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QUEENSLAND AGRICULTURAL JOURNAL

VOL. XXVI. 1 JULY, 1926. PART 1.

Event and Comment.

The Current Issue.

This month's issue contains an abridged report of the proceedings of the Annual Conference of Ministers of Agriculture which was held this year in Brisbane. Many matters of great importance to agriculturists were discussed, and some notable speeches delivered by representatives of the several States, all indicative of the serious attention that is being given to present-day farming problems. It is, of course, impossible to publish the proceedings in full, but it is believed that the report, in its abridged form, will claim the close interest of our readers. Affairs in the Sugar Industry, our main agricultural interest, are, as usual, well covered. Mr. Pollock has a note on Honey Sorgho, a variety of sorghum that has given exceptionally good results from field trials in the North. Mr. Hubert Jarvis contributes some informative notes on injurious insects in the Stanthorpe district. Banana culture in North Queensland is the subject of some useful notes by Mr. Ellison, a new contributor from the Fruit Branch. Mr. Rumball discusses anomalies in egg production, while Mr. Shelton has his customary budget of practical information for pig-raisers. The pen is well supported, as usual, by the camera, and readers will find the July Journal generally acceptable.

The Commonwealth and the Dairying Industry.

The question of extending financial assistance to the dairying industry by the Commonwealth was discussed animatedly at the recent Interstate Conference of Ministers for Agriculture. The Western Australian representative, Hon. M. F. Troy, stressed strongly the need of the extension of practical Federal support to the

States in their efforts to stabilise one of the most important of our rural industries. The Commonwealth Government with its unlimited resources and its desire to invade State activities might very well help us, he said, to improve the dairying industry in the several States. He did not relish calling upon the Commonwealth Government to assist in this matter, that is if the Commonwealth Government were content to confine itself to Commonwealth activities, but to-day it is invading almost every State activity in its desire to help. By importing pedigreed dairy cattle from the older countries the Commonwealth could assist the industry better than the States with their limited resources. Assistance in improving flocks and herds and general production in the Commonwealth should be a function of the Central Government. All the developmental work of the country was left to the States. The Commonwealth with its abundant revenue was free from the ordinary commitments in respect to the control of lands, mines, and other activities with which the States were charged. The finding and development of oversea markets for their primary products were related to the improvement of methods of increasing production and raising live stock standards, and these came naturally within the range of Commonwealth interest. His motion, that it was desirable that Commonwealth financial assistance should be given to the States in their efforts to improve the conditions of the dairying industry, met with general support.

Commonwealth and State Functions—A Clear-Cut Definition Needed.

Speaking on the same subject, the Minister for Agriculture and Stock (Hon. W. Forgan Smith) said that the proposal opened an avenue by which the Commonwealth could come legitimately to the assistance of the States. Those who had been in touch with agricultural departments in recent years realised, he continued, that Federal activities in connection with the dairying industry had been in the nature of an intrusion into the domestic domain of the respective States, and the time was fast approaching, if it had not already arrived, when there should be a clear-cut definition as to what the State and Federal functions were in relation to matters which were now regarded as of purely State concern. Particularising the dairying industry, Mr. Forgan Smith expressed the belief that Commonwealth activity should be confined to the control of export and standard grades for export. It was the authority that operated in all the States and it could administer the same laws in every part of Australia, but in regard to actual production within the State, any funds it had at its command for the purpose of assisting the dairying industry should be spent through the State Agricultural Departments. By assisting dairying financially through the State services great and far-reaching benefits would accrue. For example, the principle would apply in the acceptance by the Commonwealth of the Conference proposal that a £1 for £1 subsidy on amounts contributed by the State Governments to purchasers of purebred dairy bulls should be approved by the Federal Government. About three years ago the Prime Minister (Right Hon. S. M. Bruce) spoke of the necessity of instituting what he called a "better bull campaign," and stated that his Government would make moneys available for the financing of the purchase of purebred dairy bulls in the several States, and that he would also give freight subsidies in respect to the transport of the animals. Reference had already been made at the Conference to the present great scarcity of purebred dairy bulls in Australia. As State Governments, continued the Minister, they had to legislate for the elimination of the scrub bull, but that would be useless unless they could replace him with a purebred animal. Financial assistance, consequently, in ensuring purebred dairy stock was very desirable. The Commonwealth with its great revenue resources, could do something practical along the lines suggested with great advantage to Australia generally. After all, they were merely asking for something to which the States were entitled as the actual revenue contributors. The State Governments had to develop the land, provide roads and railways, advance moneys for farm improvements, and in numerous other ways had to carry on the functions of Government, each in its own domain. The Commonwealth Government reaped the advantage of State activities through increased revenues. Any developmental work performed by the State was followed by increased population and enhanced wealth production. The benefit to the Commonwealth from these services was reflected directly in Federal

revenues from customs, excise, and other sources. Therefore, the proposal under discussion merely meant asking the Central Government to make moneys available for an Australian-wide industry from revenues the States had contributed. There need be no apology for asking for Commonwealth assistance in the direction suggested. It was Mr. Forgan Smith's belief that the Federal Government could assist the States materially in this and in other directions, and through existing State services benefit the whole of the Commonwealth.

Cane as Fodder—A Sugar Grower's Offer.

In one cane-growing locality in the Burnett district some of the crops have been so affected by a protracted dry spell that they will scarcely pay the cost of crushing. They do not contain, it is estimated by one grower, enough milling cane to cover the ordinary expenses of harvesting, consequently, he has had to consider the possibility of finding a market for his crop as fodder. He is seeking orders from stock-owners in districts that missed the normal rainfall this year. He has 20 acres of good, clean cane fodder carrying about 4 tons to the acre. Others have from 5 acres upwards. They are prepared to deliver the fodder on rails at from £3 to £4 a ton, and are keenly desirous of finding an immediate market. Particulars may be obtained from the Under Secretary, Department of Agriculture and Stock, Brisbane.

Building up a Rural Civilisation.

As soon as agriculture becomes a thoroughly organised and stabilised industry, as soon as farming becomes a payable proposition, as soon as country life contains all the social advantages organised communities should naturally possess, then land settlement should cease to be a problem and city life should lose some of its glamour and attraction for the bush boy and girl seeking more immediately profitable outlets for their energy and enterprise. As Queenslanders we have reason to be proud of what we have already done towards improving the conditions of country life. We have a huge, lightly-populated State. There are, for instance, some hundreds of thousands more people in the single city of Sydney than there are in the whole State of Queensland. Its immensity can be measured when we realise that Brisbane is actually nearer Melbourne than it is to Cooktown in our own State, and yet in spite of the fewness of our people, our vast vacant areas and tremendous distances we are building up a rural civilisation in a way that has already aroused the interest of other States and peoples. One big advantage Queensland has is the more or less decentralisation of her population and industries. Along our seaboard are situated coastal towns, each with practically its own railway system; each the centre of a province as large as Victoria and rivalling the Southern State in agricultural richness; each with either a developed or undeveloped coal field close at hand or in the near interior. Queensland has 6,236 miles of railway open to traffic, and in addition has shown a marked development in main road construction from a casual activity towards a reasoned industry in the hands of competent engineers. In all our efforts to improve the conditions of inland industry in Queensland, the comfort and well-being of our women and children are regarded as of major importance. A part of the general scheme is the protection of mothers and infant life. Education by means of travelling Domestic Science cars, correspondence courses for children in outlying districts where ordinary school attendance is impossible, and other facilities bring the Technical College and the school to the country town and the farm. Party and community telephones are also reducing the old-time isolation in rural districts. Efficiently managed hospitals and maternity homes; an excellent aviation service in the far west, where conditions are almost perfect for flying; the Queensland Ambulance Transport Brigade; and the Country Women's Association (a very fine organisation), are all factors in a State-wide effort to place the social amenities of country life on a par with those of the city. In fact there is not a phase of social advancement which is not engaging the attention of far-sighted, public-spirited men and women in Queensland to-day, and the evidence of this was commented upon most favourably by visitors to Queensland for the recent Interstate Conference of Ministers for Agriculture.

Photo.: " Courier."

PLATE 1.—CONFERENCE OF MINISTERS OF AGRICULTURE. BRISBANE, 7TH JUNE, 1926.

Reading round the table from left to right : Hon. M. F. Troy (Western Australia), Hon. T. Butterfield (South Australia), Colonel W. M. J. Bourchier (Victoria), Hon. W. Forgan Smith (Queensland), Hon. W. McCormack (Premier of Queensland, who opened the Conference).

AGRICULTURE IN THE COMMONWEALTH.

STATE MINISTERS MEET IN CONFERENCE.

RECORD OF PROCEEDINGS.

RURAL PROBLEMS REVIEWED IN AN ALL-AUSTRALIAN ATMOSPHERE—IMPROVING CONDITIONS OF COUNTRY LIFE—PLOUGHING A STRAIGHT FURROW IN THE FIELD OF FARMING ORGANISATION—QUEENSLAND'S EFFORTS COMMENDED—MANY IMPORTANT DECISIONS REACHED.

A Conference of Ministers of Agriculture, representative of the whole Commonwealth, was held at Brisbane on Monday, 7th June, and following days. Matters of great moment to the farming industry were discussed and decisions reached on many important points. Some notable speeches were delivered in the course of the Conference. Visiting Ministers expressed themselves as deeply impressed with the evident progress Queensland has made in rural organisation. In the following pages is an abridged report of the proceedings covering the questions raised and debated, and which will be generally accepted as a valuable contribution to current thought and opinion on Australia's agricultural achievements, prospects, and problems.

The Ministerial Conference was opened by the Premier of Queensland (Hon. W. McCormack) at 10 a.m. on Monday, 7th June, in the old Legislative Council Chamber, Parliament House, Brisbane. In attendance were Hon. W. Forgan Smith (Queensland), Hon. W. M. J. Bourchier (Victoria), Hon. T. Butterfield (South Australia), Hon. M. F. Troy (Western Australia), Mr. G. D. Ross (Under Secretary for Agriculture, New South Wales), and Mr. H. C. Smith (Secretary, Tasmania).

With them were the undermentioned departmental officers of the respective States:—

Queensland,—Messrs. E. Graham (Under Secretary), H. C. Quodling (Director of Agriculture), A. H. Benson (Director of Fruit Culture), A. H. Cory (Chief Inspector of Stock), C. McGrath (Supervisor of Dairying), W. G. Brown (Instructor in Sheep and Wool), J. C. Brünnich (Agricultural Chemist), F. F. Coleman (Officer in Charge of Seeds and Stock Foods Branch), P. Rumball (Poultry Instructor), A. Henry (Cane Prices Board), J. F. F. Reid (Editor of Publications).

Mr. L. R. Macgregor (Director of the Council of Agriculture) was also in attendance.

Other officers of the Department associated with the Conference were Messrs. H. Hunter (Agricultural Branch), H. Barnes (Fruit Branch), L. Cameron (Dairy Branch), T. Hope (Private Secretary to the Minister), and J. Kilmartin.

New South Wales.—Messrs. W. J. Allen (Fruit Expert), L. T. MacInnes (Dairy Expert), H. Luckman (Secretary).

Victoria.—Dr. S. S. Cameron (Director of Agriculture), Messrs. R. Crowe (Superintendent of Exports), J. M. Ward (Director of Horticulture), J. Thynne (Secretary).

South Australia.—Professor A. J. Perkins (Director of Agriculture), Messrs. G. Quinn (Horticultural Instructor), and W. L. Summers (Secretary).

Western Australia.—Messrs. Geo. L. Sutton (Director of Agriculture), G. W. Wickens (Officer in Charge of Fruit Industries), P. G. Hampshire (Dairy Superintendent), and W. Deane (Secretary).

Tasmania.—Messrs. A. Conlon (Dairy Expert) and P. H. Thomas (Fruit Expert).

Mr. R. P. M. Short acted as Secretary to the Conference.

THE PREMIER'S OPENING ADDRESS.

The Hon. W. McCormack (Premier, Chief Secretary, and Treasurer of Queensland), in opening the Conference on behalf of the Government, welcomed to Queensland the Ministers for Agriculture of the various States and their officers, who had met to discuss matters affecting the agricultural welfare of the whole of the Commonwealth of Australia, and had a very important and difficult work ahead of them. They had to deal with many problems embracing a wide range of climate and a wide sphere of agriculture, from the humid tropics to some very cold portions that do exist in Australia. He trusted that their work would be satisfactory, and that the States in general would benefit as a result of the exchange of views between the Ministers and officers of this important branch of Government activity. There were many problems facing Australia at the present tme, and there was one important question to which he hoped the Governments of Australia and the man on the land would give attention, and that was to provide against periods of sub-normal rainfall. Sooner or later the Governments of Australia would have to face the problem created by the recurrence, at long intervals, of unfavourable seasons.

The Conservation of Fodder and Water—A National Concern.

Perhaps the problem was not within the ambit of a conference such as that, but in the last analysis it is a purely agricultural problem, for the conservation of fodder and water was the only method of providing for the dry periods that we occasionally experience. On other matters it was recognised that excellent work had been done in the various departments of the State, and there is ample scope for further activity. There was a community to legislate for, and upon the technical officers who have to deal with agriculture a tremendous task must devolve to educate the man on the land and make him understand the value of applied science to agricultural problems. He expressed regret that the representatives from other States had not the opportunity of visiting the more distant portions of the State, but if the opportunity did occur he was certain that his colleague (the Minister for Agriculture and Stock) would be only too pleased to take advantage of it.

Queenslanders Quite Good Australians.

He expressed a hope that their stay in Brisbane would be happy, that they would gain some personal knowledge of our capital city, and return to the Southern States with a conviction that Queenslanders were quite good Australians in every sense of the term. We were here in a big State with a small population and immense natural resources and in great need of development. We had a State that could produce almost anything. Our difficulties were the need of population and a more scientific method of dealing with and exploiting the resources that Nature had given us. One of the results of that Conference would be that we would advance a little further in the direction of utilising the natural wealth of this great State. The same advantage, he hoped too, would accrue to the other States. The Premier then, amidst applause, formally declared the Conference open.

The Hon. W. Forgan Smith (Queensland) was elected Chairman of the Conference by unanimous vote.

Vote of Thanks to the Premier.

On the motion of Colonel the Hon. M. W. J. Bourchier and the Hon. M. F. Troy, a hearty vote of thanks was accorded to the Premier (Hon. W. McCormack) for opening the Conference. The hospitality of the Queensland Government and the excellent arrangements made for the comfort of the visitors was referred to appreciatively by Colonel Bourchier. It was the first time that he had had the pleasure and opportunity of visiting the great North-eastern State, and he, with the other visitors, had been profoundly impressed with all that they had seen in their journey from the Border across the magnificent Darling Downs, and also below the Range. The visitors realised that they had only seen a small portion of Queensland, but of its resources and picturesque scenery they had had wonderful evidence. They recognised that Queensland was in a position to produce everything that man required—all those things which she desired for the happiness and prosperity of her people, and in that respect Queensland enjoyed an advantage over all the other States of the Commonwealth.

Apologies were received for the absence of the Hon. J. T. Lang (New South Wales) and the Hon. J. Belton (Tasmania).

The Conference formally received the summary of the resolutions of the previous Conference, the subject-matter of which was referred to sub-committees, consisting of the several groups of departmental officers of the respective States, for discussion and report.

PERMANENT STANDARDS FOR WHEAT.

Mr. TROY (*Western Australia*): It is our desire that a permanent standard for wheat be fixed. This year in Western Australia the growers were fortunate where they dealt with merchants who sold early in the season. At present there is no weight standard fixed. A Western Australian standard has now been decided upon approximating the standard adopted in some of the other States. It is absolutely essential that a standard operating throughout the year should be fixed. If any change were desired then it could be made at a conference of this character. If a standard is fixed then we shall have no difficulty in arranging for our shipments early in the season. I hope that the other States will fall into line with Western Australia. I move—**"That a permanent standard for wheat be fixed throughout the year."**

Mr. ROSS (*New South Wales*): When this matter was mentioned my Minister proposed asking this Conference to take some action as suggested by Mr. Troy, but since then he has left for the United Kingdom, where he intends to make full inquiries respecting this matter and also of the requirements of the trade on the other side of the world. After the Ministerial Conference in 1923 a conference was held in Sydney of shippers and farmers, and they turned down any suggestion for interfering with the present system and fixing a standard. Since then the farmers' organisation and the Agricultural Bureau have changed their opinions and

PLATE 2.—HON. W. FORGAN SMITH, CHAIRMAN OF THE CONFERENCE.

are in favour of grading. At that time the Minister was prepared to bring up the matter at this Conference, but when he decided to go abroad the planned to make full inquiries into the requirements of the trade on the other side of the world and thus endeavour to meet the arguments advanced by the shippers. Until those inquiries are complete New South Wales can hardly take any action. The information that will be obtained by the Minister will be available to the other States when the matter comes up again for discussion.

The Position in South Australia.

Mr. BUTTERFIELD (*South Australia*): South Australia has taken no action in connection with fixing a standard. My own opinion as a Minister and a farmer is that there should be some standard fixed. The standard is fixed annually about the end of January, after harvesting is well advanced. Early harvested wheat may

possibly be sold on the previous year's standard, which has nothing or very little to do with the current crop. We have grown wheat for a long time in Australia, and we should be able to fix a standard for Australian wheat. We could take the past twenty years, say 61½, 62, and 62½, and ascertain what shall be the standard upon which merchants will buy and sell. That should be possible. The present practice is to fix the standard each year. One year it might be fixed at 61½ and another year at 63. So long as the basis for dealing is made quite clear a standard could be fixed and, at any rate, it would give confidence to the people concerned. Supposing that wheat this year were fixed at 63, and next year's wheat is not up to that standard, the farmers would be losers thereby. It seems to me that a standard should be brought about in the interest of world traders so that they will know when we deliver our wheat that it is a pound under or above the standard, and they will have knowledge of what they are getting. A fixed basis for Australian produce seems desirable. I cannot see that we can do anything at present, and I suggest that we refer it back to the sub-committee until we have further information. It is a matter that should be referred to the Agricultural Bureaux and then direct to the farmers for an expression of opinion.

The Victorian Viewpoint.

Colonel BOURCHIER (*Victoria*): I would prefer to leave the position as it stands as regards the present f.a.q. At the 1924 conference the inadvisability of altering the present f.a.q., until the general bulk handling of wheat was introduced, was recorded. That is the position so far as Victoria is concerned. We have not yet established a bulk-handling system, although I think that is just a matter of time. In Victoria the opinion is held that it is not advisable to alter the grade.

The Practice in Western Australia.

Mr. SUTTON (*Western Australia*): When this matter was first raised by Western Australia it was on account of the fact that New South Wales had introduced bulk handling and we felt that New South Wales would probably be fixing grades. I prefer to use the term "standards," because in Australia grading has quite a distinct meaning to that which it has in America, and there might be some misunderstanding among our farmers if we talked about "grades." It was felt that New South Wales would be compelled to fix standards, and as those standards would naturally affect the other States when they introduced bulk handling, it was thought advisable to consider the matter at that time. At the same time it was felt that there were insuperable difficulties in the way of fixing a permanent grade whilst bagged wheat was being dealt with. Several years have gone by since then and that impression has proved erroneous. As Mr. Butterfield stated, we have now a long experience in connection with our wheat and we should know what our standard should be.

Since last year I have been making investigations and I find that, if you take all the information which we have had for the last ten years, if we eliminate cocky chaff and other foreign matter from the f.a.q. standards and simply deal with the millable grain, the grain is practically the same as the millable grain f.a.q. samples as fixed by South Australia for the last five years, and there is a striking similarity between that grain and the samples of other States. I have only the samples over the last five years, but the analysis shows that the other years would be practically the same. Because of that, as stated by Mr. Butterfield, we were compelled during the past season to fix a standard in order that some of our wheat should be sold, and we arrived at one which approximated to the last five years. The Western Australian standard sold and gave extreme satisfaction. Because of that experience I have no hesitation in saying that, first of all, though we have not yet got bulk handling, a standard can be fixed, and, because of the information we have regarding our f.a.q. wheat, one can be fixed that will give satisfaction to the trade. Furthermore, a standard can be fixed which will give the trade in Great Britain confidence. A week prior to leaving Western Australia we had a representative from an English firm, who was inspecting wheat at Fremantle. We happened to be giving a certificate to a cargo which was just leaving, and he was very much struck with what had been done. He made a public statement that he, knowing the trade in Great Britain, thought it certainly in the interests of Australia, both for growers and merchants, that a permanent standard should be fixed. Those who know the trade realise that, because otherwise the Australian merchant has no idea of what happens until several months after shipping. We received a cable recently that the London corn trade received our samples and they proved satisfactory. At that time we had only two cargoes to ship; 60 per cent. of the Western Australian wheat is shipped before it is possible to fix f.a.q. samples.

The difficulties previously thought to be insuperable in the fixing of a standard no longer exist. In view of that fact, and that it is also to the interest of the farmers—with which our Department is more particularly concerned—I think this

motion should be carried. Whilst we have a f.a.q. standard nobody ever hears of any farmer getting a premium for his wheat, and yet, as standard is a mixture of good and bad, and most wheat exported is f.a.q., somebody is getting the benefit, and it is certainly not the farmer. Therefore, in the interests of the farmers, it is advisable that a standard should be fixed.

The Value of Grade Standards.

