mossman River Grass).—A common tropical pestilential burr grass; not previously recorded from Queensland.

84. *Imperata arundinacea* (Blady Grass).—"Lalang" of the Malay States. Common.

85. *Eleusine indica* (Crowfoot Grass).—Common along roadsides, cultivation areas, and, in fact, anywhere where the land has been broken; it contains a fair quantity of prussic acid, and, though a nutritious fodder, may, perhaps, be the cause of death when eaten in fair quantities. An illustration and description will be found in this Journal for August, 1914.

86. *Pteris aquilina*, var. *esculenta*.—Common Bracken.

87. *Pteris aquilina*, var. *languinosa*.—Woolly Bracken.

Both of these forms occur on the tableland. In Europe and North America the common Bracken has been accused of poisoning stock, but the accounts are conflicting. I have never heard of any of the Australian forms causing harm to stock in any way.

88. *Lepiota dolichaulos* (Toadstool).—In the "Agricultural Gazette" of New South Wales for December, 1909, attention is drawn to this fungus as the probable cause of death among some cattle on the Richmond River. This is the common large toadstool with a cap about the size and shape of an ordinary dinner plate, and which comes up so thickly in paddocks on scrub areas in Queensland. On the Atherton Tableland several dairymen informed me that pigs and other stock eat them greedily without apparently any ill effects.

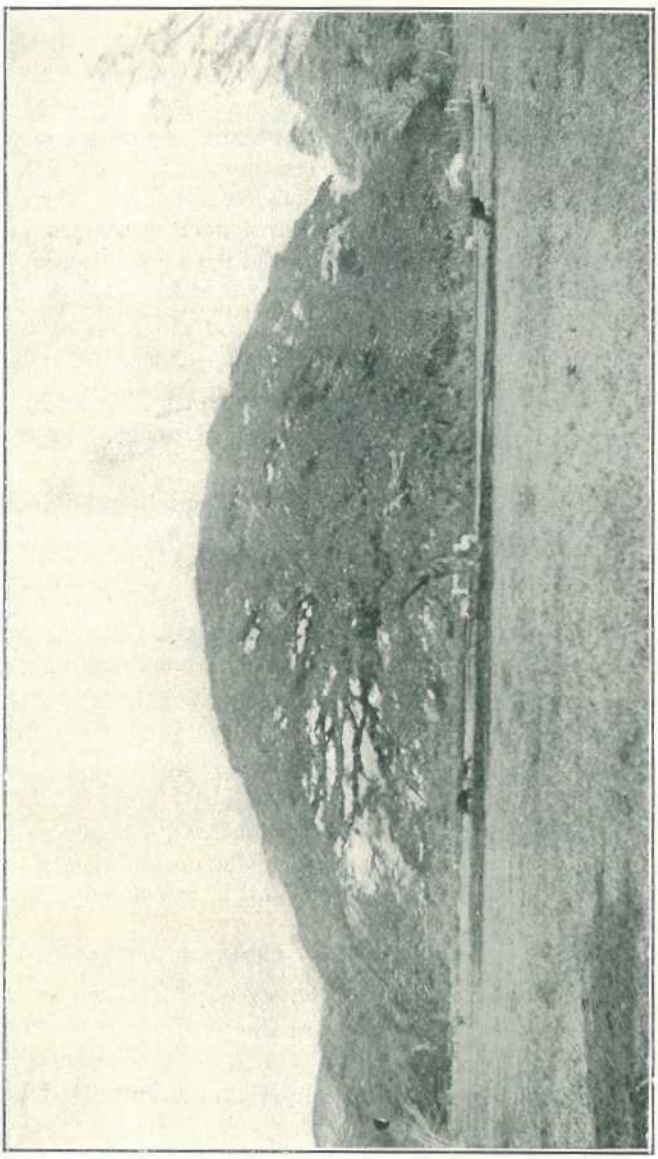


PLATE 13.—TREE OF PITHECOLOBIUM SAMAN, *Benth.*

Growing in Trinidad, British West Indies. Described in March issue of the Journal, page 94. Spread of branches = 300 feet; area covered by branches = 1 acre 2 roods 19 perches.

Answers to Correspondents.

HOME-CURING HAMS AND BACON.