Professor PERKINS (*South Australia*): I think Mr. Sutton has put the position very clearly, but I still do not see how the farmer who has wheat above the standard is going to benefit. I quite realise how the farmer below the standard will suffer. Unless you have a pooling arrangement, or unless the wheat is marketed by the State itself, you leave it to individuals, and it is pretty certain the man below standard will be docked and the man above will not get the advantage.

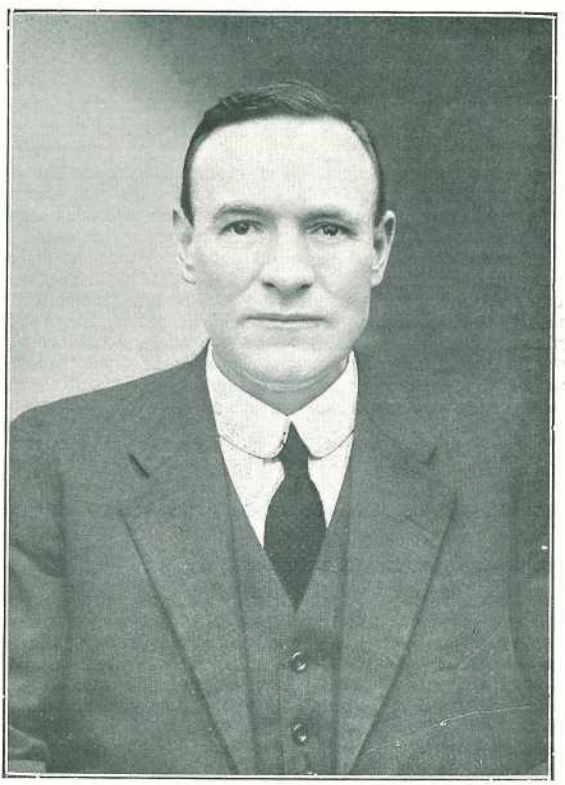


PLATE 3.—E. GRAHAM, UNDER SECRETARY FOR AGRICULTURE AND STOCK.

Of course, the trade interests in Adelaide do not favour a fixed standard, but if it were fixed by legislation they would naturally agree to it. The grade standard would induce farmers to clean wheat more thoroughly than at present. Now there is no advantage in cleaning wheat if the farmer gets no more. If wheat showed a tendency to be below standard, under the suggested scheme, it would be to the advantage of the farmer to clean it. If you can provide for the protection of the farmer with good wheat, it certainly would be an advantage.

The Canadian System.

Dr. CAMERON (*Victoria*): I wish to refer to one aspect mentioned by Professor Perkins—that of docking. When I was in America eighteen months ago I took occasion when crossing Canada to stop at Regina and visit two of the railroad elevators. In Canada there are four standards—Nos. 1 (northern), 2, 3, and 4. That year they had had frosts just before the harvest and large quantities of the

wheat were not up to No. 1 standard. On the day I visited these elevators the price of wheat was 1.52 dollars per bushel at Winnipeg. The freight from Regina to Winnipeg was 18 cents and the elevator charges 4 cents, making 22 cents off that 1.52, so that the price for No. 1 (northern) wheat at Regina should have been, that day, 130 cents. I was privileged to look through the books of both elevator concerns, showing the price paid for the wheat received on the day of my visit and the day before, and no wheat had been graded as No. 1 wheat. The average price paid to the farmers that day by both elevators was 100 cents. Allowing for freight and elevator charges of 22 cents, there was a dockage of 32 cents, otherwise about 1s. 3d. per bushel. One of the elevators that I inspected was owned by the Canadian Pacific Railway and the other was owned by a private trading concern, but both were on the same par, and it seemed to me that there was nothing to govern the rate of dockage. The man at the elevator was the judge of the grade of wheat that came in and the judge of the comparison between the standards of 1, 2, 3, and 4 that day and the wheat as delivered in the bulk car. It seemed to me he was docking unmercifully, because I never heard in Australia of wheat ever being docked to the extent of 1s. 3d. per bushel.

Mr. Butterfield: I have heard of 1s.

Mr. Troy: Was there no appeal?

Dr. CAMERON: No. The farmer drives in his bulk wagon to the elevator, delivers, and gets a docket as to the quality and the price. That is an end to it. He goes away. He is very much in the same position in that regard as the farmer here if he disputes with the agents of a shipping company. He has not got much of a chance. At any rate, there were no disputes. These farmers were accepting the dollar for the wheat at Regina while the Winnipeg price was 152 cents. The impression I got was that this grading might have a boomerang effect. At any rate, it set me thinking, and after that experience, while I regard grading as quite the right thing, I can see that it possibly might react in the direction Professor Perkins points out—namely, that every opportunity will be taken for docking. The value for standard wheat would be very difficult to get so long as buying remains in the hands of private firms and there is not what you might term "community buying." It should suffice if I convey to you the impression I got—it made one think hard, and I thought it would be extremely advisable to go steady with this proposal.

Mr. BUTTERFIELD (*South Australia*): The argument put up by the two directors cannot affect the position. This standard is fixed every year and dockage is fixed by somebody.

Dr. CAMERON: The dockage is fixed by the buyer—that is the trouble.

The Graingrowers' Interest in Shipping and Selling.

Mr. BUTTERFIELD (*South Australia*): That is the case the world over. In Australia there has been some attempt, by pooling wheat, to remedy that, and it seems to me that until the farmer has some control, either directly or through the various Governments of Australia, of the shipping of wheat and the selling of it abroad, that he will always be at the mercy of the man who says, "Well, you are docked 6d. or 1s." That is the position. Supposing you fix the standard at 62½, I do not think anyone will argue that the man who has 62½ wheat by careful farming has not an advantage over the man who has 61 wheat or wheat under 62½. He decidedly has an advantage. I think the fixing of a standard, and a high standard, will have a tendency to make our wheat more valuable, even under the dockage. I do not suppose there is anything to prevent that. In the case Dr. Cameron cited where they reduced the value of the wheat 30 cents, if it were not for some competition between the buyers they would have reduced it one dollar. If a standard is fixed we can look forward, in the near future, to the Australian farmers taking a more direct interest in the handling of their wheat and the selling of it. That seems to me to be a desirable corollary to the fixing of a standard—that the farmers themselves either co-operate or through their respective Governments take a stronger hand in the disposal of their product.

Queensland at Present not Vitally Affected.

Mr. FORGAN SMITH (*Queensland*): The motion deals with the principle, and perhaps it would be advisable to refer the two following items to their appropriate sub-committees, on which each State is represented by its departmental experts. The matter can be thoroughly discussed by them and referred back to us and be a subject for discussion again. That would facilitate business and we would arrive at an understanding much earlier. In Queensland we are not yet so vitally affected as are some of the other States. Queensland does not produce an exportable surplus of wheat, although on various occasions the Wheat Board has seen fit to export wheat from this

State. The Wheat Board operating under its own Act has done so successfully for a number of years. The board fixes a grade or standard each year, and the general principle of fixing standards is one that I approve of. If that method could be adopted it would be of advantage to the respective States. I intend to support the motion.

Lessons from Wembley.

Mr. TROY (*Western Australia*): I am glad to have the support of the Secretary for Agriculture in Queensland and to hear that the Hon. T. Butterfield also believes in the fixing of a standard. Quite recently a representative of a British firm interested in cargo-carrying investigated our methods of shipping wheat under Government certificate as to quality and weight, commended them very highly,

PLATE 4.—ROBT. WILSON, ASSISTANT UNDER SECRETARY FOR AGRICULTURE AND STOCK.

and advocated permanent standards being fixed for the benefit of merchant, miller, and grower. I would like to refer to some lessons that we have learned from Wembley. The various wheat States of Australia exhibited some choice samples of white wheat —perhaps the best white wheats produced in any country of the world—but inquiring buyers in Great Britain, as well as hundreds of inquiring buyers and millers from various continental countries, were told that these were only samples and could not be purchased in large quantities. When asked for the shipping standards of Australian wheat, it had to be admitted that each State yearly fixed its own standard known as f.a.q. Buyers immediately contrasted these out-of-date methods with the up-to-date methods of Canada, where they exhibited their permanent shipping standards, the uniformity of which was guaranteed by the Dominion of Canada. This explains the confidence that wheat buyers and millers have in Canadian wheat compared with

Australian, and it also explains why Australian visitors to Wembley have, since their return, been stressing the importance of a uniform system of standardisation in the sale of Australia's primary products overseas. I look upon standardisation as being very important to Australia, particularly with a product that brings the second highest value in connection with Australian export. Happily the wheat yield in Australia is increasing so rapidly that within the next ten years Australia will, it is expected, be producing one-third again as much wheat as she is producing at the present time, and will be able to export that increase in grain production. The Governments of Australia have seen the necessity for fixing a standard for butter for export, and have done so with the sole object of placing a superior quality product on the British markets. From reports I have learned that the "Kangaroo" brand of butter is bringing the highest price on the markets. Australian wheat can compete with any other wheat on the markets of the world, and it is therefore highly desirable that we should have some standard fixed. It is highly desirable also that we should export our wheat to other countries of the world. I am not concerned with the farmer whose wheat falls below the standard. That is his lookout. With the educational facilities offered by the Departments of Agriculture throughout Australia, with the amount of money expended by those Departments and their effective propaganda there is no excuse for a farmer to become careless or remain careless and fall behind the efficient producer.

Mr. Forgan Smith (*Queensland*): The efficient farmer is entitled to the rewards of his efficiency. (Hear, hear!)

Mr. TROY (*Western Australia*): Yes. We send out lecturers and have tests conducted at various places and we are all the time urging the farmer to do something better. The aim of Departments should not be to consider the inferior man who produces the inferior article, but to look at the matter from a national standpoint and give every encouragement to the man producing the best article. This is the Western Australian standard—

> Western Australian standard white wheat shall be dry and undamaged by moisture. It shall be free from weevils or other insects, and from smutty, musty, or other commercially objectionable smell.
>
> It shall contain not more than 2.75 per cent. of foreign matter and screenings (from 2 mm. sieve) of the foreign matter; the percentages by count of the unbroken smut balls shall not exceed .2 per cent. of the millable grain.
>
> Of the millable grain there shall be 98.5 per cent. white, sound, bright grain.
>
> Of the other grain there shall not be more than .5 per cent. of bleached grain nor more than 1 per cent. of broken grain.
>
> The weight per bushel shall not be less than 61 lb.

We fixed 62½, but we were given to understand that we were penalising our own farmers by doing so because the standard for the other States was less and our farmers did not get any more, because our standard was not an Australian standard. Recently the Western Australian Voluntary Wheat Pool sent a representative to London to inquire, amongst other things, into a wheat standard, and it was ascertained that the English buyers were not so much concerned about the weight per bushel as with the quality of the grain. Since that is an important factor on the London market then it is absolutely essential that a standard be fixed. We are pressing for the fixation of a standard. We know that in the past there were some farmers who did not produce a good quality grain, but in the interests of the Australian trade and the export trade particularly we should induce the farmers to produce the best quality grain. If that happens—and it will happen, because after all we have intelligent farmers—then we shall secure the best price on the world's markets.

The motion was seconded and carried unanimously.

MILLET—IMPORTATION OF "HURL."

Mr. TROY (*Western Australia*): In view of the decision of the Commonwealth Government to prohibit the importation of "hurl" millet from Italy, the Western Australian manufacturers of brushware are in the position of being forced out of business unless they can be assured of supplies from the Eastern States.

Prior to the prohibition Western Australian manufacturers imported this millet from Italy. Objections were raised against the importation of that millet on the grounds that a borer was introduced with the millet and that this borer was dangerous to maize and other similar Australian products. As a result of the prohibition Western Australian manufacturers were unable to get their supplies from Italy and then found they could not secure supplies from the Eastern States.

The Western Australian manufacturer is unable to purchase that millet known as "long hurl." That quality is absorbed by the Eastern manufacturers. We want to know whether a guarantee can be obtained from the States producing millet that Western Australia will be supplied, and, failing that, whether adequate safeguards can be given by this Conference permitting the obtaining of supplies from elsewhere as in the past. It is not desirable that maize and other commodities should be endangered by the importation of any borer or other pest, but I think the Eastern States should guarantee that we receive our share of the "long hurl" millet. It is suggested that the Conference pass a resolution to the effect that for the present the desirability of the continuance of the embargo is emphasised on the ground that the corn borer, once introduced, may do tremendous damage to maize, millet, sorghum, potatoes, &c., and I move—**"That the Departments of Agriculture in the millet-producing States ascertain definitely—**

1. The actual requirements of the manufacturers in each State, and

2. The amount of suitable fibre available in Australia."

Colonel BOURCHIER seconded the motion.

PLATE 5.—R. P. M. SHORT, SECRETARY TO THE CONFERENCE.

Millet Acreage Extended—Home-grown Supplies Assured.

Mr. G. D. ROSS: The position, so far as it affects New South Wales, briefly is this: The Commonwealth Government were somewhat belated in bringing the absolute embargo into effect, with the result that the New South Wales growers did not anticipate it and therefore did not increase their areas under this crop as much as they might have done. For many years past, owing to the competition from Italian millet, they found buyers have been offering very low prices—in fact the prices offered were not reasonable—but now they are quite prepared to extend their areas very considerably, so that, after this year, I do not think there will be any doubt at all

about the quantity of broom millet that will be produced in New South Wales. I can assure the Minister for Agriculture for Western Australia that, so far as the Department of Agriculture of New South Wales is concerned, they will do everything possible to assist in filling the needs of the other States and to ensure that, after this year, a much larger area of millet is planted so that there will be no difficulty in the future.

Queensland Concerned.

The CHAIRMAN (Mr. Forgan Smith): This question affects Queensland to some extent. I quite agree with Mr. Troy that where an embargo of that kind is granted the people locally should be in a position to supply all the needs of Australia. That is a sound principle which no one can combat. I would like to point out, however, that this embargo, as indicated by Mr. Ross, has only been recently applied by the Commonwealth Government, and as a consequence the industry has not had the opportunity of developing and organising to meet the demands upon it. As pointed out by Mr. Ross, the price at which millet could be imported formerly was used as a means of beating down the price of the locally grown product, and as a result the prospects of the grower were not sufficiently attractive to induce him to increase his areas. In Queensland, millet is the subject of a pool, and the production of this commodity has been properly organised. I am satisfied that within a year or so the amount required for Australian requirements will be forthcoming. It appears to me to be a good suggestion that Western Australia, or any other State affected, should be in a position to set out the tonnage of millet required and the quality which they desire. The question of price also enters into the matter. I realise that if the quantity is insufficient to meet Australian requirements, then increased production is necessary in those States which can grow it at the present time, but I feel sure, with the benefits of the embargo properly understood by the producer, sufficient areas will be put under this crop to meet all the requirements of the several States. It is all a question really of price to the grower. If the price is a suitable one, well, he will extend his areas, but under the old conditions with importations from Italy, the price was not sufficiently attractive to the local grower.

Colonel BOURCHIER (*Victoria*): I am generally in accord with the views expressed in regard to this question. It is most necessary that we protect our growers and that we insist on the embargo for another term of five years. A conference has been held, and we anticipate that this question will be adjusted amicably between the growers and manufacturers.

The motion was carried unanimously.

"Continuation of embargo on importation of broom millet fibre for further period of five years"—(Victoria and Queensland).

This is practically on the lines which I have just indicated. We are in favour of a continuation of the embargo on the importation of broom millet for a further period of five years. I move accordingly.

The Chairman seconded the motion, which was carried unanimously.

EMBARGO ON IMPORTATION OF BLACK-GROWN MAIZE.

Australian Living Standards must be Maintained.

The CHAIRMAN (Mr. Forgan Smith, *Queensland*): I move, on behalf of Queensland—**"That an embargo be placed on the importation of black-grown maize.**

This matter was affirmed, if I remember rightly, at the Hobart Conference. The principle it embodies is a sound one. Australia has adopted certain living standards, and those engaged in the production of a commodity have a right to those living standards, and, consequently, their industry should not be affected by the importation of commodities grown by cheap coloured labour. That, briefly, is the principle contained in this motion. You are aware, no doubt, that Australia can produce enormous quantities of maize. There are very large areas in Australia suitable for the production of this grain, and its cultivation can be extended to meet all the requirements of Australia. On various occasions large quantities of this black-grown maize from South Africa have been dumped into Australia to the detriment of those engaged in its production here. Since 1921, my Department has been in touch with the Commonwealth Government with respect to the duty on this product, and quite recently this Government has seen fit to adopt our suggestions. Up till 31st December last, the duty on imported maize was 1s. per cental British and 3s. per cental other countries. An amended tariff is before the Commonwealth Parliament, and duties are being charged by the Customs at the proposed new scale as from the 1st January last. This new scale provides 2s. 6d. per cental British and 3s. other countries. Although this is an improvement it is held to be still inadequate to protect the Australian maize grower. You will remember that quite recently there

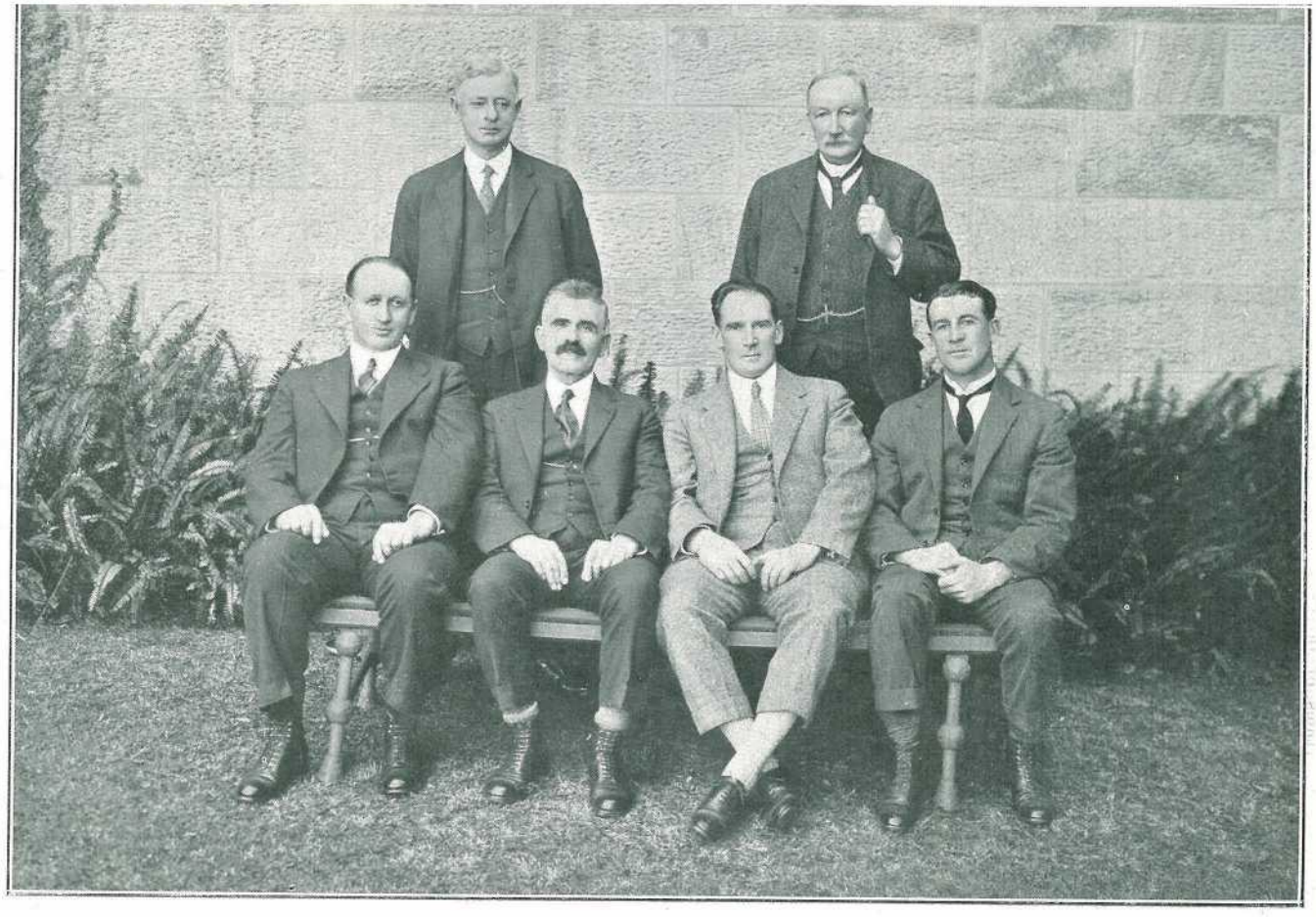


PLATE 6.—AGRICULTURAL CONFERENCE—FRUIT EXPERTS.

Standing (left to right) : W. J. Allen (Fruit Expert, New South Wales); A. H. Benson (Director of Fruit Culture, Queensland).

Sitting (left to right) : G. W. Wickens (Officer in Charge of Fruit Industries, Western Australia); G. Quinn (Horticultural Instructor, South Australia); J. M. Ward (Director of Horticulture, Victoria); P. N. Thomas (Fruit Expert, Tasmania).

was an arrangement between the Commonwealth Government and the Government of South Africa for certain forms of reciprocity, consequently, the ordinary duty did not apply to South African maize until quite recently. In the Kingaroy district and southern portions of this State immense areas are under maize and on the Atherton Tableland large quantities of maize are grown. We have very many people engaged in its production on the Atherton Tableland—on one of our soldier settlements there in particular—and it is felt by the Government of Queensland that, having adopted Australian living standards these should not be menaced by our being forced into competition with countries whose production costs are much cheaper, due to the low wage conditions that operate in those countries. I think it is a fair and sound proposition that that principle should be accepted. No one here will argue that the Australian should be expected to carry on an industry in competition with coolie labour of other countries. That, briefly stated, is the principle embodied in this resolution. Certainly the increased tariff granted by the Commonwealth recently will improve the position very considerably, but I am a strong believer in the principle of an embargo against that form of competition to which I have alluded. I therefore move the motion.