FARMER'S WIFE, Toowoomba—

We have given several recipes for curing hams and bacon in the Journal. Here is one, recommended in the "Farm Journal," Sydney:—

"The cause of hardness in bacon referred to is due to the excessive use of saltpetre, especially through using it during the first stages of curing. For home curing a suitable recipe is as follows:—Weigh out for each 100 lb. of meat 5 lb. of salt, 2 lb. of brown sugar, and 2 oz. of saltpetre. When the carcass is thoroughly set, cut up and salt lightly; then lay it overnight upon a clean concrete floor or table. By salting lightly is meant that as much salt as will cover the meat comfortably without undue waste be used. Next morning brush the salt off thoroughly; then dry-salt the meat with dry salt and brown sugar rubbed well in daily for three days. On the fourth and fifth days a little saltpetre should be added to the salt and sugar, which should be well rubbed in, especially on the skin. Leave the bacon and hams in the mixture (dry salt and brown sugar) for about three weeks; but they should be turned every day or second day; at the same time continue rubbing during this period. Then wash clean, when the bacon and hams will be ready for smoking, the duration of which depends upon the taste of the manufacturer. After the first week or ten days, it is advisable to brush the salt and sugar off the inner side of the thin parts of the bacon (flaps). Note that dry salting should only be undertaken in cold weather and in a cool place."

W. G. Gray, Ravenshoe, N.Q.—

1. *Re* branding on one side of cattle?—This applies to all registered brands.

2. It is impossible to say at what age a bull becomes of no further use for service, as this varies with the animal, the feeding, and the amount of service he is given?—If properly attended to and not overworked, he may go on until ten or twelve years of age.

3. A defence that a receipt received for a cheque subsequently dishonoured represents complete payment for goods could never be sustained. A person taking a cheque could, in the event of the cheque being dishonoured, sue the debtor for the amount.

REMEDY AGAINST CANE RATS.

THOS. LOVE, Ingham—

With reference to your request for a remedy against cane rats, Mr. H. T. Easterby, General Superintendent of Sugar Experiment Stations, states that considerable success was obtained by Mr. Jodrell, of Innisfail, in the poisoning of rats by grinding up strychnine into a powder and placing it over baits such as bread and butter and cut bananas. Mr. Jodrell anoints his hands with oil of aniseed before preparing the baits. At Mossman pellets of tallow impregnated with strychnine and aniseed oil have been thrown amongst the cane and found to work successfully. Corn boiled in a strong solution of strychnine has also been effectively used in sugar districts.

The Markets.

PRICES OF FARM PRODUCE IN THE BRISBANE MARKETS FOR MARCH, 1918.

Article.		MARCH. Prices.
Bacon	lb.	9d. to 10d.
Barley	bush.	2s. 6d. to 3s.
Bran	ton	£5 10s.
Broom Millet	,,	£33 to £38
Butter (First Grade)	cwt.	149s. 4d.
Chaff, Mixed	ton	£4 to £4 10s.
Chaff, Oaten	,,	£5 to £6 5s.
Chaff, Lucerne	,,	£4 10s. to £5 10s.
Chaff, Wheaten	,,	£4 to £4 10s.
Cheese	lb.	9½d. to 10d.
Flour	ton	£12
Hams	lb.	1s. 3d. to 1s. 10d.
Hay, Oaten	ton	£6 10s. to £7.
Hay, Lucerne	,,	£3
Hay, Wheaten	,,	...
Honey	lb.	2½d. to 3¾d.
Maize	bush.	3s. 6d. to 3s. 10d.
Oats	,,	2s. 6d. to 2s. 10d.
Onions	ton	£6 10s. to £8 10s.
Peanuts	lb.	5d. to 7d.
Pollard	ton	£7 5s.
Potatoes	,,	£2 10s. to £7.
Potatoes (Sweet)	,,	£2 10s. to £3.
Pumpkins (Cattle)	,,	£2 to £3
Eggs	doz.	1s. to 1s. 10d.
Fowls	per pair	3s. 6d. to 5s. 6d.
Ducks, English	,,	3s. to 3s. 9d.
Ducks, Muscovy	,,	5s. to 5s. 6d.
Geese	,,	6s. 6d. to 8s. 6d.
Turkeys (Hens)	,,	9s. to 11s.
Turkeys (Gobblers)	,,	15s. to 22s. 6d.
Wheat (Milling)	bush.	4s. 6d. to 4s. 7d.