Mr. BUTTERFIELD (*South Australia*) seconded the motion.

Mr. TROY (*Western Australia*): Western Australia does not produce any quantity of maize and is not likely to do so for many years to come. There are occasions in Australia when we will need, very probably, to import maize in bad seasons. In 1914 we had to import maize.

The CHAIRMAN (Mr. Forgan Smith): It is a common principle, where an embargo has been granted by the Commonwealth Government and the local production is not up to requirements, that, with the permission of the Minister for Trade and Commerce, the shortage can be made up. That applies to the embargo on sugar and would apply equally to any other commodity on which there is an embargo of that kind.

Mr. TROY: It is essential in this case that the maize-producing States should be able to notify the Commonwealth Government early in the season as to their crop estimates. It is too late to think about importing this product when the season is ended.

The motion was carried.

EGGS FOR EXPORT.

"Uniform-grade standards for eggs in the States, and for export."—(Queensland.)

"Inclusion of eggs in shell and in pulp in the Commonwealth Commerce Act."—(Western Australia.)

The CHAIRMAN: I beg to move the resolution standing in the name of Queensland, covering these items, and invite Mr. Rumball, the Poultry Expert of our Department, to express his views concerning them.

Mr. RUMBALL: Egg export is becoming a big feature in the expansion of the poultry industry in Australia. It is necessary to ensure a certain quality, and Queensland poultry farmers want to protect their future market by moving, even though it may be very late, in the direction of setting up a uniform grade throughout the Commonwealth. Eggs, when they reach oversea markets, will be known as Australian eggs, and if one State's exports are not uniform with those of other States a prejudicial effect on the market price must develop. Queensland poultrymen are of the opinion that some standard should be adopted on the same lines as that adopted in connection with the export of butter. The quality of the egg is also very important, and the easiness with which eggs can deteriorate before they are packed for export and in transit has to be borne in mind. We want both size and quality, and these requirements are common to all the States. The size of egg which should be adopted as the standard is rather a debateable point. Personally, I would like to see our first grade eggs kept up to as high a standard as possible. The Queensland Egg Board want an egg weighing a minimum of 2 oz. That, in my opinion, is a good standard at which to aim. It would fetch a higher price on the other side of the world and the cost of handling an egg of that standard is only the same as that of a lower weight egg. Other States accept an egg a good deal smaller. In New South Wales an egg of 1¾ oz. is regarded as good enough. If we are going to mix up 1¾ oz. eggs with 2¼ oz. eggs, there will obviously be a large variation in quality and general appearance, and it is appearance which is going to attract the consumer. It is admitted that a lot of our eggs just fail to attain the 2-oz. standard, and I suggest that a grade of 1⅞ to, possibly, 2⅛ oz., be accepted as the Australian standard.

It is a debatable point, but Queensland wants a large-sized egg in the first grade, and that is the egg that we want to export.

The Chairman's suggestion that the Conference take both items together was agreed to.

Mr. TROY (*Western Australia*): I second the motion. We in Western Australia desire to include eggs in shell and pulp in the Commonwealth Commerce Act, Part 2, clause 5 of which says that the export of goods enumerated under the Regulations is prohibited unless there is applied to those goods a trade description in accordance with the Act. If we achieve that, we bring those commodities under the control of the Commonwealth, and that will bring us somewhere near where the Queensland people want to get.

Colonel BOURCHIER (*Victoria*): I would just like to point out that a number of egg merchants operating for local consumption in Victoria sell eggs by the case, ungraded. Merchants who grade eggs on arrival at their rooms find certain grades are quite satisfactory for their trading purposes, namely, first grade, 2 oz.; second grade, 1¾ to 2 oz.; third grade, 1½ to 1¾ oz. For consumption within the Commonwealth it is suggested that those grades be adopted. The view of Victoria in this matter is briefly this: It is recommended that no eggs be allowed to leave the Commonwealth which do not weigh an average of 2 oz. or 15 lb. to the 'long 100.'' This is the weight in general demand on the London market and has proved satisfactory in every case where last export season eggs were shipped under Government supervision. England consumed over £34,000,000 worth of eggs last year, and of that amount was compelled to import slightly over £20,000,000 worth. We have been putting up a very good quality of egg, and I do not think that we should do anything which should pull down or lower the general average of the eggs, and I am inclined to think that if we adopt this resolution it will be a step in that direction. After all, if one State builds up a reputation for its eggs which have been exported I think that the standard adopted does not appear to be too low.

Mr. BUTTERFIELD (*South Australia*): South Australia takes up a very definite stand on this question. There was a conference of egg experts just recently which dealt with this matter. I have listened to what Mr. Rumball has had to say, and we are very much in accord with him in our State. In regard to the 1¾ oz. egg, there is, of course, some difference of opinion between the merchants who deal in them and the Agricultural Department. There may be a very decided difference in the point of view, and we said that the 1⅞ oz. egg is the irreducible minimum and that to allow shipment of eggs of a less weight would be prejudicial to the export trade. Our representatives go on to say that in egg shipments last year from South Australia to the London market no eggs under 2 oz. were allowed. It, therefore, seems desirable that the Conference should settle the point. We shipped 2-oz. eggs, and if we can ship something better through the method suggested by Mr. Rumball, so much the better for the export trade. I agree with the 2-oz. standard; and our experts are of that opinion. The Farmers' Union does an immense business in South Australia in the export of eggs. It seems to me that the points mentioned by Mr. Rumball are points which the Conference should adhere to and support in an endeavour to improve the standard for export.

Mr. ROSS (*New South Wales*): The Producers' Distributing Company in New South Wales has had considerable experience in the export of eggs. In fact, they were the first organisation to experiment in this direction, and as a result of their experiments they claim that the demand on the other side is not for large eggs but for even sized eggs. If I might read an extract from a communication from them it may explain their attitude:—

> ''After an experience covering some seasons of shipments to the West coast of America and to Great Britain the members of the Council are definitely of the opinion that a minimum weight of 2 oz. is altogether too drastic and if insisted upon will seriously reduce the quantity which can be exported. In the early weeks of spring production, when the flocks are at their full vigour, 2-oz. eggs are fairly general, but this is not maintained in the heavy flush producing months—when the bulk of the export packing is done—and probably 75 per cent. of shipments made in the past seasons would be below the 2-oz. minimum, although an average of 2 oz. has been consistently maintained. The overseas markets do not ask for a large egg but for an even-sized egg.''

If a large egg is selected it will reduce the quantity for export and at the same time reduce the standard of the egg which has to be marketed here, and we consider that our own consumers are entitled equally to that—which I think is a sound principle. The experience of the P.D.S., then, is for quality. They have received the highest price paid, probably—25s. to 26s. per 10 dozen.

Dr. Cameron (*Victoria*): What price do they pay the producers?

Mr. ROSS: I think 1s. 4d. up to 1s. 6d. per dozen. But when some other Australian eggs were bringing 15s. per 10 dozen eggs on the other side they were getting up to 25s. and 26s., so that apparently their eggs were in demand.

Mr. Rumball: They are exported by private agents.

Mr. ROSS: That may be, but still the P.D.S., which is a co-operative concern, look for quality, and they find that so long as they have an average of 2 oz. it meets the demand in the United Kingdom.

An Important Industry.

Mr. FORGAN SMITH (*Queensland*): I regard these two resolutions as being very important. There is a great field for expansion in the poultry industry in Australia. It is not generally known that the production of poultry and eggs in America constitutes the fourth most valuable agricultural industry in the United States. The average individual can scarcely realise that unless the figures are shown to him officially. That shows the capacity for expansion in Australia. In many portions of the Commonwealth we have considerable natural advantages for the expansion of that industry. Up to the present time eggs for export have not been included in the Commerce Act, and consequently can be exported without inspection and without any uniform grade being insisted upon. Since I have been Secretary for Agriculture I have received at least three deputations on behalf of the poultrymen of this State asking that a grade for export be established, and they have gone so far as to ask me to provide at their expense a departmental expert who will see that the eggs are graded so that they can be sold under a State guaranteed grade. Our information is that the 2-oz. egg on the oversea markets realises the highest price and consequently the producers of those eggs should reap the advantage instead of all eggs being regarded just as eggs, which happens where you sell any commodity that is ungraded. It is of importance to Australia that we sell under a guaranteed grade, because when the product becomes known on the markets of the world, and it is known that we can guarantee the standard, then we can command the best price and conduct our export trade much better than we have done in the past. My suggestion is that we agree to the principle and appoint a committee of experts to say what shall be a uniform standard or grade. The Queensland suggestion is that there should be two grades—

First grade—15½ to 16 lb. for long 100, no egg to be less than 2 oz.

Second grade—13 to 13½ lb. for long 100, no egg to be less than 1¾ oz.

I am not proceeding to argue on the basis of those grades. That is a suggestion. My suggestion is that we should approve of the principle, which is of importance and of advantage to the other States. We can appoint departmental officers to report later on to the Conference what the standard for export should be, so that when we make our representations to the Commonwealth Government they can be accompanied by what are the considered requirements of the various States.

Mr. CROWE (*Victoria*): We should be careful not to convey any other impression than that we are sending only first grade eggs from this country. The meaning is sometimes conveyed that in sending second-grade eggs we are sending eggs of second quality. That is not so. The eggs are all of the same quality but of different sizes.

Mr. FORGAN SMITH (*Queensland*): Queensland suggests that the standard of egg for export shall be—

> "Not over four days after being laid, sound, clean, unwashed, and infertile."

The two grades will be determined on size, the quality being the same.

Mr. CROWE (*Victoria*): There are many exporters in Victoria who believe that the minimum of 2 oz. should be adopted; again there are others who wish the weight to be as low as 1⅞ oz. If eggs in shell and in pulp are included in the Commonwealth Commerce Act then there is New South Wales to be considered. At the last Poultry Conference representations were made to have included for export eggs of 1½ oz. The 1½-oz. egg or 1¾-oz. egg might have been all right during the last few years when eggs were bringing a high price in England, but there is a tendency for Austria, Russia, and other European countries to enlarge their operations, and there is a likelihood of the price of eggs falling on the London market. The cost of cases, filling, handling, and breakages are the same with a 1¾-oz. egg as a 2-oz. egg. We shall quickly reach the period—I hope that it will be a long time yet—when it will be unprofitable to produce the small egg. If we persist in producing the small eggs it will wreck our export trade, therefore in the meantime we should endeavour to educate the poultry keeper to go in for hens that will lay the larger eggs. It is in that direction that the salvation of the export trade lies. The Commonwealth authorities have consulted me in connection with these matters. I know that the Regulations would have been brought in had it not been for the difficulty in framing

regulations embracing the requirements of New South Wales. If the Commonwealth agreed to bring in regulations under the Commerce Act providing for a grade of eggs for export and some of the States decided that a minimum of 2 oz. should apply, then I suggest that the name of that State or States be prominently featured on the brand on the case. The Commerce Act provides that the word "Australia" be featured on the brand on the case, but it does not provide for the name of the State to go on the brand. The Commonwealth regulations provide for the inclusion of anything that is true. It is true that the eggs will be produced and shipped from Queensland or Victoria or whatever State desires to have the 2-oz. minimum, and if the name of the State is featured on the brand on the case then the State or States are protected.

It was agreed that a departmental committee should draw up suggestions for a standard for export and report to the Conference.

UNIFORM SEED LEGISLATION.

Mr. TROY (*Western Australia*): This matter was discussed at the Conference in 1923 and referred to a committee. The committee consisted of Messrs. Coleman (Q.), Carne (W.A.), and the Director of Agriculture (W.A.). This committee finally submitted proposals which, after slight amendment, were accepted by all the States except Queensland, although this State did not offer definite objection against the proposals, but suggested that another conference should be held. This was not agreed to in view of the practically unanimous decision regarding the proposals previously submitted. It is therefore considered that the Conference should now definitely adopt the suggestions then made so that they can be accepted as the basis for any new or amending legislation. It is also suggested that the Commonwealth list of prohibited noxious weeds should be revised, and that each State provide a list of its noxious weeds with a view to having them included with those which are now prohibited from being exported. It will be noted that the latest regulations appear to be those of Queensland, which do not materially differ from those of New South Wales. West Australia does not appear to have definite standards for germination, and in Victoria it is understood that the legislation is not in full operation. Other States do not appear to have any legislation dealing with the matter, but apparently in South Australia imported seeds for sowing are tested for germination for purposes of the Commerce Act.

In view of that conference Western Australia passed legislation in 1923. There is legislation in New South Wales known as the "Seeds Act of 1921," in Victoria "Seeds Act of 1915," and in Queensland "The Seeds Acts of 1913-14." We import a good deal of our seed from the Eastern States and for that reason we would like to see uniform legislation.

> I move that this item also be submitted to the expert officers of the Department with a view to securing suggested legislation to meet the needs of the whole of Australia, on a uniform basis.

Mr. COLEMAN (*Queensland*): The Acts in the different States covering this matter vary materially, and the one in Victoria appears to be inoperative. It omits such things as peas, oats, and such items. As in Queensland we are purchasing oats in large quantities from Victoria it will be seen we have an active interest in the abolition of the last clause of the Act. The Victorian Act really does not deal with agricultural seed, while our Queensland Act does, with the exception of flower seed.

Referring to the committee mentioned by Mr. Troy, it is unfortunate that that committee never met. If it had I think we would have managed to clear the air. In the recommendations put forward, Johnston grass was included. In Queensland we rather object to the inclusion of that item, as it tends to admit it to be agricultural seed. It is against our present policy to consider it as other than a weed, and a bad one, under a Cultivation Act. There was also a possibility of including tank weed. The machinery for an Act and the Regulations dealing with standards are two different things. If we pin ourselves down by legislation we might get ourselves into trouble because of unforeseen exigencies, but it is possible to fix standards for purity as the necessity arises. We have to deal with the matter on the principle that the grower will be able to sell his produce to the merchants and we should not place unnecessary restrictions on the merchants.

Up to the present the Victorian Act excludes farm seeds, in which we are greatly interested. South Australia does not appear to have any Act, nor does Tasmania. Our trade relations with New South Wales are important, and when the new railway is completed they will be more important still, and we shall have to consider the effectiveness of the legislation from the point of view of the other State as well as our own. Then there is the question of the different plants and seeds used. In Queensland we are not associated with some of the crops with which you are associated in the Southern States. We have not clover—except White Dutch. Ordinary European grasses are also non-existent here.

Mr. SUTTON (*Western Australia*): We can never hope to arrive at uniformity in details for all States in such a vast continent as ours, but we can hope to arrive at unanimity with regard to principles. As a result of the conference referred to, the Minister representing Western Australia did bring in an Act which, for home purposes, worked satisfactorily. Merchants made no complaints in conforming to the Act, and it is easily operated. The main guiding principle is that the buyer shall know what he is buying and the supplier shall know the quality. We have purposely omitted prescribing standards for germination and purity. We have a provision prescribing that standards may be settled upon when desirable. It is considerably better to have some seeds, as during the war we had only Japanese rape seed of low quality, than to have no seed of any quality. That is why we adopted that provision. We dealt with the objections of other States and received correspondence from those States suggesting amendments, which were adopted, and finally the whole matter was submitted to all the States, and accepted by all with the exception of Queensland, and to-day I do not know the reason why Queensland did not accept those conditions which were acceptable to the other States. I therefore hope we shall reach finality at this Conference.

Dr. CAMERON (*Victoria*): I endorse the remarks of Mr. Sutton. The more I hear of this matter of uniformity in seeds legislation the less I think it is necessary. The Victorian Act, although dated 1915, is a consolidation, and was passed as far back as 1905. It has been in operation for twenty years and has given satisfactory results. The percentage of foreign ingredients is subject to prescription by regulation, and we have from time to time dealt with those percentages, but I think the percentages existing will stand comparison with those of any of the other States. For instance, dodder—we allow none of it. We contend the Seeds Act is to ensure two things: First of all, germinability, and secondly, absence of foreign ingredients, *i.e.*, ingredients foreign to that particular seed.

The motion was agreed to.

STABILISATION OF THE DAIRYING INDUSTRY.

The CHAIRMAN (Mr. Forgan Smith, *Queensland*): I move the resolution standing in the name of Queensland—

> **"Stabilisation of the Dairy Industry, by the setting up of Butter and Cheese Boards in each of the States, to act in collarboration with each other and with the Federal Dairy Produce Export Control Board in marketing."**

The object of the resolution is to stabilise prices with a view to giving those engaged in these industries that decent standard of living that they have a right to expect and demand in any free community, and, at the same time, to so scientifically organise the distribution as will bring about advantage to the State generally. The principle of the stabilisation of prices is one which has been given a good deal of consideration by every Government in Australia. As the Premier, in opening this Conference this morning, pointed out, we have vast natural resources; that nature has been kind to us, and that we have the opportunity of developing these to the extent of our industry and to the extent that we apply ourselves intelligently to these problems. The principle, that those engaged in the production of a commodity should have the right to a proper recompense for their labour and trouble in producing it, is one that every right-thinking man or woman in the community will agree with. But certain conditions operate, both here and elsewhere, which bring about a fluctuation in prices and bring about a state of affairs that is not considered desirable.

Queensland's System of Control.

In Queensland, under our Primary Products Pools Act, we have introduced a system of control which, with its limited application, has been of distinct advantage to the farming community. By means of this encouragement those engaged in this industry have had their material conditions improved, but that is affected somewhat by the limited application of the scheme. It can be readily understood that a State that sets up a good living standard for its people when it is subject to the competition of States or countries not having adopted the same living standards, then that competition immediately affects the stability of the standards that have been imposed. I do not propose to go into detail at this juncture other than to move the principle. We have with us here Mr. Macgregor, the Director of the Council of

Agriculture, who is also Government representative on the various pool boards, and he will outline to you what has been done in Queensland and what is actually meant by this proposal.

Queensland's Legislation.

Mr. MACGREGOR (*Queensland*): As most of you are aware, the Queensland Government, of late years, has caused to be enacted a very comprehensive code of agricultural legislation, in which legislation covering the marketing of primary products occupies a very important and prominent place. In this connection the farmers are being encouraged to avail themselves of the most modern methods of co-operative practice, and, in particular, to combine together on the basis of compulsory agricultural pools. We have, at the present time, under this legislation in Queensland twelve marketing boards constituted for the purpose of bringing about a more orderly system of marketing in relation to the products concerned. Our policy is to encourage the producers themselves to investigate their own problems. We assist them to do so. We assist them to ascertain just what the existing system lacks and to devise means whereby the existing state of affairs can be improved. Having decided upon the best system to set up in lieu of the existing system we also assist and encourage them to launch their marketing activity. In the case of some of the primary products of Queensland—and this would obtain also in regard to all the States—we are able to satisfactorily control the situation apart altogether from the circumstances that obtain in the other States. When we appointed a special committee of dairymen to look into dairying problems, however, it was early apparent that the question of stabilisation of the dairying industry was one which affected all the Australian States. We therefore made approaches to the dairying organisations in the other States; these organisations, in collaboration with Queensland, formulated a definite proposal to the Federal Government. The arrangement was that if these negotiations were brought to a successful issue an approach would also be made to the Governments of the different States. The Federal Government was asked to enact legislation dealing with the control of export and also to enable them to control all interstate trade in dairy produce. On this being achieved we were to ask for legislation setting up a State body in each State to enable the bringing about of orderly marketing intrastate. As most of you are aware, the representations to the Federal Government were only partly successful. The Federal Parliament ultimately enacted a measure dealing with the control of export only; the Federal Government having declined to introduce a measure dealing with the control of interstate trade. Upon this eventuating there emanated from Victoria a suggestion which has come to be known as the Paterson stabilisation scheme. This idea was first put forward by Mr. Delroy, of Murgon, Queensland, and was later taken up by Mr. Paterson, M.H.R., and has come into practical operation from the first of this year under the designation referred to. The matter was exhaustively discussed at one Melbourne Conference of Australian Dairying Interests convened by the Queensland Council of Agriculture. Our experience has been that voluntary co-operation is in the long run unsatisfactory. The Paterson scheme came into operation in the beginning of this year (1926). It was understood, of course, that the previous arrangements with regard to the setting up of State authorities would still stand good, and in May, 1925, Queensland constituted a Queensland Butter Pool, and the other States contented themselves with setting up committees of butter operators. The overseas price is largely governed by the capacity of the overseas consumers to buy, and it is a known fact that butter operators and speculators overseas do not like the price of butter to go too high, because immediately it does so their market shrinks owing to the inability of the old world consumer to pay the price. When it gets beyond a reasonable figure the consumer switches to margarine, and the consumption diminishes. We have this state of affairs additionally—that in competition with Australian butter in the world's markets there is butter from Argentine, Denmark, and Russia, in none of which countries can it be said that the Australian standard of living obtains, so that you have an overseas price dominating the position, such overseas price being largely governed by two factors—namely, the conditions of production in countries which have either more favourable conditions or a lower standard than Australia; and, secondly, a low standard of living in the consuming countries. Without some form of action by Australian dairymen, our prices, under our high standard of living conditions in Australia, are governed by those overseas circumstances and conditions which the dairyman contends ought not to be allowed to dominate the situation in Australia.