VEGETABLES—TURBOT STREET MARKETS.

Asparagus, per dozen bundles	...
Cabbages, per dozen	4s. to 7s.
Beans, per sugar-bag	7s. to 15s.
Peas, per sugar-bag	6s. to 15s.
Carrots, per sugar-bag	2s. 6d. to 5s.
Cauliflowers, per dozen	...
Chokos, per case	1s. 9d. to 2s.
Beetroot, per sugar-bag	6d. to 9d.
Lettuce, per dozen	1s. to 1s. 6d.
Parsnips, per dozen bundles	6d. to 1s.
Sweet Potatoes, per sugar-bag	1s. 6d. to 3s.
Table Pumpkins, per dozen	6s. to 6s. 6d.
Marrows, per dozen	1s. to 4s.
Tomatoes, per quarter-case	2s. to 6s.
Cucumbers, per dozen	6d. to 8d.

SOUTHERN FRUIT MARKETS.

Article.	MARCH. Prices.
Bananas (Queensland), per case	6s. to 12s.
Bananas (Tweed River), per case	3s. to 14s.
Bananas (Fiji), per bunch	5s. to 6s.
Bananas (G.M.), per bunch	5s. to 6s.
Lemons (local), per bushel-case	...
Mangoes, per case	4s. to 5s.
Mandarins, per case	...
Oranges (Navel), per case	...
Oranges (Queensland), per case	7s. to 14s.
Papaw Apples, per half-case	6s. to 7s.
Passion Fruit, per half-case	4s. to 8s.
Pineapples (Queens), per double-case	8s. to 12s.
Pineapples (Common), per double-case	6s. to 8s.
Tomatoes (Queensland), per quarter case	1s. 6d. to 3s.
Cucumbers, per bushel case	...
Strawberries, per lb.	...

PRICES OF FRUIT—TURBOT STREET MARKETS.

Article.	MARCH. Prices.
Apples, Eating, per case	3s. to 7s.
Apples, Cooking, per case	3s. to 7s.
Apricots, per case	...
Bananas (Cavendish), per dozen	3d. to 5d.
Bananas (Sugar), per dozen	2d. to 6d.
Cape Gooseberries, per quarter-case	...
Cherries, per box	...
Citrons, per hundredweight	7s. to 8s.
Cocoanuts, per sack	15s. to 25s.
Cumquats, per quarter-case	...
Custard Apples, per tray	2s. 6d. to 4s.
Lemons (Lisbon), per quarter-case	7s. to 10s.
Mandarins, per case	7s. to 10s.
Mangoes, per quarter-case	4s. to 4s. 6d.
Oranges (Navel), per case	8s. to 10s.
Oranges (Seville), per hundredweight	...
Oranges (other), per case	5s. to 10s.
Papaw Apples, per quarter-case	2s. to 2s. 6d.
Passion Fruit, per half-bushel case	5s. to 7s.
Peaches, per quarter-case	2s. to 4s.
Pears, per half-bushel case	...
Peanuts, per lb.	5d. to 7d.
Persimmons, per quarter-case	1s. 8d. to 2s.
Pineapples (Ripleys), per dozen	1s. to 3s. 6d.
Pineapples (Rough), per dozen	1s to 3s. 6d.
Pineapples (Smooth), per dozen	6d. to 1s. 6d.
Plums, per quarter-case	6s. to 8s.
Rockmelons, per dozen	...
Strawberries, per dozen boxes	...
Tomatoes, per quarter-case	2s. to 6s.
Watermelons, per dozen	...

TOP PRICES, ENOGGERA YARDS, FEBRUARY, 1918.

Animal.	FEBRUARY. Prices.
Bullocks	£23 5s. to £26 2s. 6d.
Cows	£15 10s. to £17 15s.
Cows (Single)	...
Merino Wethers	42s. 9d.
Crossbred Wethers	42s.
Merino Ewes	30s.
Crossbred Ewes	38s.
Lambs	37s. 3d.
Pigs (Baconers)	...
Pigs (Porkers)	47s. 6d.
Pigs (Slips)	...

RAINFALL IN THE AGRICULTURAL DISTRICTS.

TABLE SHOWING THE AVERAGE RAINFALL FOR THE MONTH OF FEBRUARY, 1918, IN THE AGRICULTURAL DISTRICTS, TOGETHER WITH TOTAL RAINFALLS DURING FEBRUARY, 1918 AND 1917, FOR COMPARISON.

Divisions and Stations.	Average Rainfall.		Total Rainfall.		Divisions and Stations.	Average Rainfall.		Total Rainfall.	
	Feb.	No. of Years' Records.	Feb., 1918.	Feb., 1917.		Feb.	No. of Years' Records.	Feb., 1918.	Feb., 1917.
North Coast.	In.		In.	In.	*South Coast*—continued:	In.		In.	In.
Atherton	9·67	17	9·62	9·83					
Cairns	14·93	36	18·06	6·09	Nambour	8·96	22	5·67	5·58
Cardwell	17·02	46	16·98	22·09	Nanango	4·54	36	2·91	1·68
Cooktown	13·61	42	13·48	11·57	Rockhampton ...	7·82	31	8·20	5·58
Herberton	7·49	31	10·02	7·79	Woodford	9·32	31	9·33	3·02
Ingham	15·65	26	18·40	23·93					
Innisfail	22·07	37	20·07	19·20					
Mossman	15·13	10	15·36	17·95	*Darling Downs.*				
Townsville	12·16	47	7·12	20·06					
					Dalby	2·98	48	2·17	3·45
					Emu Vale	2·45	...	1·13	2·73
Central Coast.					Jimbour	3·09	...	0·42	1·68
					Miles	2·75	33	3·36	4·12
Ayr	9·43	31	8·30	10·49	Stanthorpe ...	3·45	45	0·86	4·29
Bowen	8·79	47	14·66	12·04	Toowoomba ...	4·57	46	2·26	6·85
Charters Towers ...	4·40	36	11·26	7·45	Warwick	3·05	31	2·30	2·57
Mackay	11·77	47	9·89	18·02					
Proserpine	10·96	15	13·34	14·15					
St. Lawrence ...	8·26	47	7·49	10·58	*Maranoa.*				
					Roma	3·17	44	0·17	4·88
South Coast.									
					State Farms, &c.				
Biggenden	3·88	...	4·15	2·93					
Bundaberg	6·45	35	5·62	8·46	Bungeworgorai ...	3·02	4	0·45	4·43
Brisbane	6·57	67	2·25	1·64	Gatton College ...	3·26	...	1·59	4·01
Childers	6·17	23	8·89	6·73	Gindie	2·75	...	5·84	6·17
Crohamhurst ...	15·03	25	7·88	6·97	Hermitage ...	2·56	...	1·59	2·83
Esk	5·94	31	2·18	3·89	Kairi	6·18	4	...	8·99
Gayndah	4·26	47	4·95	3·11	Kamerunga ...	14·09	...	13·35	7·41
Gympie	6·75	48	7·28	2·84	Sugar Experiment				
Glasshouse M'tains	9·50	10	9·03	3·90	Station, Mackay	10·37	...	11·77	14·80
Kilkivan	5·24	39	4·07	2·33	Warren	3·92	4	10·96	7·25
Maryborough ...	6·67	47	7·39	6·28					

NOTE.—The averages have been compiled from official data during the periods indicated; but the totals for February this year, and for the same period of 1917, having been compiled from telegraphic reports, are subject to revision.

GEORGE G. BOND, Divisional Officer.

Farm and Garden Notes for May.