The Value of Organisation to the Queensland Dairyman.

In May, 1925—at the end of May—the Queensland Butter Pool came into operation. The result of the Paterson stabilisation scheme is that the price of butter in the Australian States has been lifted measurably out of the range of overseas parity. Overseas parity still operates in the case of New Zealand and, of course,

if the world's price of butter is low there is an opportunity for New Zealand to send butter to Australia, notwithstanding the protection afforded by the duty—so that overseas influence is not completely gone. The value to the Queensland dairyman alone, irrespective of the value to the dairyman in the other States, of the results of this form of organisation under the Queensland Butter Pool and the Paterson stabilisation scheme I estimate at the figure of £200,000 for the year to the end of April last.

What Stabilisation Means.

One reason for asking that stabilisation should be effected under legislative authority is because this scheme is loosely held together on a voluntary basis and may not hold together indefinitely. Additionally, it is particularly desirable that all these violent fluctuations of the market should be controlled by some measure of stability being brought about. Moreover, there remains the problem in connection with which it is apparent that even with the Australian consumer paying a margin above the cost of production, a very large export will defeat the result and bring about conditions under which the net return to the individual cream supplier will be under the cost of production by reason of the large quota which is being exported to a less remunerative market. The Chairman, in speaking a few minutes ago, made reference to stabilisation. That is a term which is not properly understood, and which I agree is somewhat difficult to apply at times, but it means bringing about regular, even, and more stable prices, a condition of affairs more favourable to the producer and more favourable to the consumer also than unorganised speculative conditions. For example, some little time ago I took out some figures in connection with the price of eggs in Queensland, and I found that the average price netted to the poultrymen was a fraction above 1s. 6d. a dozen. It was found that if the price could be stabilised all the year round, say at 1s. 7d. a dozen, the Queensland poultrymen would have received several thousands of pounds more for his production than he received under conditions where the variation was from 1s. in the glut season to 2s. 6d. or 3s. in the season of short production. It might not be possible just definitely to even out the price at 1s. 7d. in the case of eggs, but it is held that the margin should be reduced, and that the minimum price should be brought closer to the maximum, and that this would be in the best interests of both the producer and the consumer. My appeal is one for State legislative protection of the endeavours of the dairymen of Australia to improve their conditions and effect stabilisation.

The representatives from Victoria will know quite well that there are other matters bearing on this industry beside the price of butter. For instance, in Victoria the rents that are charged to the dairymen have a very material effect on the receipts of the dairymen in the final analysis. Then there is the question of the economic production of dairy farms. Can it be improved? The consumer, undoubtedly, has the right to ask if these things are being done, before you ask him to pay considerably more than is being paid outside.

Mr. TROY (*Western Australia*): At Hobart last year I took very strong exception to the Paterson scheme because it imposes a burden upon the consumers of Australia, and particularly upon the butter exporting States of Australia. There is nothing brilliant about the Paterson scheme, it is merely a plausible project in which you put your hands into the pockets of the consumers and give what you take to the producers. You take 3d. a lb. from the pocket of the consumer and give it to the producer. Mr. Paterson, at Hobart, was frank and ingenious and so innocent of any desire to do anything not right, that he said you could not ask the Commonwealth Government for a bonus as the bonus meant the payment of money, and he did not propose to do that. There is no difference in doing that and in putting your hands into the pockets of the consumers and asking them to pay the bonus. We are handling a good amount of butter in Western Australia, and one must view the matter as it affects the different States. The trouble is that land is too dear, that the value of land is not what it produces. Go down the north coast of New South Wales and they will tell you that land is worth £70 to £100 per acre, and in the same breath they will say they cannot live on the butter industry.

Colonel BOURCHIER (*Victoria*): I am strongly in favour of stabilisation schemes. We must recognise that unless we can make it worth his while the dairyman will not be able to carry on at all. We see the cost of production continually going up; we see the cost of labour increasing; every year the dairyman has to pay more and it costs him more to produce his butter, and therefore he is entitled to some consideration. All here will admit that there is no harder worked man to-day than the dairyman, whether he be in Victoria, Queensland, South Australia, or in any other State. Therefore, anything that can be done to assist the dairyman should be done, and if the Paterson scheme will assist him in the way it has been represented I am in favour of it generally. It is a basis for us to work on. I second the motion.

Mr. BUTTERFIELD (*South Australia*): I move, as an amendment, that the motion be altered to read:—

"To make for the betterment of the dairying industry we agree to the formation of Butter and Cheese Boards in each State to act in collaboration with each other and with the Federal Dairy Produce Export Control Board in improving the methods of marketing dairy produce."

I believe that something should be done in regard to the dairying industry. I am quite at one with those who say the dairyman needs something more than he is getting. I am prepared to assist in arriving at a more economical production if possible and to eliminate some or any of the extraordinary costs that attach to production. But members of the Conference must realise that in the dairying industry, as I know it—and I have been in it a long time—there are some contributing factors that the dairyman values very highly. I may give members of the Conference the benefit of my own experience as a dairyman when, with my family growing up, we milked 35 to 40 cows. Had it not been for that my family would have had to go out and work for somebody else, and we valued as a very great asset the fact that they were able to live at home; that my children were not being ordered about by anybody else. That is a very great factor in farm life, and it is one of the very finest values in connection with the settlement of our land—that it does enable us to keep our children at home with their parents in good environment. If you do not value that I am sure you will have to capsize all your ideas of value with regard to production in this country, because I do not know very many wheatgrowers, even in this country, who have made a competency sufficient to retire on without the assistance of their families, and that assistance has been given for very many years without standard rates of pay. If you want to allow in any industry connected with the land to-day standard wages and standard conditions, well, I do not think you can carry on those industries, but that value which contributed so much in our own case, and in other cases as well, is something that will always go towards keeping the agricultural industry of any country going. There are so many interests involved and so many difficulties that I do not think we would be wrong in carrying my amendment. It does not bind us to anything, but it does show this: That we are concerned about the industry, and out of an amendment of this kind there may be some evolution which will make for its betterment.

The Maintenance of Australian Living Standards.

The CHAIRMAN (Mr. Forgan Smith, *Queensland*): I would just like to say that the object of the motion is not to provide a justification for the Paterson scheme. The Paterson scheme, as has been pointed out by various speakers, is an expedient by the dairymen of Australia to deal with conditions as they find them; an expedient to enable them to equalise the prices as between export and import values to give them a better return. From the point of view of hard and fast economics the scheme can be attacked in various ways; but there is the position. The dairyman, so far as I can follow his reasoning, accepted the only means at his disposal to improve his conditions, and in lieu of a better system he adopted what is known as the Delroy-Paterson scheme. I lay it down as a definite principle—which can be justified by anyone having the interests of the people of his State at heart—that no one has the right to get any commodity cheap if its cheapness depends on the sweated labour of the men, women, and children engaged in its production. If an industry can only be carried on by the sweated labour of a man's wife and children, it is up to us as members of responsible Governments to do what we can to come to their assistance. In arriving at a just basis of assistance, due regard must be had to various important facts, some of which have been mentioned this afternoon. The difficulty on the land, as in any ordinary business, may be due to over-capitalisation. If a man is endeavouring to make a return from land for which he pays too high a price or for which he pays too high a rent, then it is unfair to charge the consumer a price based on that over-capitalisation. The same thing holds good with regard to any other business. If an industry on any account is over-capitalised it is carrying too great a burden, which the people under ordinary circumstances who use that business have to pay. I have always thought that in Australia some system of assistance to the agriculturist is a natural corollary of the protection which we give to the manufacturing industry. In Australia we give certain important assistance to various branches of the manufacturing industry, and industries affected by overseas competition can always approach the Tariff Board and state a case for an increase in the duty. That is done with a view to maintaining what has been referred to as the Australian living standard. If that is a sound principle in the manufacturing industries, such a basic principle can be applied with equal justice to the agricultural industry. Remember, agriculture must at all times remain the basic factor in the production of wealth in all the States. If we desire to have increased population and make use of the advantages which

Nature has given us in Australia, then we should be in a position to assure the man on the land—the man who is reasonably efficient and who runs his concern in a businesslike way—that return which under similar conditions is assured to men in other forms of human activity. That, I think, lays down the basis and the need and the justification for any sound scheme which might be adopted by this Conference.

Difficulties in the Way.

As Mr. Butterfield pointed out, there are many difficulties in the way—there always are in reference to any economic question, but we are concerned in the adoption of a scheme which we can justify in a logical way. The motion provides for order where there is disorder at the present time, by the establishment of butter and cheese boards for each of the States to act in co-operation with the Commonwealth Dairy Produce Export Control Board. The carrying of the motion or the carrying of the amendment does not commit us to the Paterson scheme or to any scheme; it lays down a logical method by which a satisfactory scheme can be brought forward and may be brought forward and dealt with. At the present time there is no organisation of that nature. We have organisations in almost every other form of human activity, in every form of human enterprise with the exception of the organisation of the stable products of the land. The man engaged in primary production is the only industrialist who produces without a foreknowledge of his market or without any control over the market which governs his prices. Therefore we are justified in establishing organisations which will give him that measure of control over his industry which we as Governments have sought to give to other forms of activity in our midst.

Mr. Troy: What about the manufacturer?

The CHAIRMAN: Manufacturers have their Chambers of Manufactures. They have organisations of various kinds which control market conditions and eliminate competition. These things, I repeat, operate in every other form of activity. The workers have their trade unions in which they can band themselves together with a view to securing a decent standard of living for themselves and for their dependents. The dairyman, in my opinion, at the present time in Australia is in exactly the same position as is the worker in any industry which is unorganised. If, for example, you had a state of no organisation in the building trade, where every operative was compelled to secure the best price offered by anybody willing to employ him, he would not be enjoying that condition which he enjoys at the present time. By means of organisation he has improved his position, and so can the dairyman.

Mr. Troy: He has to prove his case.

The CHAIRMAN: Mr. Troy points out quite truly that the worker has to prove his case for an increase, but if he were unorganised, no matter what he could prove, he would get very little.

Mr. Butterfield: I think we are all agreed with that.

The Value of Organisation.

The CHAIRMAN: If he were not organised he would not be able to get anything like the standard he enjoys. In the motion—there is no intrinsic difference between the motion and the amendment—we provide for organisation between the States whereby waste can be eliminated, whereby standards of efficiency can be laid down and improved marketing conditions brought about, and in countless different ways the conditions of the dairyman improved. I think that anyone who has followed the operations of the Federal Dairy Produce Export Control Board, whatever his opinion may be about the adequacy of this instrument, will agree that it has done something to improve the conditions of the dairyman in Australia. That board has justified its existence—it has improved conditions to some extent. What is wrong therefore with setting up some similar system of control over that proportion of dairy produce which is consumed in Australia? That, briefly speaking, is what the motion or the amendment asks for. We are not asking people to agree to the Paterson scheme or any definite scheme. We are asking them to agree to the establishment of boards which, if operated properly, and if they achieve the success for which we hope, will be able to confer benefits on the industry as a result of scientific organisation on the marketing side. There is no doubt at all that there are many factors other than the price of a commodity which lead to the continued impoverishment of the man on the land. Anyone would be blind and ignorant entirely if he did not recognise these things. We know that there are many conditions operating against placing these industries on a sound footing—over-capitalisation is one.

Mr. Troy: It is the most important.

Marketing Organisation Essential.

The CHAIRMAN: It is the basis of all business. If you are trying to run a business on too high a capitalisation you will soon get into Queer street, and just so will the dairyman get into Queer street if he pays too much for his farm, whether in the shape of purchase or rent. The Agricultural Departments in the various States assist in the way of improving herds, the conservation of water and fodder, and in fact in countless different ways. The Department can in these ways heilp to build up this industry on a sound footing, on a sound producing basis, but having put the industry on a sound basis you have to do something more—you have to provide a proper marketing organisation which will enable those in it to meet on equal terms those who compete with their product. Much has been done; much remains to be done. If the acceptance of the amendment will bring about unanimity in the Conference it will do an excellent thing, and if the boards are composed of men of vigour and intelligence I believe they will be able to carry out very important functions in the community.

The amendment became the motion and was carried.

Australian Dairy Organisation Scheme—Question of Commonwealth representation.

Legislative control of the use of sires for the improvement in breeding of grade dairy cattle.

Dr. CAMERON (*Victoria*): A scheme has been suggested in Victoria which would provide, in the first instance, for bulls to be licensed which had only a small relationship to know high-producing stock and bulls out of high-producing grade cows not subjected to Government test, and as the number of high-producing bred bulls increased, to gradually tighten up, and in the course of ten years to have reached the stage when only either pedigreed bulls or bulls bred from tested stock would be licensed. That is a scheme which, it is thought, would certainly have the support of the bulk of the dairymen in Victoria at the present time. It is going to be a rather costly thing to administer. That side has to be taken into consideration, and before proceeding further in the matter it was thought desirable to take the opportunity of ascertaining the views of the other States. Our Government herd-testing scheme, which confines itself to the testing of pedigreed stock only, has been in operation for a period of thirteen years, and during the last six or seven years we have had an average of well over 100 herds under test. At the present time we have about 150, so that we have a considerable number of that class of bull available—perhaps a greater proportion than any other State—but still, if licenses were to be confined to that class of bull the number of bulls available would not at all meet the requirements. In addition to that, the Government subsidises herd-testing societies to the extent of £5,000 a year. We have forty of these societies in operation, and under the scheme which I have indicated, bulls, no matter of what breed or how they were got, are eligible if they reach a certain standard.

Mr. BUTTERFIELD (*South Australia*): We have a tax on bulls, though only small—10s. per annum. It was designed with a view to eliminating the scrub bull to some extent. Then, in addition, we subsidise the purchaser of a purebred bull to the extent of 60 per cent. of the price. There is a limit to the assistance, but if a man pays £50 for a bull we give him 60 per cent. of that sum.

The Chairman (Mr. Forgan Smith): Are there any restrictions as to the free use of the animal? Do you make any conditions?

Mr. BUTTERFIELD: There are certain conditions as to his use—by the neighbours, for instance, at a fee of about 10s. It seems to me that it would be quite simple to improve herds by buying up all the bull calves, or a certain number of the bull calves in the country each year from owners who did not wish to rear them or make use of them. The Government could set aside some country to carry them till they were available, marking them, of course, in such a way that they knew their pedigrees when they wanted to use them, and distributing them to dairymen in various parts of the State. That seems to me to be quite an easy method, and it would probably, almost certainly, make for a very great advance in the wealth production. There is no question that the sire is at least half the herd. We are breeding up to a better standard. Personally, I think that the best stock should be obtained with standard cows, and every bull calf dropped should be made of value to the State.

Mr. GRAHAM (*Queensland*): The position in Queensland is much the same as that prevailing in Victoria, with this exception: The State Government here subsidise any farmer who purchases an approved bull. An approved bull is an animal from a cow which holds registration in an approved herd book and has also been subjected to a long distance test with certain standards—that is, an aged cow should give 450 lb. of butter per year, with a corresponding decrease in production according to age. That is the only assistance that is given by the Department, and bulls of that kind are really the only ones over which the Department exercises any control, or

registers. The bulls from the State farms are being sold to dairy farmers, and the prices vary according to the production of the cow and the production of the dams of the sire.

Mr. Butterfield: They are all standard?

Mr. GRAHAM: No. That means that the cows are tested and if they attain a standard we say that they are "standard," but in a Government institution we are on a somewhat different footing from the private owner. It is provided that a cow must reach a certain standard at, say, two and a-half or three years. She is tested at her first lactation. The ordinary breeder would say that she had some difficulty in her calving and that she is nevertheless a good cow if she failed to pass the test. At five years' time that cow might qualify, so that in the sense in which the term would be used in a Government institution she would not perhaps be standard. We do not take the first failure into consideration—she has other opportunities to qualify. Then again, I think that we all know that this high production may be more or less artificial, and there will always be cows in herds which are not able to pass the standard. I do not think there is any breeder who has all his cows up to standard. We see that on the racecourse—where animals are bred for stamina and speed—and we cannot always say that like begets like. Generally, the obstacle which has stood in the way of any officer of the Department making a recommendation to the Minister concerning this matter has been the insufficient number of bulls in the State which may be looked upon as being of such a standard that they would be likely to improve the herds. We found that whereas there are something like 22,000 registered dairymen, not more than 30 per cent. of them were using purebred bulls, leaving something like 15,000 dairy farmers not observing that practice. On the other hand, counting all bulls, some of which were on the indifferent side from the point of view of production, not more than 2,000 animals were available. It may be said that that is not an excuse for not making the initial step, but when you start to legislate in such a matter you may find that the dairyman in one district is burdened with the responsibility of using purebred bulls, whereas in another, through force of circumstances, he is relieved of responsibility. There are difficulties in other directions, too. For instance, the purchasing power of the dairyman has to be taken into account, and I can quite see that in any scheme set up by the Government care would have to be taken not to inflate values. That is another aspect which would have to be carefully watched. There is also another difficulty. Take the grade bull. It is a rather good thing to encourage it, but sometimes it happens to be some animal which one feels is hardly worth it. If we force a man to buy an animal, it is very probable under present conditions that he will get what is really not a good bull. That was the position till we got to using bulls drawn from our purebred farm herds. The dairy farmer would get a bull from the best cow in his herd and use that, or he would buy one from a neighbour who had a good herd. That system has been in operation in various parts of Australia for a great number of years, and it is certainly not a successful one. I do think that some effort should be made, even if it were thought necessary to introduce prospective legislation. That would give the Government an opportunity of raising the complement of purebred dairy stock at the time that the legislation became operative. I am not too enamoured of the idea of using grade bulls. Many farmers in the closer settled districts are anxious to improve their herds. That anxiety is nothing novel and is not a recent development.

Mr. ROSS (*New South Wales*): The Minister for Agriculture in New South Wales has given instructions that a Bill dealing with this matter should be prepared. All our cows are tested under the United Pure Breeders' Association rules, and the yield has been increased considerably. The Jerseys average about 550 lb. of butter per animal, the Guernseys have been raised to 475 lb., and the Shorthorns and the Ayrshires to about 350 lb.

A Delegate: Butter or butter fat?

Mr. ROSS (*New South Wales*): Butter. The progeny of these cows are offered to the farmers at a relatively low price.

Dr. CAMERON (*Victoria*): With the exception of a flock of crossbred sheep numbering about 1,000 or 1,500, which are used for lamb breeding, the Department of Agriculture in Victoria has every hoof registered. The crossbred sheep are used for lamb breeding by being mated with purebred sires. All our dairy cattle, Clydesdale horses, cross Leicester sheep, and Suffolk sheep, are registered. Our policy has been to introduce and hold on the farms stock that have not been tried out or exploited by private enterprise. It is held that it is a function that the Government should properly undertake. Our dairy stock are not those of ordinary breeds. We have red-polled cattle and Friesians. The Friesians have become quite common in recent years, but in 1917, when the Government undertook the establishment of a herd of Friesians, there were only two Friesian herds in Victoria. We have introduced Suffolk and Ryland sheep, with the object of proving their merits, and they are breeds that are not undertaken or exploited privately. The policy for the disposal of the

dairy progeny has been this: It was thought that the system adopted by the private breeder for the disposal of his progeny was not a sound one. He usually picks out the animal he fancies and places a price on it and waits until he gets it, and very often that high-priced animal is not worth the money that is paid for it by the purchaser, and so a system was adopted as far back as 1911 and has been carried on ever since. It has been a complete success. I commend the system. It is a system of offering the bull calves to breeders at a price based on the butter-fat production of the dam—on that alone—apart from make or shape or type. The price fixed was 1s. a lb. of the butter-fat produced by the dam, so that for a cow producing 400 lb. of butter fat the price for the calf would be £20; in the case of a cow producing 300 lb. of butter fat the price for the calf would be £15; in the case of a cow producing 200 lb. of butter fat the price would be £10. That system is still in vogue and it has been taken advantage of to the fullest extent possible. There has never been a month during the past twelve years when we have not had orders booked prior to calving. It is a wonderfully profitable system from the farmer's point of view, because he gets rid of all his bulls by the time they are a month or six weeks old. Furthermore, it enables the farmer to get a high-class bull at a moderate cost. The price of £20 for a bull from a cow producing 400 lb. of butter fat is very moderate. The system is a success, and the fact that it is appreciated by the farmers is shown when we show that we never have any bulls on hand.

Mr. SUTTON (*Western Australia*): We have what is known as the Dairy Cattle Improvement Act. We have realised that one of the greatest means of improving dairying production is by having purebred sires ex tested cows. For the first year we did not take very stringent measures, but we gave the farmer notice that the Act was in operation and that we would bring it actively into force the following year. Up to the present very little difficulty has been experienced in registering the bulls. There has been no standard set. The Act has been in operation for two years. The next step will be all purebred bulls ex tested dams. The Government is assisting farmers to purchase bulls on long terms—eight years—through the Agricultural Bank. The bank will not assist dairymen to buy bulls unless they are purebred ex tested dams. For several years prior to the passing of this Act—and I commend this to the agricultural officers—we were preaching the value of better bulls. The introduction of this Act and the necessity for filling in the form, which is simply designed, made the farmer think. The result is the farmer now knows more about what a registered and standard bull is than he ever did before. During the two years during which the Act has been operating there has been a greater educational effect than during the previous ten years of propaganda.

A resolution favouring legislative control was carried.

Commonwealth financial assistance to the States in respect to the Dairying Industry.

Mr. TROY (*Western Australia*) moved that it is desirable that Commonwealth financial assistance be given to the States in their efforts to improve the dairying industry.

The CHAIRMAN (Mr. Forgan Smith), in seconding the motion, said that the State Governments have to develop the land; they have to provide railways to give access to markets; they have to advance moneys for farm development, and in a whole host of different ways carry on the functions of Government within their own domain. The Commonwealth Government reaps the advantage of State activities by means of increased revenues. Any developmental work done by the State resulting in increased population and increased wealth production is reflected directly in the Commonwealth revenue through the Customs and Excise and other sources. Therefore, it is only asking the Commonwealth to make moneys available from sources which the States themselves have provided for research and other work that comes obviously within the Federal sphere.

Resolution 26—**"That the Commonwealth Government subsidise the States at the rate of £1 for £1 of the amount contributed by the State Governments to purchasers of purebred dairy bulls"** (Queensland), was agreed to.

Resolution 27—**" That the Commonwealth Government defray shipping, rail, and quarantine charges on approved purebred farm or dairy stock imported from overseas "** (Queensland), was agreed to.

Resolution 28—**" That the Commonwealth Government subsidise the States at the rate of £1 for £1 of the State Governments' expenditure in the matter of herd testing "** (Queensland), was agreed to.

UNIFORM LEGISLATION.

Dried Fruits.

On the motion of Colonel BOURCHIER (*Victoria*), the necessity for uniform legislation respecting dried fruits was affirmed.

Citrus Fruits.

The desirability of enacting legislation providing for the collection of levies, on a compulsory basis, on all citrus fruits marketed, for the purpose of creating a fund for the proper organisation of the industry was affirmed.

Tick Control.

A resolution, submitted by Mr. TROY (*Western Australia*), that the Commonwealth Government be asked to subsidise the States in respect to any approved scheme for preventing the spread of the cattle tick and for its eradication, was carried.

The Conference also approved, at the instance of Mr. TROY, of rigid inspection of stock, particularly in regard to tick infestation, at State and Federal territorial boundaries.

Pastoral Extension and Improvement.

At the instance of Mr. TROY (*Western Australia*), the Conference approved of united action for the extension and improvement of the pastoral industry, with special regard to research work in connection with the quality of fleeces.

PASTORAL.

Restrictions on Interstate Stock Movements.

Restrictions on interstate movements of stock in relation to the disease of pleuro-pneumonia contagiosa.

Major CORY (*Queensland*): This disease is of such a technical nature that I think restrictions were somewhat unwarranted. It is a disease that is prevalent in the Eastern States. The incubation period varies from a few days to a month, and consequently the restriction adopted by New South Wales of three months seems unwarranted, because there is no guarantee that it will be always effective. We should make the quarantine period a uniform period of two months.

Mr. ROSS (*New South Wales*): I think this is a matter that arises out of a proclamation issued recently in New South Wales, that cattle coming into New South Wales from Queensland must be accompanied by a certificate to the effect that they had not been in contact with affected cattle for three months. Special provision was made in connection with cattle coming to be slaughtered. The disease might remain quiescent in an animal for some time and that is the very reason why we are anxious to have this control. The policy followed in New South Wales is to destroy all infected cattle, to keep control of the inoculations, and keep a close supervision on the herds that have been released from quarantine. That method is apparently working well, because from the information that I have gathered outbreaks we have had have not been local, but have been brought by cattle introduced. It is particularly on account of the fact that the disease might remain quiescent for some time that we are anxious that there should be the certificate that the cattle have not been in contact with infected cattle for a period of three months.

Dr. CAMERON (*Victoria*): The restrictive control of pleuro-pneumonia in cattle is looked upon as a very important thing in Victoria. Once an animal is infected with pleuro-pneumonia it may apparently recover, but the diseased portion of the lung remains, very often tightened up, but subject to an outbreak at any time when that animal gets into a pneumonic condition or has an inflammatory condition in the area in which the old lesion is situated. Any animal that has ever had pleuro-pneumonia, if it continues to live, remains all its life a carrier of the disease and a potential source of infection in any herd to which it is admitted. Obviously, the thing to do, after recognising that fact, is never to allow the animal to recover from pleuro-pneumonia. In the case of outbreaks in dairy herds, our plan is to take the temperature of the cows every second day, and we have no hesitation, although there may be no other signs of disease, in destroying any animal showing an increase of temperature. That system was wonderfully effective, and between 1911 and 1914 we practically wiped out pleuro-pneumonia in Victoria. At all events, during those three years we had only six outbreaks, and none of those outbreaks were traced to a pre-existing outbreak in Victoria. They were traced to animals that had come over the border. Perhaps the drastic control measures and their cost may be said to have had a very good result in this way: The stockowners protested vigorously against the

ruthless slaughter of their animals on the occasion of outbreaks, and there arose a cry for compensation. That culminated two years ago in the passing in Victoria of the "Cattle Compensation Act," legislation which, so far as our present experience of it goes, is producing excellent results.

The Chairman (Mr. Forgan Smith): How is it financed?

Dr. CAMERON: It is financed by a levy on all stock sold. A duty stamp, called a cattle duty stamp, has been issued by the Stamps Department, and is effective in the case of all stock subject to slaughter or barter. If you send a pen of bullocks to any saleyards you receive back your account sales and they show a deduction of 1d. in the £1 on the prices realised. The thing is operating far beyond our expectations. Personally, I did not have a great deal of faith in the operation of the Act, because compensation for the destruction of diseased animals has been tried in other countries——

The Chairman (Mr. Forgan Smith): Does that apply to animals suffering from any disease—tuberculosis?

Dr. CAMERON: Not from all diseases. To tuberculosis, yes. It applies to animals suffering from anthrax, actinomycosis, tuberculosis, and pleuro-pneumonia, or any other disease for which an animal is destroyed on the order of an inspector of stock. Compensation is paid only in the case of destruction from such an order or on condemnation at the abattoirs—in the case of carcases—by a meat inspector. In the country districts it has been found necessary to get a little amendment of the Act and allow for veterinary surgeons or approved inspectors to give such an order. All the money from the sale of stamps is paid into the Treasury. Stock agents supply themselves with these stamps, and the obligation is on them under the Act to make use of them when transactions take place, at the rate of 1d. in the £1.

The compensation is very liberal, seven-eighths of the live value of the animal at the time of slaughter. We find it advisable, and quite within the resources of the fund, even to extend that in the case of tuberculosis. Oftentimes an animal will be emaciated and not of much market value—it may not be worth more than £1 or 30s. if put up for auction—but so long as there has been no suppression of the knowledge of disease in that animal the stock officers are instructed to estimate the value of that animal as if it were healthy. Seven-eighths of the nominal value is allowed, plus the value of the hide, and the fund on that basis appears to be ample. So far there has been a surplus. The result of the Act has been that we are getting far more voluntary notices of disease, both of tuberculosis and pleuro-pneumonia, than ever before, and this has necessitated the appointment of four additional inspectors of stock and two veterinary officers to cope with the administration of the Act.

Mr. TROY (*Western Australia*): I was glad to hear Dr. Cameron's remarks on the compensation fund. We have in mind the providing of compensation for tubercular diseases, and the establishment of such a fund. It does not appear reasonable that the people engaged in the dairying industry shall have their herds destroyed willy nilly. Apparently Victoria is the only State that has passed such legislation.

Mr. H. C. SMITH (*Tasmania*): As we have no pleuro we do not need a scheme of compensation for that disease, but we have in operation a scheme of compensation in the case of tubercular disease. It is a condition that if the stockowner attempts to hide the fact that his cows are diseased when they are obviously suffering he does not get any compensation at all, but if disease is found as a result of inspection by the veterinary officer under the test applied, then he is entitled to two-thirds of the value of the animal.

The Chairman (Mr. Forgan Smith): We only compensate where the diagnosis has been wrong. We take the view that where the disease exists in an animal justifying its destruction it has no value.

Mr. H. C. SMITH: Compensation is to encourage any man who has diseased stock to report the matter.

Mr. BUTTERFIELD (*South Australia*): I do not think South Australia will agree to shorten the period of restriction. We have suffered considerably from the introduction of pleuro.

The CHAIRMAN (Mr. Forgan Smith): I think the discussion has been a useful one. I was interested to hear of the Act referred to by Dr. Cameron, and I would like to have a copy of that Act for consideration. There is something in the contention put forward by Mr. Smith, of Tasmania, that where compensation is paid from a fund to which the stockowners themselves subscribe there is not the tendency to hide the presence of disease. At the present time when herds are travelling on stock routes outbreaks occur, and they are often not reported unless owners or drovers are

absolutely forced to do so through the disease becoming general. Where a compensation fund is established it may be regarded as a sort of insurance, to which the stockowners subscribe, against non-disclosure of certain diseases.

Lice and Tick Infestation in Sheep.

The desirability of adopting active measures to control infestations of lie and ticks in sheep was discussed.

Mr. ROSS (*New South Wales*): Under the Stock Diseases Act of 1923 both sheep lice and ticks have been declared scheduled diseases and the Act is now being enforced very stringently. It provides for the quarantine of affected flocks until they have been successfully dipped and reported clean. Owners are not opposed to this. We find in nearly every case that they submit to voluntary quarantine without forcing departmental action. It is having a good effect in many districts and it is proposed to continue enforcing the regulations stringently. With regard to the introduction of infested sheep from other States, New South Wales has prohibited the introduction of sheep without a certificate, because it has been found frequently on examination at the border that sheep have been infested.

The CHAIRMAN (Mr. Forgan Smith): In 1921 we introduced regulations under the Diseases in Stock Act providing for the compulsory dipping of sheep in the way described by Mr. Ross. In addition to that, we provide for the compulsory quarantining of the properties on which the infested sheep were running, and that quarantine is not lifted until it is certified that they are free from this infestation. We have found that to be very effective and we have had no difficulty in enforcing the regulation. Queensland is comparatively free from the trouble alluded to in this resolution. However, we realise the importance of it, and were it necessary to increase the powers already taken we would not hesitate to do so. We have done practically everything that is suggested by Mr. Ross, and have even gone further and provided for compulsory quarantine.

Mr. TROY (*Western Australia*): We have adopted this compulsory quarantine in Western Australia. We make it obligatory on the part of the stockowner to dip his sheep within certain specified times.

The CHAIRMAN (Mr. Forgan Smith): The advantage of compulsion is this —that after the quarantine is lifted it is a guarantee from the Government that the place is clean, whereas if there is no compulsion there would be no such guarantee.

Mr. ROSS (*New South Wales*): The voluntary quarantine to which I referred is practically the same as compulsory quarantine. The quarantine is not lifted till it is lifted by the Department. The sheep are under supervision by the inspectors in exactly the same way as if the quarantine were compulsory. There is only one difference—that is, that we do not gazette the areas.

Colonel BOURCHIER (*Victoria*): We have compulsory sheep-dipping right throughout the State and sheep are not allowed to travel along roads or to be yarded in saleyards if they are tick infested. We have practical immunity to a large extent. Of course, we have municipal and other dips throughout the State.

Mr. BUTTERFIELD (*South Australia*): For the purposes of our Act, all sheep found in any flock or enclosure in which a sheep is found to be infected with tick or lice are deemed to be infected sheep; so that we have the provisions as watertight as possible in our State, and in that portion of the State which is subject to infestation we are very careful to see that the Act is carried out. The Stockowners' Association are unanimous in their desire that every precaution possible should be taken against infestation.

Mr. H. C. SMITH (*Tasmania*): We have had compulsory dipping in Tasmania for a number of years, and on the whole the system is working satisfactorily.

MARKETING.

The Conference proceeded to discuss the following matters:—

1. Facilitation of marketing scheme operating under the State legislation by adequate provisions respecting marketing finance—(Queensland).

2. That the benefits of the Commonwealth Rural Credits system be extended to all Commodity Boards and Pools—(Queensland).

3. Failure of the Commonwealth Bank Rural Credits Branch—(South Australia).

The CHAIRMAN (Mr. Forgan Smith): We can make adequate provision for the production of a commodity. The problem of the present day is one of successful marketing, and various schemes have been discussed and operated by State Governments with that end in view. The basis of successful marketing depends to a large extent on our ability to provide adequate financial resources for carrying out any scheme that might be adopted.

The resolutions in the name of Queensland and South Australia refer more particularly to the Commonwealth Rural Credits Scheme. I hold definitely this opinion—that the Commonwealth Bank is a financial institution that should function in the interests of the wealth producers of Australia. At its inception it was intended to be a national bank to finance the industrial operations of the people. Since then it has done excellent work in connection with the financial arrangements during the war, but up to the present time it has done little or nothing to assist agricultural production or distribution. It has sought to obtain gilt-edged securities in various ways, but little or nothing has been done in the way of financing co-operative activities or to assist agricultural projects. I remember last year when the Commonwealth Rural Credits Scheme was first introduced it was acclaimed in Queensland as the Farmers' Charter. Various speeches were made in this State setting out that under this scheme the necessary finance would be made available to co-operative organisations to enable them to build up their enterprises, to carry on marketing operations, and, in a word, a properly established Rural Bank would be called into being. I welcomed the idea that the Commonwealth Bank should take up this form of activity, but we are now disillusioned, because little or nothing has been done in the direction indicated at the inception of the measure. Take, for example, some of the obvious objections to the Act as it now stands—advances can only be made for one year, for instance. Certainly, it may be said that these can be renewed from time to time, but in the establishment of a co-operative butter factory, or any other form of industrial activity, a one year's loan is of no advantage at all. Then again, with regard to the marketing of various products, we find that the Commonwealth insist on the product being in the legal control of the bank—otherwise it will make no advance at all. Now, under the pooling system it has been found impossible—the reason is quite obvious—to place commodities in the legal control of the bank. They have to be stored in various buildings.

Mr. Butterfield: Frequently they have to be harvested.

The CHAIRMAN: Frequently, as Mr. Butterfield says, they have to be harvested. That is a very necessary part in the operations of any form of rural activity, so that provision in the Act makes it impossible for any of our forms of activity to be financed under the scheme. In Queensland we have something like twelve pools in operation, one of which operates within the ambit of its own Act—that is, the Wheat Pool—and the others are established under the Primary Products Pools Act. Those pools have engaged in various forms of activity. It can be readily understood that these pool boards require buildings in which to store the commodity which is pooled. In the case of maize we have silos for storage; in the case of wheat we have sheds; and in the case of other commodities we have various forms of buildings which must be secured in order to enable the controlling boards to carry on their business. The Commonwealth Bank, to which approach was made in connection with some of our pooling operations, advised the boards concerned that it was prepared to finance them under a system of State Government guarantee. There, gentlemen, you find this "Farmers' Charter," which was lauded so much at the time of its inception. Any private bank would provide an overdraft to any pool board on to anyone else with the security of the State behind it.

Mr. Butterfield: They all do.

The CHAIRMAN: They all do. As a matter of fact, just the other day the Maize Pool Board was able to make arrangements with one of the associated banks for all the necessary finance without any guarantee at all. In the case of the Wheat Pool the Commonwealth Bank provides certain sums of money from which advances may be made to the farmer. Generally the first advance is in the vicinity of 3s. per bushel, with further payments later on upon realisation, but the State Treasurer has to sign a guarantee in favour of the bank before those funds will be made available. That has been set out very fully. Then again, there are various other matters which affect the position. They have done little or nothing at all in connection with the exchange question. You will remember in 1924 the exchange on wheat amounted to 3½d. per bushel and the exchange on butter to ½d. per lb. Certainly, they were abnormal years, but they may occur again. That is a form of activity in which the Commonwealth Bank should assist the primary producers. Their activities should be concentrated in the direction of stabilising exchange as far as possible.

Rural Credits.

I believe that it is a sound principle that an institution such as the Commonwealth Bank should assist wealth production within the Commonwealth, and assist the man who is prepared to acquire land and establish a farm and engage in the production of commodities which are necessary for human welfare. Up to the present in this regard the Rural Credits Scheme has given to Queensland no advantage. So far as the Pool Boards are concerned the bank has told us that it will finance them if it gets a State Government guarantee. Another objection to the scheme is that the loan is limited to the duration of one year, and a further objection is that advances will not be made to individuals. They will only be made to existing institutions or to associations. No advance is made to the settlers direct as between the bank and them without the intervention of any other organisation. You will see from the points I have set out that the Rural Credits Scheme, which is now under discussion, has failed to function in the direction in which its sponsors said it would operate. It has failed to carry out the responsibilities of an Australian Commonwealth Bank, and it is fitting that Ministers for Agriculture should publicly stress these matters with a view to securing an amendment of the Act and the placing in operation a scheme which will enable the various forms of co-operative activity or marketing institutions to carry out the functions for which they were called into being. Reference has been made to the financing of various crops. That is a function of the State at the present time, and many of the States are doing it, and I believe that the resources of a Commonwealth Bank should offer greater facilities in that direction with considerable advantage to Australia. That is the reason why Queensland placed her resolutions on the agenda paper for discussion, and it is interesting to note that South Australia has evidently been affected in the same way. I claim that one of the justifications of a Commonwealth Bank is the establishment of a means whereby primary production can be carried on successfully in Australia and whereby the necessary marketing operations of co-operative groups of primary producers can be financed.

Mr. BUTTERFIELD (*South Australia*): What the Chairman has said of Queensland is abundantly true of South Australia. Time after time our Treasurer has been forced, in the interests of the producers of South Australia, to guarantee them with some financial institution in order that they might be financed through the harvesting or processing of their various crops. We have had time and again to come to the rescue and pledge the security of the State in the interests of the Commonwealth Bank, and also other financial institutions, in order that our settlers might be assisted. Only during the last session we were successful in getting our Rural Bank Act passed in South Australia, and whether it is advisable to have a duplication or an extension of the Commonwealth Bank or the Commonwealth Rural Credits Act, or whether the better plan would be co-operation with the State Rural Bank, is not quite clear. But it does seem to me that in all our activities with the man on the land the State Government is the closer in touch. It is more easily reached and more sympathetic with the individualities of our settlers, and it does seem to me that in the final analysis the institution which is going to be of help to the producers of the country must be prepared to consider individual cases and analyse them as such. I agree with what the Chairman has said. Up to the present the Rural Credits Scheme of the Commonwealth Government has been an absolute failure. It has accomplished nothing. It has done nothing that a private or commercial bank would not do.

Mr. TROY (*Western Australia*): The Wheat Pool came to the State Government for a guarantee. It could not be arranged with the Commonwealth Bank. The State Government were willing to arrange a guarantee on certain conditions which might have been agreed to had not the Wheat Pool, in the meantime, obtained a credit from the Co-operative Wholesale Companies of Great Britain. They have been financed from that quarter ever since. All the financing of rural industries and much of the secondary industries in the Western State is done by the State by guarantee. Our Agricultural Bank has financed the whole of our agricultural settlement and some of our pastoral settlement, and the State has been compelled to assist mining by guarantees as well as by advances and also to assist secondary industries by guarantees as well as by advances. At one time the Commonwealth Bank advanced money pretty liberally to certain institutions for buildings, &c., but I do not know of any transactions under the Rural Credit Scheme at all. Everyone comes to the Government. If an industry is in trouble it is sent along by the banks to see if the Government will guarantee the risk.

The CHAIRMAN (Mr. Forgan Smith): It is a very undesirable state of affairs, because it means that under that system of guarantee the Government is taking all the financial risk and the bank is getting all the profits.

Colonel BOURCHIER (*Victoria*): We have not approached the Commonwealth Bank of recent years to assist us in connection with marketing proposals. We have a Bill modelled on the basis of the best of other Australian Acts dealing with rural

credit in course of preparation. Our Wheat Pool has been guaranteed by the Government. We did not approach the Commonwealth in that matter.

The following resolution was proposed and carried:—

> **"That the attention of the Premiers of the States be called to the failure of the Commonwealth Bank Rural Credits Branch to render practical assistance to producers and producers' organisations in the preparation of produce for market and the marketing thereof, and that representations be made to the Commonwealth Government in order to secure the necessary amendment to the Act to enable the Act to render such assistance."**

IMPERIAL BUREAU OF ENTOMOLOGY.

Mr. ROSS (*New South Wales*): At the conference of Ministers in 1925, a resolution was passed recommending that the State Premiers should communicate with the Commonwealth Government in order to secure contributions from the Commonwealth and the States on a £1 for £1 basis for the Imperial Bureau of Entomology, the States to make their quota on the per capita basis. Prior to the 1925 conference, an agreement had been in existence for the previous five years by which the Commonwealth contributed £400 and the States £600 for this purpose. In the first place, the Commonwealth refused to increase its contribution, and further representations were made pointing out that there were precedents with the Bureau of Mycology, and also pointing out the benefits that they derived in connection with the Bureau of Science and Industry in the Northern Territory and the Mandated Territories. When this item was listed no reply had been received from the Commonwealth Government, but subsequently we were advised that the Commonwealth was prepared to contribute on the £1 for £1 basis for a period of one year only. The Minister desired that this matter should be brought before this Conference in order to secure the opinions of other Ministers on the matter, as to whether they proposed again to approach the Commonwealth Government for contributions on the £1 for £1 basis, or whether they proposed asking the Commonwealth Government to bear the whole expenditure.