FIELD.—During this month, the principal work in the field will be the sowing of wheat, barley, oats, rye, and vetches. There is no time to lose now at this work. Potatoes should be hilled up. Cut tobacco. The last of the cotton crop should now be picked, the bushes being stripped daily after the dew has evaporated. Cotton-growers are notified that cotton-ginning and baling machinery has been installed on the premises of the Department of Agriculture and Stock in William street, where seed cotton will be received by the department from the growers, to whom an advance of 1¾d. per lb. will be paid. The cotton will then be ginned, baled, and marketed in the best market, and whatever balance to credit is shown when account sales are received will be distributed amongst the suppliers according to the amount of cotton supplied by them. Only bare expenses of preparing the shipments and freight, if the cotton is exported, will be deducted. Thus it will be seen that cotton-growers will have a sure market for their produce. Every effort should be made to ensure feed for stock during the winter by utilising all kinds of green fodder in the form of silage or hay. Those who own dairy stock will be wise to lay down permanent grasses suitable to their particular district and soil. A few acres of artificial grass, notably Rhodes grass, will support a surprisingly large number of cattle or sheep in proportion to acreage. Couch grass in the West will carry ten to twelve sheep to the acre. Coffee-picking should now be in full swing, and the berries should be pulped as they are picked. Strawberries may be transplanted. The best varieties are Pink's Prolific, Aurie, Marguerite, Annetta, Phenomenal, Hautbois, and Trollope's Victoria. Aurie and Marguerite are the earliest. In some localities, strawberry planting is finished in March, and the plants bear their first fruits in August. In others, fruit may be gathered in July, and the picking does not end until January.

KITCHEN GARDEN.—Onions which have been planted in seed beds may now be transplanted. The ground should long since have been thoroughly cleaned, pulverised, and should be rolled previous to transplanting. Onions may still be sown in the open on clean ground. In favourable weather plant out cabbages, cauliflowers, lettuce, leeks, beetroot, endive, &c. Sowings may also be made of all these as well as of peas, broad beans, kohl-rabi, radishes, spinach, turnips, parsnips, and carrots. Dig and prepare beds for asparagus.

FLOWER GARDEN.—Planting and transplanting may be carried out simultaneously during this month in showery weather; the plants will thus be fully established before the early frosts set in. Camellias and gardenias may be safely transplanted, also such soft-wooded plants as verbenas, petunias, pentstemons, heliotrope, &c. Cut back and prune all trees and shrubs ready for digging. Dahlia roots should be taken up and placed in a shady situation out of doors. Plant bulbs such as anemones, ranunculus, snowflakes, freesias, ixias, watsonias, iris, narcissus, daffodils, &c. Tulips will not suit the Queensland climate, but hyacinths may be tried, although success is doubtful. All shades and screens may now be removed to enable the plants to get the full benefit of the air. Fork in the mulching, and keep the walks free from weeds. Clip hedges and edgings.

Orchard Notes for May.

THE SOUTHERN COAST DISTRICTS.

The advice given respecting the handling and marketing of citrus fruits in the last two numbers of this Journal applies with equal force to this and the following months. Do not think that you can give the fruit too much care and attention; it is not possible, as the better they are handled, graded, and packed the better they will carry, and the better the price they will realise.

Continue to pay careful attention to specking, and fight the blue mould fungus everywhere. Don't let mouldy fruit lie about on the ground, hang on the trees, or be left in the packing-shed, but destroy it by burning. Keep a careful lookout for fruit fly, and sweat the fruit carefully before packing. If this be done, there will be little fear of the fruit going bad in transit or being condemned on its arrival at Southern markets. Where the orchard has not been already cleaned up, do so now, and get it in good order for winter. Surface working is all that is required, just sufficient to keep moisture in the soil; keep down undergrowth, and prevent the packing of the surface soil by trampling it down when gathering the fruit.

Keeping the orchard clean in this manner enables any fallen fruit to be easily seen and gathered, and it need hardly be stated, what has been mentioned many times before, that diseased fruit should on no account be allowed to lie about and rot on the ground, as this is one of the most frequent causes of the spreading of many fruit pests.

May is a good month to plant citrus trees, as if the ground is in good order they get established before the winter, and are ready to make a vigorous growth in spring.

Don't plant the trees, however, till the land is ready, as nothing is gained thereby, but very frequently the trees are seriously injured, as they only make a poor start, become stunted in their growth, and are soon overtaken by trees planted later, that are set out under more favourable conditions. The land must be thoroughly sweet, and in a good state of tilth—that is to say, deeply worked, and worked down fine. If this has been done, it will probably be moist enough for planting; but should there have been a dry spell, then, when the hole has been dug and the tree set therein, and the roots just covered with fine top soil, 4 to 8 gallons of water should be given to each tree, allowed to soak in, and then covered with dry soil to fill up the hole. In sound, free, sandy loams that are naturally scrub soils, holes may be dug and the trees planted before the whole of the ground is brought into a state of perfect tilth. It is, however, better to do the work prior to planting, as it can then be done in the most thorough manner; but if this is not found possible, then the sooner it is done after planting the better. If the land has been thoroughly prepared, there is no necessity to dig big holes, and in no case should the holes be dug deeper than the surrounding ground either is or is to be worked. The hole need only be big enough to allow the roots to be well spread out, and deep enough to set the tree at the same depth at which it stood when in the nursery. Plant worked trees 24 to 25 ft. apart each way, and seedlings at least 30 ft. apart each way.