The CHAIRMAN (Mr. Forgan Smith): You will remember that this matter was discussed very fully at the Hobart Conference last year, and the following resolution was carried:—

> **"That this conference recommends the State Premiers to contribute to the Bureau of Entomology in any future agreement on the £1 for £1 basis with the Commonwealth, and that the States' contributions be raised on the per capita basis."**

The position is as outlined by Mr. Ross. The Commonwealth first of all refused to do anything, and then there has been the question of the amount. The position in a nutshell is, that the Commonwealth have been £100 short weighted on the basis agreed to by Ministers at Hobart last year. If we agree, the basis would be, briefly, this—

	Contribution.
Commonwealth	£500
New South Wales	192
Victoria	141
Queensland	71
South Australia	46
West Australia	31
Tasmania	19
	£1,000

That would be the contributions for the year. I think it is a very wise thing to keep in touch with this Bureau of Entomology, and the amount prescribed for affiliation and for receiving the returns and the result of their investigations is something that is worth while. There can be no doubt that the information which is obtained by this Bureau is of value to all agricultural countries in the world. The Commonwealth Government in one communication stated that the matter would be reconsidered when the Institute of Science and Industry was reconstituted, and it has agreed to contribute for one year apparently with the view of having the whole matter reviewed by the Institute when properly established. I suggest that we carry the resolution that we carried at the last conference, and I move accordingly.

Mr. TROY (*Western Australia*) seconded the resolution, which was carried unanimously.

International Institute of Agriculture, Rome.

Mr. BUTTERFIELD (*South Australia*): Steps should be taken for establishing in the different countries of the world places where propaganda can be issued so as to make the Institute better known, for the purpose of strengthening the relations with it and obtaining generous contributions to the endowment fund. The members of the Institute should carry out propaganda work when in foreign countries.

Professor PERKINS (*South Australia*): It has been suggested that local branches representing the Institute at Rome should be formed in each State. The idea is to ascertain if the other States are agreeable to the suggestion. It does not involve any financial commitments.

The matter waes referred to the Agricultural Committee for discussion and report.

Agricultural Research.

A proposal for representation at the conference to be held in England in respect to the question of the co-ordination of agricultural research throughout the British Empire was referred to the Commonwealth Institute of Science and Industry.

A similar proposal in respect to the World's Third Poultry Congress at Ottawa, Canada, in 1927, was negatived.

POWER ALCOHOL.

The CHAIRMAN (Mr. Forgan Smith): This matter has been placed on the agenda paper because of its importance to Australia. It has been the subject of a Bill in the Commonwealth Parliament granting a bounty for power alcohol produced from cassava. The manufacture of power alcohol is a matter of far-reaching importance to the Commonwealth of Australia. Internal combustion engines are becoming a very important feature of modern industry and consequently supplies of liquid fuel are of paramount importance. Up to the present time natural oils have not been discovered in Queensland or Australia generally, although the geological indications are favourable to the discovery in oil-bearing country. We are dependent on importations from overseas for our liquid fuel. One can readily understand, therefore, that any failure to secure those supplies, due to disburbances which might arise, would leave Australian industry in a very bad way. Motor traction is a very important factor in modern industry and on our farms.

In Queensland we have entered into an arrangement with a British Company, which has supplied certain data to the Government and which has, in conjunction with the Plane Creek Sugar Mill, formed a company for the distillation of power alcohol. The factory is now under construction in the Mackay district and will probably be ready to commence operations about the beginning of next year. It is proposed to use molasses, a by-product of the manufacture of sugar, for power alcohol production. A ton of molasses will produce something like 60 gallons of liquid fuel. Naturally there is not sufficient molasses available to keep the factory going or to enable it to enter on production on a large scale, and it has been suggested by the company that we interest ourselves in the cultivation of cassava, which may be utilised, in conjunction with other starch-bearing crops, to keep the distillery going all the year round. Power alcohol can be produced from cassava, sweet potatoes, and quite a large number of other crops that can be grown readily in Australia. The whole matter to be decided is whether it can be economically produced. The problem is not so much one of chemistry but of ordinary business economics. You must be able to pay the producer a fair price for his crop and extract the alcohol at a cost that will enable it to compete with imported fuel.

Cassava is recognised as one of the best products for that purpose, and our Department has introduced cassava from Java, and areas are now under crop in the Mackay district, under quarantine and under Departmental supervision, and for the purpose of supplementing molasses at that distillery. It is probable that other distilleries will be established in Queensland sugar districts at no distant date. At the present time we can produce more sugar in Australia than is required for Australian consumption and any surplus is exported at a severe loss to the industry when it enters into competition with sugar grown by cheap coloured labour elsewhere. No Australian can continue indefinitely producing crops at an unremunerative price. In the sugar mills the first boiling of the juice after crushing the cane produces from 60 per cent. to 65 per cent. of sugar, and at the present time in order to extract all the obtainable sugar from the juice another two additional boilings are often resorted to. It has been suggested from the first boiling we could obtain enough sugar for Australian requirements, and the resultant juice could then be utilised for the production of power alcohol and the sugar, plus the alcohol, would provide a remunerative price for the sugar-grower. Complete experiments will be made at the Plane Creek Mill and it will be established as to what can best be

utilised for this purpose. The Commonwealth has granted a rebate in excise in connection with power alcohol produced from cassava, and a very interesting experiment is being conducted in that way. I feel sure that we are on right lines, and, if anticipations are realised, at no distant date we will be producing in Queensland large quantities of liquid fuel from the by-products of sugar-cane and also from other starch-bearing crops. It is thought that there are crops other than cassava of high starch content that might be economically employed in the production of power alcohol, and the suggestion is made that experiments be carried out in each State with crops that offer promise in this direction. Arrangements could also be made for the treatment of quantities of these crops at the distillery at Plane Creek with a view to determining the commercial prospects of the industry in other States. That is to say, the company that has been established locally is prepared to conduct experiments with any crop that is suitable for the production of power alcohol and the Ministers for Agriculture, through their chemical bureaus, might give some attention to this matter. There is a very big market for the fuel if it can be economically produced. It is definitely established that it can be produced successfully from molasses. The treatment of other crops is really more of an economic problem.

Colonel BOURCHIER (*Victoria*): It is most essential that every support should be given to experiments in this direction. There are vast quantities of oil and petrol in different parts of the world, but there is no doubt that in time the supplies must diminish, and it is a safeguard to ascertain the value of alcohol or spirit such as has been mentioned by Mr. Forgan Smith. It is very interesting to know that experiments are being carried out in Queensland with regard to this product, and any investigations or experiments that can be carried out in any of the other States to test this out more fully should be carried out. It is well worthy of every consideration and support.

The CHAIRMAN (Mr. Forgan Smith): We tried power alcohol from cassava in some of our cars, and the chauffeurs of the Works Department spoke very highly of it as a fuel for motor cars. We have large cars conveying stone and building material from the quarries and so on, and one chauffeur informed me that it gave that extra punch that is so often necessary in going up hill, and it is quite a satisfactory fuel for motor cars.

Mr. BUTTERFIELD (*South Australia*): Experiments are being carried out, or have been carried out, in South Australia by the Government Analyst, and he is quite sure that from a ton of ordinary beet straw 70 gallons of fuel can be obtained. The question of economic production has to be solved. There should be more money spent in research in connection with such an important matter as this. I am at one with the Chairman, and I am sure that his statement of the position as applying to Queensland is valuable to all of us and it will stimulate similar investigation in other States.

The CHAIRMAN (Mr. Forgan Smith): We are prepared to give any State interested the results of our experiments and to help them in conducting experiments. If you have starch-bearing crops that you would like tested in connection with their power alcohol possibilities in a practical way we will be prepared to arrange for those experiments to be made. What has to be done is to produce alcohol in sufficient quantities to be able to guarantee a continuity of supply, and it must be at a reasonable price. To put the matter on record I move—

"That it is desirable that the manufacture of power alcohol be encouraged from agricultural products."

The motion was carried.

NATIVE FUR-BEARING ANIMALS.

The question of an interstate agreement respecting open seasons for native fur-bearing animals and the ensuring of a continuity of supplies of fur skins was discussed.

The CHAIRMAN (Mr. Forgan Smith): This year Queensland has an open season for opossums, the first for three years, from the beginning of June till the end of July. Other States also have open seasons, and consequently there will be very large quantities of skins on the market. We may have occasion to decide to close the season for a number of years, and other States may do the same. Consequently there is no continuity of supplies and the market is not kept stocked. It occurred to me, therefore, that it might be a good thing if some arrangement could be made between the States whereby that continuity of supplies could be assured.

Mr. Butterfield (*South Australia*): You collect a royalty?

The CHAIRMAN (Mr. Forgan Smith): Yes, and issue a license. Sometimes our open season may synchronise with that in another State, and the effect I have in mind, I think, is a good one if it can be achieved. Victoria and Queensland have

open seasons this year, and, although there will be no difficulty in selling the skins, both States may keep the season closed next year. Last year we had a close season, and there were inquiries from London and elsewhere about the opening of the season and consequent renewal of supplies.

Colonel BOURCHIER (*Victoria*): In Victoria for some years prior to this year we had close seasons, and owing to the great increase in the numbers of the opossums and their depredations we decided on an open season this year. Already very large supplies have been obtained, and even complaints have been made that the animals would be wiped out altogether. One of our difficulties is the poisoning of opossums by cyanide, and we have lost very large numbers of stock through that means.

The Chairman: We prohibit that.

Colonel BOURCHIER (*Victoria*): Although we have not prohibited the sale of cyanide we have tightened the legislation governing it.

Mr. TROY (*Western Australia*): We have a close season, and in some localities the trapping has been so severe that we have lost the opossum altogether.

THE MEAT INDUSTRY.

Provision of legislation to enable the Commonwealth Meat Industry Encouragement Act to be uniformly operative was discussed.

Colonel BOURCHIER (*Victoria*): My object in having this item placed on the agenda was for the purpose of hearing discussion from the various States on the question of the Commonwealth Meat Industry Encouragement Act. On several occasions I have been approached by the stock-owners of Victoria, urging that the Victorian Government bring in legislation with regard to this measure. Personally I was in favour of doing something to assist the industry, but I naturally desired to know what had been done in the other States. I promised the stock-owners that we would introduce legislation at a later date on lines to be laid down after further consideration had been given to the matter. I understand that what is required is a levy of so much a head on sheep and bullocks—sheep, 1d. for 500 head and the same amount for 100 head of bullocks. I think it is a good thing because, after all, we have to deal with the meat industry as we have to deal with every other industry.

Mr. E. GRAHAM (*Queensland*): In this State we have legislation but the benefits accruing from its operations have not been great. Some of the representatives on the board have left the State and others have relinquished their interests in the industry and forfeited their right to sit on the boards, so numerically the number on the Council is insufficient, and the interests represented have been undecided as to whether to ask for further representation on the Council and reconstitute the boards, or allow it to languish. Those interests have now been encouraged to make nominations to the board with a view to allowing the Council at its first meeting to take a ballot as to whether the Advisory Council shall continue in operation or otherwise.

The Queensland legislation is similar to that in other States. It was enacted prior to the Federal Act, and it is subsidiary to the Federal Act. It was passed by the Queensland Government and set aside until the Federal Act came into operation to synchronise with that Act. The object was to encourage the meat industry generally, and particularly the export of meat. The Federal Government gave a bonus to encourage the industry. It was thought that this organisation would be able to collect data and see that that bounty was distributed pro rata to the producers. It was also thought that the boards, working together and working under the Federal Government, would be able to institute inquiries as to market conditions overseas and as to the likelihood of developing the meat trade. A levy on stock is imposed by the Federal measure on all stock in States where the Act is operative.

Mr. Butterfield: Stock sold or stock held?

Mr. GRAHAM: On stock held—over 100 head of cattle and 500 head of sheep. The local boards are the collecting media for these funds, and they pass them on to the Federal Board.

The CHAIRMAN (Mr. Forgan Smith): The object of the Act was to encourage those engaged in the production of cattle for export to organise with a view to providing marketing facilities for themselves, and develop new methods of marketing and exploit possible new markets. That was the object of the measure and a very laudable one, but if the people interested are not prepared to help themselves then the Government cannot help them very much. We gave the cattle industry machinery for the improvement of their industry, but up to the present it cannot be said that it has been utilised to the fullest extent. That is due to certain obvious

economic reasons. On the Commonwealth and State advisory boards certain interests are represented—the interests of the cattle grower and the interests of the meatworks. The meatworks at the present time purchase the cattle on the hoof, for which they pay a given amount per 100 lb. dead weight. They are the sole authority as to the classification or grade of the meat. Of course, the Commonwealth has its inspectors at the meatworks who grade for export under various schedules, but on the actual purchase the meat companies lay down what the price shall be and they are the people who determine its classification. They purchase the meat outright and reap the advantage of any improvement in the market overseas. Some of the graziers have gone into the question of having stock treated on owner's account by the meat companies with a view to getting any advantage the market may have in regard to any increase, but the companies are not favourable to that proposal, and where prices have been quoted for treating cattle on owner's account they have been higher than what appeared to be a business proposition on the part of the owner. As a result of the cleavage of interests on this Council—that is, the interests of the cattle grower who wants as good a price for his meat as he can obtain and the interests of the meat export companies who want to get that meat as cheaply as possible—not much benefit has resulted. The thing is very complicated by the fact that the meat companies have large plants which only operate during a portion of the year, and consequently their overhead costs, spread over the twelve months in the year, are very high indeed. The cattle owners have made certain suggestions about acquiring abattoirs to engage in the meat export trade themselves and also to send chilled meat to the South.

Our scheme, as pointed out by Mr. Graham, is financed by a levy on stock—sheep and cattle—above a certain number held by the stock raiser. The idea of the scheme, both Federal and State, is a sound one, but like everything else it depends for its success on the co-operation of those interested. Some people, particularly some of the large cattle growers, for some reason or other have failed to give the scheme the support they might have done. That is due in some instances to the operation of vested interests who are able to exercise control in countless different ways. You know how co-operative efforts that affect vested interests are often scotched by influences operating through financial circles in countless different ways. In Queensland, Mr. E. T. Bell has done yeoman service in connection with this work. He is Chairman of the State Advisory Board and also Queensland representative on the Federal Board. He has done wonderfully good work in attempting to organise the meat industry to take advantage of this scheme, but he has received a good deal of opposition from quarters in which one would naturally look for support. I am inclined to the view that the State Advisory Board should be empowered to take a vote as to whether those engaged in the cattle industry require a continuation of the scheme or not.

Stock Brands and Earmarks.

Mr. BUTTERFIELD (*South Australia*) moved—

"That it is desirable that uniformity should be secured between the States in relation to brands and earmarks."

Mr. W. Forgan Smith (*Queensland*) seconded the motion, which was carried.

Butter Exports to Canada.

The CHAIRMAN (Mr. W. Forgan Smith, *Queensland*) moved—

"That the attention of the Commonwealth Government be called to the imposition of a dumping duty by the Canadian Government on Australian butter, and that every endeavour be asserted towards the removal of this duty."

Colonel BOURCHIER (*Victoria*) seconded the resolution, which was carried.

Dried Fruit Marketing.

It was unanimously agreed—

"That the attention of the Institute of Science and Industry be called to the necessity for investigating the methods of preparation for marketing of currants and sultanas in Greece and Smyrna."

UNIFORM MARKETING LEGISLATION.

The setting up of an authority in each State (with provision for farmer representation) to be responsible for the initiation of projects designed to bring about better marketing and general improvement in the Agricultural industry was discussed.

The CHAIRMAN (Mr. Forgan Smith, *Queensland*): The idea is to enable some system of uniformity between the States which will be mutually advantageous to the producers and consumers in the States concerned. At the present time some difficulty arises in respect to section 92 of the Constitution which provides for free trade between the States, and consequently, where we have organised marketing as between one State and another, its objects can be defeated by means of other interstate activities. We can see the necessity for some form of co-ordination in regard to marketing legislation. Then, again, we readily understand economic conditions operating in one State while they do not operate in another. We in Australia, as a Commonwealth, have devised a tariff for the deliberate purpose not only of fostering and prospering our own industry, but also with the purpose of enabling certain Australian standards of living to be maintained within the Commonwealth, and that protection is given so that these standards shall not be menaced by being brought into competition with the products of countries that have not adopted the same high standards. The same thing holds good with regard to the organisation of marketing within the State. Bear in mind that the main object of organised marketing is to give those engaged in production marketing control of the product, and to enable them to get all that there is in an industry without its being exploited or being made the subject of speculation by any intermediary body. In addition to that, another important function is the maintenance of regular supplies. It is not desirable in the interests of the users of an article to have glut periods at one stage and a scarcity at another. Regular supplies and stabilised prices are both in the interests of the producer and consumer; violent fluctuations in quantity or price are detrimental to the interests of both. Consequently regular marketing along those lines should be of importance and all the State action should be uniform. These movements must naturally be initiated by somebody. I am a firm believer in people organising themselves and doing something to help themselves in connection with the problems which concern them. As was pointed out when we were discussing the question of the Meat Industry Encouragement Act, the success of any scheme depends on the intelligent co-operation of those whom the scheme is intended to benefit. There can be no Messiah to lead the producer into the promised land. He must take action to organise his industry on an efficient basis and take control of the marketing of his product. The history of co-operation is illustrating and illuminating in that respect. It shows difficulties in the beginnings; difficulties that have to be overcome by steadfastness of purpose and intelligent application to the problems that concern them. And co-operative organisations, both in this and other countries, have produced the men who are required to cope intelligently with the situations which may arise and manage generally their affairs. Dealing with the initiation of these projects, it is necessary to have some body that will take the lead in the promotion of any proposal which may be desirable in the interests of marketing and co-operative effort generally.

Queensland System.

We have made provision for that in Queensland by means of the Primary Producers Organisation Act, whereby we have organised the farmers through various bodies and they have executive control in what is known as the Queensland Council of Agriculture. Each section of the agricultural industry has control of its own business, but the central council is the body charged with the responsibility of dealing generally with matters which affect all agricultural interests within the State, and being elected representatives of the farmers in the several portions of the State, they can be readily assembled to discuss any project which is of general agricultural interest, and form a valuable connecting link between the producer and the Government of the day. The Council takes the initiative in many projects which may be considered wise by them in the welfare of the people they represent. It is the body that consults with the Government and through which various forms of activity are set in motion, and it also forms the nucleus of the body which later on controls the commodity when the organisation has been set up. I believe that institutions of this kind should be encouraged by all State Governments. These are days of organisation. All industries should be organised and placed on an efficient basis, and agriculture, not only in its own interests but also in the interests of the State, should be among the number. It should be organised and responsible bodies should be set up in each State that are capable of controlling co-operative effort and activity, and of initiating projects and discussing with Governments matters of mutual welfare.

Mr. TROY (*Western Australia*): I admit that you have done a great deal in Queensland in regard to the organisation of the primary producers. My experience is that if you can prove to producers that such legislation is for their good they adopt it, and you cannot prove it until you have the system in operation, as you have in Queensland as a result of legislation and consequent conferring of statutory powers. I am satisfied that under other conditions we could accomplish

in our State or in other States what you have accomplished in Queensland, but we have no desire to run the whole of the farmer's business. We want to give him the opportunity of education. We have in Western Australia a very successful voluntary wheat pool, but that pool would never have been established had it not been for the experience gained by the wheat grower through the previous establishment of a compulsory pool. If you want the farmers to agree to pools of this character, you have got to give them a lead, and when you can prove that the whole thing is right they will follow, but you cannot give them a lead, you cannot show them the way, without legislative authority.

A Tribute to Queensland.

Mr. BUTTERFIELD (*South Australia*): I feel that in Queensland you have done marvellous things in regard to the betterment of the farmers' conditions. I do not agree that it is necessary to wait till the farmer becomes wise, because, after all, that is not what we conceive as education. Education means the existence of that essential—a teacher. When the farmers realise that they are going to gain they are quick to grasp a benefit. We have need to do more to bring home to the minds of the producing community what are their needs, and I am hopeful that that will be done. I think it can be said without any political inference whatever that Queensland has done wonders. Queensland has attempted more than has been done in other States and has been successful. There has been no authority set up in our State with power to investigate and initiate projects. You must first set up an authority. That is the basis or ground work with respect to any attempt at co-operative marketing for the benefit of the producers. A Government should look for able, competent men, men who are connected with interests involved, to determine certain processes which can be applied to the achievement of something better for the producers. That cannot be done by any individual producer. It can only be done by a board appointed to inquire and recommend. I can see from my short visit to Queensland that immeasurable benefits have been extended to the producers of this State, and they can be extended in any other State by Governments that are so inclined. I am strongly in favour of setting up some authority as defined in every State, and I for one shall go further into the matter with the intention of doing something on behalf of the producers of South Australia. Co-operative effort unless supported by the Government of a country is often apt to result in failure, because there are often initial difficulties which only a Government can surmount, and there is always special knowledge on the part of some person or body of persons required to make success assured. If vested interests find that they are going to lose a little profit by efforts at co-operation they will always oppose such a scheme in order to conserve their own interests. Self-preservation is the first law and they naturally look to protect themselves. We have done a good deal to assist co-operation in our State, but the assistance has been mainly financial.

The CHAIRMAN (Mr. Forgan Smith): I move—

> **"That the conference affirms the desirability of setting up an authority in each State (with provision for farmer representation) that will assist in the initiation of projects designed to bring about better marketing and general improvement in the Agricultural industry."**

Colonel BOURCHIER (*Victoria*): I am strongly in favour of co-operation between the States with respect to marketing projects, but I am not quite sure what is meant by this resolution. It states that we affirm the desirability of setting up an authority. I take it the Government in each State is the authority, unless it is proposed to establish a board or council or something else.

The Chairman (Mr. Forgan Smith): Each Government would do what it thought right itself. The idea is to give some responsible authority—a Board, or, say, a Council of Agriculture—the duty of which would be to investigate and initiate projects calculated to benefit the producing interests, that would mould them into shape and be a kind of advisory body to the Government.

Colonel BOURCHIER (*Victoria*): I strongly approve of the principle.

The Chairman (Mr. Forgan Smith): I would not approve, and never have approved, of any Board being established with powers that should be held only by a responsible government.

Colonel BOURCHIER (*Victoria*): In our State the question of marketing projects is dealt with by the Minister for Agriculture and Markets. I am in favour of Commissions being appointed temporarily to go into these matters. We have the State Rivers and Water Supply Commission in Victoria. We have our own Department of Agriculture, and on the question of markets, I find it advisable, on

occasion, to refer a matter to a body constituted by persons very closely affected for report. I cannot say that I am in favour of setting up a permanent board. That is purely a matter for the State concerned. I find it works quite well to appoint a representative board when the occasion demands. I am strongly in favour of farmer representation, and, with regard to all the boards in those activities which has been established in Victoria, we lay down that farmers and producers shall be represented on such boards. Take, for instance, the Fruit Board; the Soft Fruits Board; the Dried Fruits Board—the growers are represented on all those boards. We also have the voluntary Wheat Board, upon which the growers are represented.

Quite recently we have amalgamated the Co-operative Meat Freezing Works of Victoria under one central body, and we have the directors of the various companies represented. Right through, so far as the State of Victoria is concerned, we believe that the primary producers should be represented on these boards.

FODDER CONSERVATION.

The question of a national scheme of drought insurance by means of adequate fodder conservation involving collaboration between the Commonwealth and State Governments was discussed.

The CHAIRMAN (Mr. Forgan Smith): This is a matter to which every Government has applied itself from time to time. Drought insurance is a matter of vital importance to every State in Australia, and if a proper scheme can be drafted and put into operation it would be of incalculable advantage to Australia.

If a scheme could be successfully launched for a period of years it would represent an excellent business proposition in itself, and the indirect advantages to a State would be enormous. In a period of drought not only must the losses of stock and the losses in the value of potential crops be assessed, but in addition it affects every avenue of human activity within a State. There is a serious diminution of flocks and herds which reacts immediately on revenue. In addition to that the curtailment of spending power decreases the volume of general commerce. The existence of drought means a shrinkage of income and a general serious decline in the spending power of the whole community.

These points suggest the magnitude of the problem. It is not my purpose at the moment to put forward any definite scheme. The problem is much too big for any far-reaching scheme to be discussed in anything like detail at a conference such as this. It would mean a long and serious consideration by a body of experts who would have to work out details in a manner that would bear complete investigation. The general basis of the problem is one which should engage the attention of this conference, and it might be valuable to have the views of Ministers on the matter.

A national scheme means a nation-wide scheme. It is a matter that affects the interests of every State, and it is a matter also that directly affects the Commonwealth. It affects the revenue; it affects industry; it affects wealth production in the Commonwealth; and the idea is that some form of collaboration could be brought about as between the State and Commonwealth Governments for a comprehensive scheme embracing the whole of Australia. That would be desirable. Then it is national as distinct from the producer only. At the present time if the pastoralist or farmer or grazier is affected by drought indirectly everyone in the community is affected. Any insurance scheme would naturally ask who are to be the payers of the premium, and then the question arises, if a scheme were prepared that appeared to be sound, who would provide for the cost of it? Would it not be a fair thing for the States out of their general revenue to pay a proportion of the cost as well as the producer directly? That is also what is meant by national.

Mr. M. F. TROY (*Western Australia*): Fodder conservation in Australia has been largely neglected in the past, but the several States are doing something at the present time, and if financial resources were available to enable a scheme to be tested on a large scale then we would very soon get the requisite data to determine whether it could be conducted on a still larger scale. We need, first of all, more railways, because in a large territory such as we have there is an abundance of feed in one portion while there is a drought in another.

Any scheme of fodder conservation must be accompanied by a scheme of education among stockowners themselves. No stockowner knows when the inevitable drought will happen. If any stockowner were to conserve large quantities of fodder he would naturally carry a greater quantity of stock to compensate him for the expenditure incurred, and he arrives at the same position in the end—he overstocks. So any scheme of this character cannot be determined superficially. It must be thoroughly investigated.

Mr. BUTTERFIELD (*South Australia*): In years of plenty the people of Australia are very apt to forget the seriousness of their position at critical times. It is desirable that something should be done on the lines set out.

Colonel BOURCHIER (*Victoria*): Everything possible should be done by the States to assist in the direction indicated. Victoria is not in quite the same position as the other States, because although we certainly do have droughts like the rest of Australia—and some very severe ones—we are, perhaps, in a more fortunate position owing to the fact that we have a very large area under irrigation. I think it amounts to 1,500,000 acres. We are continually irrigating—pushing out the channels into the drier areas, and thereby insuring the State against the ravages of drought.

MECHANICAL MOISTURE PRECIPITATION.

The practicability of the control of moisture precipitation by mechanical means was also considered.

Mr. GRAHAM (*Queensland*): To my mind this is a very easy matter to deal with. As to the technical work connected with it I have nothing to do, but I would call attention to the importance of its consideration. I think you will agree that as regards the production of crops and other vegetation the greatest amount of energy, effort, and scientific thought has been directed towards the improvement of the soil conditions by the addition of artificial manure, and to the purity of seeds and other factors that go towards high production; but even when all these things are perfect the main essential is moisture, which is the over-riding factor in determining the yield of the crop. This question of moisture affects both the agriculturist and the pastoralist. It affects the pastoralist outside even the influence of drought. Many of our holdings are only stocked up to one-fifth of their capacity, and we may say that if we were assured of a rainfall we could increase our sheep three times and still be assured that no losses would occur through over-stocking. In other States irrigation and other methods of water conservation have been resorted to. I think that an analysis of the irrigation schemes throughout the world will show that they are not profitable from a strict financial point of view; the amount returned is not adequate to pay interest on the capital expended. It does seem possible as the result of man's increased knowledge of the atmosphere and his control of flight that a greater and deeper scientific investigation could be made. I claim that Australia is very properly suited for the carrying out of these investigations. We have some regions that register a rainfall equal to any in any other part of the world, and on the other hand there are portions where the rainfall is scanty. I suggest that this matter be given further consideration and that the question be referred to the Council of Scientific and Industrial Research, and I ask that that Council make it as one of its major subjects for investigation, and that it be not shelved as something quite impossible.

Dr. CAMERON (*Victoria*): Many attempts have been made to produce rain by mechanical means. There are other parts of the world that are more drought-stricken than Australia. The scientists have failed. There is no ground whatever arising from experience and for believing that with the present state of scientific knowledge further attempts are worth while. Rain precipitation is caused by an enormous natural force, but the only force it is conceivable that men could apply would be infinitesimal. This has been a subject for perennial discussion, and the highest scientific opinion on the subject throughout the world is definitely against the feasibility of mechanical rain precipitation.

Mr. TROY (*Western Australia*): I think we should leave this matter to people who devote the whole of their time to this form of investigation. We have a scientific research department in Australia and the matter comes within its province. I do not in any way deprecate the motion, but we should confine our attention to the matters that have brought us here.

Mr. GRAHAM (*Queensland*): It has been stated by a very eminent scientist that such a thing is within the realms of possibility; in fact, in laboratory tests he has brought about the artificial precipitation of moisture, and has declared before a body of scientists that the matter of control of mechanical precipitation of moisture would be within the grasp of man in the future. When the subjects dealing with aviation and wireless were mentioned, it was stated that such things would never be accomplished. The Bureau should give this matter further consideration, scrutinise the possibilities of such an invention, and if they agree that the matter cannot be accomplished, then they can let it go. Scientists have stated that it is within the grasp of man, and seeing it is such a big factor in agriculture the problem should be investigated.

The Conference proceeded to discuss the Committee's reports.

REPORT OF THE AGRICULTURE COMMITTEE.

The General Agriculture Committee submitted the following recommendations and reports in respect to agenda items on which it had conferred. Each recommendation and report was approved and adopted by the Conference:—

1. Permanent Standards for Wheat.

Recommendation.—"This Sub-Committee recommends to the Ministers of the several States that the State Departments of Agriculture be asked to confer with the recognised agricultural organisations in the wheat-growing States on the matter of standards designed to facilitate the more profitable marketing of wheat and the improvement of the quality of wheat for export."

2. Determination of Milling Quality of Wheat, and Method of Determining the Value of Flour and Wheat.

Recommendation.—"The Sub-Committe recommends in connection with these two questions that further researeh is required before any change is made in the methods of estimating the flour strength of wheat."

3. Uniform Grade Standards for Eggs in the States, and for Export.

Recommendation.—(1) "That the Commonwealth Government be requested to provide in the Commeree Act Regulations that the Australian brand for export eggs be "Emu," and that the minimum pack permitted for export should average 2 oz. per egg, with a minimum weight of individual egg of 1⅞ oz.

(2) "That for the Australian trade, the Departments of Agriculture of the respective States should make efforts to induce producers to grade their eggs in packs with a range of 1 lb. per long hundred (10 dozen) between them."

4. The Adoption of a Uniform Standard of Copper Carbonate.

Recommendation.—"That further tests regarding the physical and chemical composition of copper powders for the prevention of bunt be conducted by the chemists for agriculture in all the wheatgrowing States, and that on the matter of fineness of grinding and density the Berkeley methods be provisionally adopted in such tests; and further, that Mr. Sutton be authorised to conduct correspondence with the Berkeley authorities with the object of securing the apparatus required to have the tests conducted on uniform lines, and also to discuss with the schemists in each State, methods of investigation to be uniformly undertaken by them."

5. Finalisation of Recommendations made at the 1924 Conference of Chemists relative to Fertilisers, Fungicides, and Stock Foods.

Consideration of the Regulation Methods of Analysis in connection with the Provisions of the Fertilisers, Fungicides, and Stock Food Bills drawn up by chemists at the Ministers' Conference in 1924. (Motion withdrawn at 1925 Conference.)

6. Uniform Fertilisers Act. (Mot'on withdrawn at 1925 Conference.)

Recommendation.—"That in the event of amendments being introduced in any legislation relating to stock foods, seeds, fertilisers, fungicides, or pesticides in any State, such amendments should, as far as possible, be framed in conformity with provisions of a like character in Acts already in operation in other States."

7. That it is Advisable to have "Chlorocide" Admitted to Australia Duty Free.

8. That it is Advisable to have a Remission or Reduction of Duty on the Admission into the Commonwealth of "Paradichlorobenzene."

Recommendation.—"This Committee recommends to Conference that the importer be advised to prepare a case and submit it to the Tariff Board, asking for remission of duty on 'chlorocide' and 'paradichlorobenzene' imported."

9. Uniform Seed Legislation.

Recommendation.—"The Committee reports to Conference that after discussion it is found that in the States which have Pure Seeds Acts, these are reasonably uniform in their provisions."

10. Methods of Examination of Imported Seeds and Grain.

Recommendation.—"That the Federal Authorities administering the Quarantine and Commerce (Trades Description) Acts, who are considering draft proclamations regarding this matter, should be asked to submit a copy to each State for consideration."

REPORT OF THE DAIRY COMMITTEE.

The CHAIRMAN (Hon. W. Forgan Smith): You will notice that some of the matters dealt with in this report are outstanding from the last Conference—some suggesting no action be taken, and others that the Commonwealth be approached, and so on. I would suggest that these be taken in globo and approved. The Conference agreed.

Standardisation of the Grading and Examination of Dairy Products placed on the Interstate and Intrastate Markets.

Recommendation.—"That the Commonwealth Government be asked to reconsider its decision in respect to the standardisation of the grading and examination of dairy products for the oversea, interstate, and local markets by the allocation of the work of grading to State officers and the supervisory work of standarisation to its own staff, on the lines submitted to it by the Conference of Ministers of Agriculture at Perth in 1922 and reaffirmed at each Conference since. Failing action being taken on these lines, this Committee recommends that the States themselves take the necessary steps to bring about standardisation of the grading for the interstate and intrastate trade."—Approved.

Visit of Dairy Expert to Europe.

Recommendation.—"That it be a recommendation to the Governments of the States to send an officer overseas to investigate dairy matters, the expenditure involved to be borne by the different States on a production basis." Conference agreed.

Co-ordination in Experimental and Research Work.

Recommendation.—"That the States co-operate in experimental and research work relating to the dairy industry by advising the controlling officer of each State of action proposed and/or taken, so as to give an opportunity to collaborate and assist."—Conference agreed.

Australian Dairy Organisation Scheme—Commonwealth Representation.

The CHAIRMAN (Mr. Forgan Smith): The Australian Dairy Organisation scheme adopted in 1922 provided for Federal official representation on State Dairy Boards and the Australian Dairy Council. From 1922 to 1925 these boards and the council confined their attention principally to overseas dairy produce export matters. In 1925, the Commonwealth Government passed the Dairy Produce Export Control Act, whereby a board was appointed to advise the Minister on matters relative to export. This board superseded the export section of the Australia Dairy Council's operations. The council now intends to devote the whole of its efforts to matters in connection with production, education, manufacture, home markets, &c., all of which are exclusively of internal and domestic concern to the various State Governments. At the last Ministers' conference it was resolved that on any export board established the State Governments should be adequately represented. The Commonwealth replied that the request would be considered in the event of any amendment

of the existing Export Control Acts being contemplated or of legislation being introduced for the establishment of any additional boards of this description. However, no further action in the matter has been taken so far.

Mr. MCINNES (*New South Wales*): This matter was brought forward to consider what action should be taken in connection with the continuation of Federal representation on the Australian Dairy Council. We have no suggestion to make on the matter as it is a question of policy.

The CHAIRMAN (Mr. Forgan Smith): I have here a memorandum from my Chief Dairy Expert:—

> "It is suggested that the question of State representation on the Dairy Produce Export Control Board be again brought before the notice of the Commonwealth Government, as we consider it in the interest of the industry that the State should keep in touch with all boards functioning in association with the various bodies connected with this industry."

Mr. TROY (*Western Australia*): It is vital that the States should have representation on the Dairy Export Control Board, because the States produce the commodity which is exported. The Minister in each State should keep in touch and know what is being done and how it is being done. I move:—

That the States ask for representation on the Dairy Export Control Board.

Colonel BOURCHIER (*Victoria*) seconded the motion, which was carried.

Compulsory Installation of Tried and Approved Machinery.

Recommendation.—"That the three largest producing States, New South Wales, Victoria, and Queensland, arrange for the appointment of a Joint Committee to investigate the efficiency of dairy machinery, with a view to issuing a joint certificate of efficiency where such machinery is found satisfactory."—Approved.

Uniform Specification for Thermometers.

Recommendation.—"That the States approve in principle of the suggestion submitted by New South Wales, and recommend that the various departments discuss the matter of uniform specification for thermometers used in connection with the manufacture of dairy produce, taking the New South Wales regulations as a basis."—Approved.

Uniform Herd-Testing.

Recommendation.—"That clause 12 of the original draft of the Official Australian Pure Bred Herd-testing Production Scheme be amended by the addition of the following words: 'Unless there is being carried out a system of daily weighing as a check on the official twenty-four hours test.'"—This resolution was carried by the Committee by three votes to two.

In view of the conflict of expert opinion, the Conference discussed the recommendation at length and finally approved of it.

Preservatives in the Manufacture of Butter.

Recommendation.—(1) "That further investigation be made with a view to ascertaining methods of manufacture or treatment of butter to improve the quality and overcome undue deterioration without the use of boric acid.

(2) "That the States under Item 20 undertake to examine in detail the methods put into force in New South Wales to manufacture butter without the use of boric acid, and report any decision they may arrive at to the various Departments of Agriculture."—Approved.

Purification of Water for Butter-Making Purposes.

Recommendation.—"That the investigation of the purity of water used in the manufacture of butter is considered advisable: Such investigations to cover a bacteriological examination of all butter wash water used in all factories where inferior butter is made from untainted cream."—Approved.

REPORT OF THE FRUIT COMMITTEE.

The recommendations of the Fruit Committee respecting marketing of the prune crop; standard grades for bananas; grading of apples and pears; grading of canned fruit; apple and pear grades for overseas export; uniform legislation dealing with fruit tree stocks; application of uniform grades for nursery fruit trees; investigation of methods of control of fruit tree diseases; reaffirming the advisability of fixing uniform grade standards for every kind of fruit in all States; oversea fruit exports; that reports be made available to the States by the Commonwealth Government on the prices and conditions of fruit arriving at English markets —were all approved.

Other recommendation approved were:—

Arsenic Sprays.

"That owing to the action taken by the British authorities in respect to apples and pears imported into the United Kingdom which have been treated with arsenic sprays, it is requested that the Commonwealth Government, through the Bureau of Science and Industry, carry out research work in the control of the codlin moth, with a view to the discovery of a method of control which does not involve the use of arsenic."

Suggested Commerce Regulation Amendment.

The amendment of the Commerce (General exports) Regulations 1925—

> "Fresh fruit shall not be exported if it is affected with San Jose scale or has been in contact with fruit so affected, or has been produced in any orchard where San Jose scale is present."

was suggested. The Committee recommended that the Conference request the Commonwealth Government to modify Regulation 46 of Statutory Rules 22, 1926, by deleting all the words after the word "scale," making it read, "fresh fruit shall not be exported if it be affected with San Jose scale"; and that Note 3 (prohibited exports) on p. 37 of Statutory Rules, No. 22, 1926, be altered accordingly.

Other agenda items in respect to oversea marketing of citrus fruits; development of oversea markets for citrus fruits, and question of compulsory export; the question of prohibiting the sale of immature or dry citrus fruits on the local market, and of the export of immature fruit; and grade standards for citrus fruits; the necessity of the continuance of the Citrus Insurance Fund; of the continuation of export bounty on sweet wine; and inspection of wine for export—were affirmed.

Destruction of Starlings and Sparrows.

The Committee regretted that it was unable to suggest any practical method of dealing with starlings and sparrows, other than by systematic poisoning.

CONCLUSION.

The CHAIRMAN (Mr. Forgan Smith): I thank you, gentlemen, for your attendance at this Conference, and declare its closure. I wish to say, on behalf of Queensland, that we appreciated the holding of this Conference in Queensland. As Minister for Agriculture, I appreciate the opportunity of having you here to discuss the several important agricultural matters on the agenda paper which are of interest to the agriculturists of the Commonwealth. I also wish to take this opportunity of thanking the daily Press for the publicity that they have given to our proceedings. Many important matters have been dealt with, and I feel sure that the Conference has been a success; that the conclusions arrived at on important matters are wise conclusions, and when given affect to, as no doubt they will in due course, will result in that benefit that was intended to be achieved when initiated by the several members of this Conference. The next assembly will be in Adelaide, and I am sure that the departments concerned will take the opportunity of giving effect

to these resolutions and that the result of their experience will be made available to the other States, and at the next annual conference we shall be able to report that many of our decisions have become effective with advantage to the people whom we represent.

Mr. BUTTERFIELD (*South Australia*): I rise with the endorsement of everyone here—Ministers and officials—to move a hearty vote of thanks to you, Mr. Forgan Smith, in the first place for presiding over this Conference, and in the second place as representative of the Queensland Government, for the very fine consideration that all visitors have received at your hands. We all appreciate very much the consideration that has been shown to us and our friends in every possible direction since we entered your State. We have met with hospitality from our entry into Queensland until now, and there promises to be a continuation of that hospitality until we depart. You can take as genuine our appreciation of what has been done for us, and I am sure we will all go back with happy memories of our contact with you during the last few days. I have much pleasure in moving—

"That a hearty vote of thanks be accorded to Mr. Forgan Smith for his presidency over this Conference."

Colonel BOURCHIER (*Victoria*): I have very much pleasure indeed, on behalf of myself and the officers of the Victorian Department, in thanking you, Mr. Forgan Smith, for the hospitality extended to us during our stay in your State. This has been one of the most instructive conferences that I have had the pleasure of attending.

Mr. TROY (*Western Australia*): I feel it a privilege to support the motion, and wish to express on my own behalf and on behalf of the officers who have accompanied me from Western Australia, our thanks for the magnificent hospitality that you have showered upon us since our arrival in your State. I wish also to express our thanks to Mrs. Forgan Smith and the other ladies in Queensland who have given up so much of their time to entertain the ladies who accompanied our party. I hope that you will be able to attend the next Conference at Adelaide, and that when we again come to Queensland we shall have the pleasure of again sitting as a conference with you, Mr. Forgan Smith, as Chairman. I have very much pleasure in supporting the motion.

Mr. G. D. ROSS (*New South Wales*) and Mr. H. C. SMITH (*Tasmania*) also supported the motion, and referred to the capable way in which the Chairman had conducted the proceedings.

The vote of thanks was carried enthusiastically.

The Value of Annual Conferences—Public Service.