Towards the end of the month cover pineapples when there is any danger of frost; dry blady grass or bush hay is the best covering. Keep the pines clean and well worked—first, to retain moisture; and, secondly, to prevent injury from frost—as a patch of weedy pines will get badly frosted when a clean patch alongside will escape without any serious injury.

Slowly acting manures—such as meatworks manure when coarse, boiling-down refuse, farm manure, or composts—may be applied during the month, as they will become slowly available for the trees' use when the spring growth takes place; but quickly-acting manures should not be applied now.

THE TROPICAL COAST DISTRICTS.

May is a somewhat slack month for fruit—pines, papaws, and granadillas are not in full fruit, the autumn crop of citrus fruit is over, and the spring crop only half-grown. Watch the young citrus fruit for Maori, and when it makes its appearance spray with the sulphide of soda wash. Keep the orchard clean, as from now till the early summer there will not be much rain, and if the orchard is allowed to run wild—viz., unworked and dirty—it is very apt to dry out, and both the trees and fruit will suffer in consequence.

Bananas should be kept well worked for this reason, and, though the fly should be slackening off, every care must still be taken to prevent any infested fruit being sent to the Southern markets.

Citrus fruits can be planted during the month, the remarks *re* this under the heading of the Southern Coast Districts being equally applicable here.

THE SOUTHERN AND CENTRAL TABLELANDS.

Get land ready for the planting of new deciduous orchards, as, although there is no necessity to plant so early, it is always well to have the land in order, so as to be ready to plant at any time that the weather is suitable. The pruning of deciduous trees can commence towards the end of the month in the Stanthorpe district, and be continued during June and July. It is too early for pruning elsewhere, and too early for grapes, as a general rule. Keep the orchard clean, particularly in the drier parts. In the Stanthorpe district the growing of a crop of blue or grey field peas, or a crop of vetches, between the trees in the older orchards is recommended as a green manure. The crop to be grown as a green manure should have the soil well prepared before planting, and should be manured with not less than 4 cwt. of phosphatic manure, such as Thomas phosphate, or fine bonedust, per acre. The crop to be ploughed in when in the flowering stage. The granitic soils are naturally deficient in organic matter and nitrogen, as well as phosphoric acid, and this ploughing in of a green crop that has been manured with a phosphatic manure will have a marked effect on the soil.

Lemons will be ready for gathering in the Roma, Barcaldine, and other districts. They should be cut from the trees, sweated, and cured down, when they will keep for months, and be equal in quality to the imported Italian or Californian fruit. If allowed to remain on the trees, the fruit becomes over-large and coarse, and is only of value for peel. Only the finest fruit should be cured; the larger fruit, where the skin is thicker, is even better for peel, especially if the skin is bright and free from blemish; scaly fruit, scabby, warty, or otherwise unsightly fruit is not suitable for peel, and trees producing such require cleaning or working over with a better variety, possibly both.

The remarks *re* other citrus fruits and the work of the orchard generally, made when dealing with the coast districts, apply equally well here, especially as regards handling the crop and keeping down pests.

ASTRONOMICAL DATA FOR QUEENSLAND.

TIMES COMPUTED BY D. EGLINTON, F.R.A.S.

TIMES OF SUNRISE AND SUNSET AT BRISBANE.

1918.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
Date.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.
1	4·57	6:46	5·21	6·41	5·41	6·19	5·58	5·46
2	4·58	6·46	5·22	6·41	5·41	6·18	5·59	5·45
3	4·59	6·46	5·23	6·40	5·42	6·17	5·59	5·44
4	4·59	6·46	5·24	6·40	5·43	6·16	6·0	5·43
5	5·0	6·46	5·25	6 39	5·44	6·15	6·0	5·42
6	5·1	6·47	5·25	6·39	5·45	6·14	6·1	5·41
7	5·2	6·47	5·26	6·38	5·45	6·13	6·1	5·39
8	5·3	6·47	5·27	6·37	5·46	6·12	6·2	5·38
9	5·3	6·47	5·28	6 36	5·46	6·11	6·2	5·37
10	5·4	6·48	5·29	6·35	5·47	6·10	6·3	5·36
11	5·5	6·48	5·29	6·35	5·47	6·9	6·3	5 35
12	5·6	6·47	5·30	6·34	5·48	6·8	6·4	5·34
13	5·6	6·47	5·31	6·33	5·48	6·7	6·4	5·33
14	5·7	6·47	5·32	6·32	5·49	6·6	6·5	5·32
15	5·8	6·47	5.32	6·32	5·49	6·5	6·5	5·31
16	5 9	6·47	5·33	6·31	5·50	6·3	6·6	5·30
17	5·9	6·47	5·34	6·30	5·50	6·2	6·6	5·29
18	5·10	6·47	5·35	6·29	5·51	6·1	6·7	5·28
19	5·11	6·47	5·35	6·28	5·51	6·0	6·7	5·27
20	5·12	6·46	5.36	6·28	5·52	5·59	6·8	5·26
21	5·13	6·46	5·37	6·27	5·52	5·58	6·8	5 25
22	5·13	6·46	5·37	6·26	5·53	5·57	6·8	5·24
23	5·14	6·45	5·38	6·25	5·53	5·56	6 9	5·23
24	5·15	6·45	5·38	6·24	5·54	5·55	6 9	5·23
25	5·16	6·45	5·39	6·23	5·54	5·54	6·10	5·22
26	5·16	6·44	5·39	6·22	5·55	5·52	6·10	5·21
27	5·17	6·44	5·40	6·21	5·55	5·51	6·11	5·20
28	5·18	6·43	5·40	6·20	5·56	5·50	6·11	5·19
29	5·19	6·43	...	...	5·57	5·49	6·12	5·18
30	5·19	6·42	...	..	5·57	5·48	6·12	5·18
31	5·20	6·42	...	...	5·58	5·47	...	...

PHASES OF THE MOON.

The Phases of the Moon commence at the times stated in Queensland, New South Wales, Victoria, and Tasmania.

			H.	M.	
5 Jan.	☽	Last Quarter	9	49	p.m.
13 „	●	New Moon	8	36	a.m.
20 „	☾	First Quarter	12	38	„
27 „	○	Full Moon	1	14	p.m.

The Moon will be at Perigee on 15th, Apogee on 3rd and 31st.

4 Feb.	☽	Last Quarter	5	52	p.m.
11 „	●	New Moon	8	5	„
18 „	☾	First Quarter	10	57	a.m.
26 „	○	Full Moon	7	35	p.m.

The Moon will be at Perigee on 12th, Apogee on 28th.

6 Mar.	☽	Last Quarter	10	44	a.m.
13 „	●	New Moon	5	52	p.m.
19 „	☾	First Quarter	11	30	„
28 „	○	Full Moon	1	33	„

The Moon will be at Perigee on 13th, Apogee on 27th.

4 April	☽	Last Quarter	11	33	p.m.
11 „	●	New Moon	2	34	„
18 „	☾	First Quarter	2	8	„
26 „	○	Full Moon	6	5	„

The Moon will be at Perigee on 10th, Apogee on 23rd.

For places west of Brisbane, but nearly on the same parallel of latitude—27½ degrees S.—add 4 minutes for each degree of longitude. For example, at Toowoomba the sun would rise and set about 4 minutes later than at Brisbane if its elevation (1,900 feet) did not counteract the difference in longitude. In this case the times of sunrise and sunset are nearly the same as those for Brisbane.

At St. George, Cunnamulla, Thargomindah, and Oontoo the times of sunrise and sunset will be about 18 m., 30 m., 38 m., and 49 minutes, respectively, later than at Brisbane.

At Roma the times of sunrise and sunset may be roughly arrived at by adding 17 minutes to those given above for Brisbane.

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 somewhere 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.

For the sunrise and sunset at Rockhampton, Townsville, Cairns, and other places in Queensland, readers may be referred to the "Queenslander" to which newspaper monthly astronomical notes will be supplied.—D.E.