Hon. W. FORGAN SMITH (*Queensland*): On behalf of the State of Queensland and the officers of my department, I thank you very sincerely for the cordial manner in which you have carried that vote of thanks. It has been a pleasure to us to have you all with us. I believe that these Conferences, as some speakers have pointed out, do a great deal of good to agriculture generally, apart altogether from the decisions which may be reached. The departmental officers at the discussions at the sub-committees gain the benefit of the experience of other officers engaged in similar services, and use it no doubt in the carrying out of their own duties. It is a privilege to have been associated with the several officers of the departments at this and the previous Conference. I am satisfied that they are men who carry out their duties with zeal and an abounding desire to do well for the country in whose service they are engaged, and that spirit of public service is one which should be prized by all citizens who love their country. Service is a matter which is often overlooked in dealing with public affairs. Ministers and their staffs are engaged in a great public service in shaping policy and administering the affairs of the State. When successful they add to the well-being of their fellow citizens, and that brings about a recompense which cannot be assessed in terms of cash. At the next Conference, I am sure that we shall have a very hearty reception in Adelaide, and the same thing applies to the other State in which Conferences will be held subsequently. I am glad that some of the Ministers will be able to visit North Queensland, and I wish to say in conclusion that I appreciate very much the opportunity I have had of presiding here. I acknowledge my indebtedness to my own departmental officers and the other officers who have contributed to the success of these proceedings. I wish you all the best of success in your duties, and I hope that the results of the Conference will be to the benefit of those engaged in agriculture and the Commonwealth generally.

Dr. CAMERON (*Victoria*) moved a vote of thanks to the Conference secretaries, Messrs. R. P. M. Short and Alex. Henry, and paid a high tribute to their work.

The vote of thanks was accorded most cordially, and the Conference closed.

Bureau of Sugar Experiment Stations.

CANE PEST COMBAT AND CONTROL.

The Director of the Bureau of Sugar Experiment Stations, Brisbane, has received the following report (28th *June*, 1926) *from the Entomologist at Meringa, near Cairns* (*Mr. E. Jarvis*):—

Successful Control Measures Against Termites.

During March, 1923, we were asked by growers in the Burdekin district to institute experimentation against the so-called giant, or thick-winged termite (*Mastotermes darwiniensis* Frogg.), which at that time was said to be causing serious damage to cane, and although, fortunately, of local occurrence, was thought to be on the increase.

Preliminary laboratory experiments in this connection indicated that cane sets could be rendered proof against white ant attack if dipped before planting in a solution of Paris green ½ oz., water 2½ pints. Further research along similar lines, however, was soon abandoned in favour of such control methods as fumigation of the soil around affected stools of young plant cane; dipping the ends of sets in repellent solutions; placing poison-baits in or close to termite-infested stumps, posts, roots, &c.

Our efforts during the last few weeks have been directed against the nest or termitarium, and the discovery of simple methods of destroying it; a phase of control which aims a blow, as it were, at the source of the trouble, giving one a chance to destroy simply and inexpensively in the one operation many thousands of individuals, including workers, soldiers, and nymphs, together with the queen-mother of the community, who never leaves the nest; being in fact little more than an animated machine designed for ejecting a constant supply of eggs; amounting, it is said, in the case of some of the African termites to many thousands each day during a period of several months.

The internal structure of the termitarium built by these insects usually consists of innumerable thin plate-like woody-looking or papery fragments of irregular form and size, arranged in a compact mass, which being open or well aerated is very suitable for treatment with fumigants. Among those just tested by us, ordinary Shell benzine and calcium cyanide were the two that gave best results. The former of these fumigants has been found effective in South America against *Leucotermes tenuis* Hag., which is said to be the most important termite in Brazil.

The following brief notes on our methods of application and the results secured are supplied by Mr. J. H. Buzacott (Assistant to Entomologist), who took part in this branch of experimental work:—

> 12th May.—One half pint of Shell benzine was poured into a hole in the top of a mound. The hole was 6 in. in depth, and sealed after the injection. Nest was opened two days later, and a 95 per cent. kill observed. All the surviving ants were soldiers, and the queen was found dead in her cell.
>
> 26th May.—A large mound, 5 ft. in height, was treated at a depth of 2 ft. with 1 pint of Shell benzine. On 5th June the nest was dug, and 100 per cent. kill had occurred. The smell of benzine still strongly pervaded the interior of the nest.
>
> 26th May.—Two nests were treated, each with 2 oz. of calcium cyanide. In the first it was placed at a depth of 2 ft. 6 in., whilst in the second it was placed just inside a cavity at the top of nest. The hole was sealed with mud in each case. Opened on 5th June a 95 to 97 per cent. kill had occurred in each mound, and the calcium cyanide was found to have decomposed entirely. Where the calcium cyanide had been placed near the surface the masses of dead ants were observed surrounding the dose.

The termites concerned in the abovementioned experiments were *Eutermes vernoni* Hill., and a species of *Termes*, the former insect being destructive at times to cane sets, although not attacking the sticks above ground level. Experiments in the Burdekin district against *Mastotermes darwiniensis* Frogg., which we had intended carrying out last April, were postponed for the time being; but it is hoped to test the value of several forms of control in connection with this white ant in the near future.

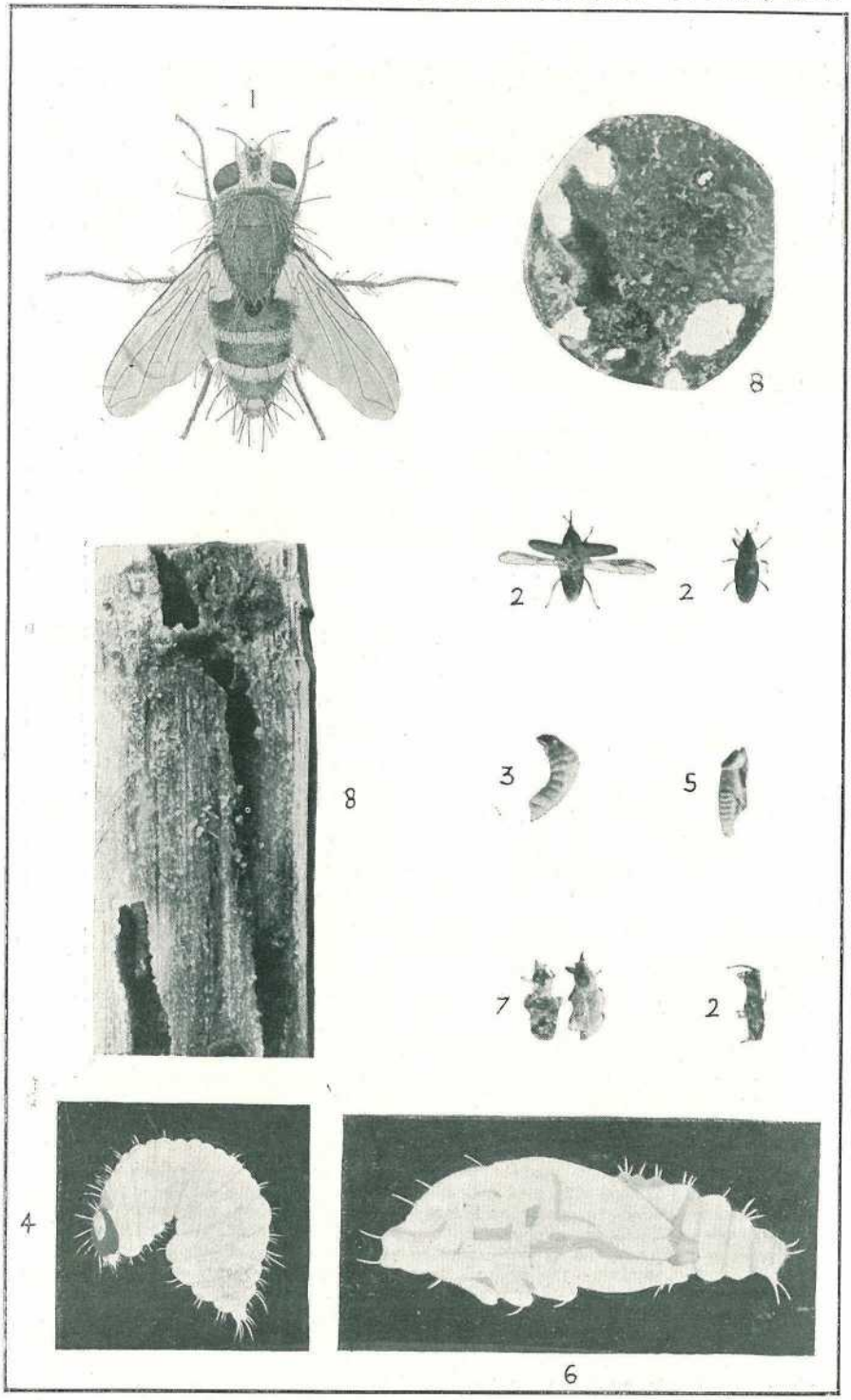


PLATE 7.

Fig. 1. Tachinid Fly Parasite (magnified).
Fig. 2. Weevil Borer (natural size).
Fig. 3. Larva or Grub of same (nat. size).
Fig. 4. Larva of same (magnified).
Fig. 5. Pupa of same (natural size).
Fig. 6. Pupa of same (magnified).
Fig. 7. Weevil Borers attacked by fungus.
Fig. 8. Sections of cane bored by Weevil.

Notes on the Habits and Economy of Tachinid Flies.

In view of the fact that despite liberations of the parasite *Ceromasia sphenophori* effected from time to time by us at South Johnstone some of the growers there are suffering severely from the cane-borer (*Rhabdocnemis obscurus* Boisd.), it would be interesting to point out the reason for the present activity of this pest in the above district. Exceptional opportunity has apparently been afforded these borers for multiplying abnormally on various areas of standover grub-infested cane during the last couple of seasons, and probably in sticks of burnt rejected cane, either left standing or lying on the ground in canefields or against tram lines.

Seeing that the life-cycle of this weevil (from egg to beetle) occupies no more than three months, any cane showing the slightest evidence of infestation should be cut as early as possible, and on no account be left to stand over. When such cane is crushed, thousands of larvæ, pupæ, and beetles are necessarily destroyed; which otherwise would continue breeding, and have a chance to produce two or more additional broods of beetles to infect subsequent crops of cane.

Economic Value of Tachinid Flies.

Among the different controlling factors employed by us to check the numerical increase of this beetle, first place must be accorded to its dipterous parasite *Ceromasia sphenophori*, which when it has once secured a footing in affected districts is generally able to keep the cane-borer in subjection, thus rendering the employment of artificial remedial measures unnecessary.

On areas around Moolaba and Babinda, for instance, it has now become so firmly established that puparia of this parasite may be easily obtained at any time in canes harbouring grubs of *obscurus*.

It is interesting to note that Mr. F. Muir, Entomologist, reporting from Hawaii in 1924, states:—"The introduction of the Tachinid *Ceromasia sphenophori* has led to a great reduction in the numbers of *Rhabdocnemis obscurus*, but where the Tachinid does not yet occur the weevils still do great damage to sugar-cane."

Factors Checking its Increase.

One of the chief causes tending to check or prevent the breeding of this useful parasite, or its establishment after liberation in a district, is an indiscriminate burning of the cane.

This kills any larvæ or puparia that may be in the sticks, the flies naturally suffering a severe check, while in some cases nearly every specimen may in this way be destroyed over extensive areas of cane land. At Japoon, for example, in the South Johnstone district, during February and October, 1924, these parasites were reported by our Field Inspectors to have practically got the borer under effective control, and on one of the farms visited where Tachinid flies had been twice liberated it was hard to find any borer-affected cane. In August of the following year (1925), however, it was reported that during this interval of ten months, the occurrence of a large fire throughout the Japoon area had destroyed these Tachinid flies, and borers were then found to be increasing in consequence.

An important organism exercising a natural control over this parasite is the entomogenous fungus (*Empusa* sp.). During the occurrence of damp atmospheric conditions associated with high temperatures favourable to germination of the sphores of this fungus, such as occur in the wet season, great numbers of Tachinid flies sometimes perish in our breeding-cages, seemingly as though suddenly smitten by some virulent disease. Tachinids attacked in this manner become encrusted with a whitish mould (spores of the fungus) and are found in the field adhering with legs extended to the surfaces of leaves, &c.

Additional but far less serious checks on the increase of these parasites are effected by various predaceous enemies occurring in our canefields. Amongst such may be mentioned lizards, frogs, jumping spiders, ants, &c. Unfortunately *Ceromasia sphenophori*, unlike the watchful house fly, happens to be very unwary, sometimes even not taking to wing until nearly touched with one's finger.

Owing to this habit, some of the liberated specimens probably fall an easy prey to insect enemies. The common little ant, *Pheidole megacephala*, which is abundantly present in most of our Northern canefields, doubtless attacks Tachinids emerging from puparia formed in cane sticks before their wings have had time to grow and become fit for use.

Digger-Wasp Parasites from Java.

On 14th June four living and two dead specimens of the Scolid wasp, *Triscolia rubiginosa*, were brought to this office by Mr. Hunter Freeman, of the Colonial Sugar Refining Company, who has just returned from a trip to Java. This insect is

parasitic on grubs of *Xylotrupes gideon* L., a Javanese beetle closely related to our so-called Elephant Beetle. These digger-wasps, which consisted of one female and three males, together with an egg and a cocoon, obtained from parasitised grubs of *X. gideon* during transit, were handed over to this Experiment Station by Mr. Freeman, in order that we might determine whether this wasp will attack grubs of our cane-beetle *Lepidoderma albohirtum* Waterh. The female insect was at once placed in a suitable cage of soil containing a large grub of our grey-back beetle.

Seeing that *rubiginsoa* is a much bigger parasite than *Campsomersis tasmaniensis* Sauss. or *radula* Fabr., which destroy grubs of *albohirtum* in Queensland, there is not much likelihood of the former digger-wasp proving serviceable against our notorious cane-beetle. In all probability, however, this Javanese parasite will be found to attack larvæ of the Elephant Beetle, *Xylotrupes australicus* Thomp., which may serve as a host on which to breed numbers of the parasite for experimental work in the laboratory.

ENTOMOLOGICAL HINTS TO CANEGROWERS.

By EDMUND JARVIS, Entomologist.

Look after Parasite of Cane-Borer.

It is time that our growers began to understand that every Tachinid fly liberated by the Bureau of Sugar Experiment Stations amongst their borer-infested cane is worth many hundreds of times its own weight in gold. The Tachinid in question, for example, was introduced into Hawaii in the year 1910, and fifteen months later had become established in several canefields. We learn from the Hawaiian Sugar Planters Association that one of these plantations "reported an increase of 0.98 tons per acre in average yield of sugar for the 1913 crop which would mean a saving of $75 to $90 per acre, according to the prevalent price of sugar. Where the plantation was harvesting 1,000 acres, this would equal $75,000 to $90,000 for the plantation. A further increase of 1.25 tons per acre was reported for the 1914 crop, which would more than double the above annual saving." Now, it should be possible for us to secure similar increases as a result of such liberations, but we cannot expect to do so unless these parasites are carefully looked after and given a chance to multiply. Indiscriminate burning of the cane in which they have commenced to breed is one of the chief causes of failure to establish them. (See official report for May to June, 1926, in July numbers of "Queensland Agricultural Journal" and "Australian Sugar Journal.")

Another Good Grasshopper Bait.

The following poison-bait, recommended by an American entomologist, has been found a simple, effective, and exceedingly cheap remedy:—

Sawdust	100 lb.
Sodium arsenate	1 quart
Molasses (crude)	1 gallon
Salt	5 lb.
Water	7 to 10 gallons

Apply this at rate of 10 to 20 lb. of wet bait per acre (according to amount of grasshoppers present). (See also Hints for June, under "Combating Grasshoppers," in the two abovementioned Journals.)

Ants Nesting Against Cane Stools.

Accounts have come to hand from two or three growers at Innisfail and on the Tableland regarding the activities of a small yellow mould-building ant, which is thought to cause minor injuries to cane roots. When formed around a stool, its nests should be fumigated with carbon bisulphide or benzine, injected at intervals of a few inches apart, and three or four from the base of the canes.

When occurring between the rows, benzine could be sprayed on to the nests, which should then be covered over with a layer of moist soil. A 2 per cent. solution of lysol, or a 10 per cent. solution of cresyl has been found effective for the treatment of ants' nests. A splendid poison-bait for laying in the vicinity of these insects as traps, is obtained from the following ingredients:—

"Four hundred and seventy-three parts by weight of white sugar; 2 of sodium arsenite; 0.61 of tartaric acid; a little sodium benzoate and colouring matter boiled together in water; the amount of water being kept up as it evaporates to maintain a total of 1,000 parts by weight."

CANE PESTS AND DISEASES.

The Director of the Bureau of Sugar Experiment Stations, Mr. H. T. Easterby, has received from the Assistant to Pathologist (Mr. N. L. Kelly) the following report (29th June, 1926):—

SHORT DESCRIPTION OF MAJOR DISEASES.

Leaf Stripe.

This disease occurs in a small part of the Bundaberg district, and in nearly every cane district north of this.

Symptoms.—The most noticeable feature is, usually, the presence of long stripes running from the base of the leaf to the tip. These stripes are light yellow when young, becoming dark brown as the tissues die. They vary in width very much, and alternate somewhat irregularly with normal green tissue. The critical symptom, the presence of a white mould beneath the leaves, is very noticeable in spring and summer, but not so obvious in winter. The mould will form, however, on keeping the leaf in a warm moist space for twenty-four hours. In the early stages the stripes work up from the leaf sheath to the tip. Later the young leaves are formed narrower and have the mould under them as they appear. Finally, the young leaves come out very small and entirely yellow. The stalk has by this time become very "spindly," and one may see in an infected field odd stalks, taller than the rest, with long internodes and small yellow leaves with dead tips. In autumn and winter the leaf dies and splits from the tip into threads. Along the sides of these threads are to be seen, with a lens, many blackish spherical bodies—the resting spores. Thus the leaf-splitting stage is the one usually met with in winter.

Cause and Infection.

The causal organism is a fungus *Sclerospora sacchari*. Its methods of reproduction are—

1. In the warm weather, minute asexual spores (conidia) are borne at the tips of the threads (hyphæ) of the "mould" which is found beneath the leaf. These are only produced by night, and are spread either then or early next morning by wind or insects to other canes nearby, whereon they germinate if moisture be present.

2. As the cold weather approaches the resting spores (oöspores) are formed to tide the fungus over the winter. When the leaves split these fall to the ground, germinate on the advent of spring, and infect cane growing nearby. Having been distributed by wind, cultivation, and drainage, the percentage infection in this crop is usually much larger than in the previous one. Apart from these natural methods, the disease, as with the other major diseases, is spread by the planting of infected sets.

Control.—1. Eradication.—"Rogue" fields infected less than 5 per cent. during spring, to prevent the spread either by method 1 or later by 2. All severely infected fields should be ploughed out on harvesting. Plant a leguminous crop, or, at all events, thoroughly prepare the land.

2. Seed Selection.—Use only clean seed. If possible avoid all infected fields.

3. Resistant Varieties.—Q. 813 has been found to be a fairly resistant variety. It is best to plant a resistant variety in any field which has recently been severely infected. Return to other varieties later, if desired. This completes a synopsis of the five major cane diseases appearing in Queensland. Under certain circumstances, other diseases often assume importance.

Top Rot.

I made certain preliminary observations on this disease as occurring around Gin Gin, mainly in M. 1900 Seedling, though Q. 813 was also slightly affected. One field on a red soil hillside was infected to over 50 per cent.

1. No Red Streaks ("Queensland Agricultural Journal," May, 1926, p. 406) could be found on the leaves of any infected stool, no matter in what stage the disease was.

2. Of twenty-five infected stems twenty-three had normal roots and a fair to strong pressure of sap (root pressure). The remaining two were suffering slightly from "Foot Rot." The field has lately had abundant rain, but little heat, so that growth is almost at a standstill.

In this and, at this time of year, in most fields of M. 1900 Seedling, and, to a lesser extent, of other varieties, one or more sections of varying length are to be seen, pure white in colour, later turning purple. This is termed sectional chlorosis, and in itself is practically harmless. It is almost certainly secondary to the lodging of a raindrop or dewdrop in the rolled younger leaves.

Now in the Top Rot observed, one or more of the chlorotic sections in one or more of the younger leaves—usually not the youngest of all—first turns brown, and putrefies, and the putrefaction advances downwards towards the growing point. Where the brown rotting mass is in contact with other leaves, putrefaction of these also sets in. Blowflies often lay their eggs in the rotting mass at this stage, and several of their larvæ are soon to be found there. The putrefaction first attacks the stem a little to one side of the growing point. If the youngest leaves stave off attack for some time, the now lateral rot causes a slight bending of the stem, which may be followed by a "knife cut." This was observed in 8 per cent. of cases. In the majority of cases, however, the youngest leaf and the growing point commenced to putrefy, thus forming a Top Rot. A spell of warm, dry weather apparently checks the disease and minimises the losses it causes.

Mosaic.

This disease is widespread in the Bundaberg district. The features of this disease were discussed fully in my last report. I might add that as every stool of Shahjahanpur 10 that I have seen is infected I can only conjecture the losses caused in this variety. The enormous infection and losses in varieties adjoining a plot of Shahjahanpur 10, however, should impress the grower with its undesirableness.

Gumming.

This disease is causing considerable losses in the Woongarra locality. It is also present on many fields in other sub-districts. The best means of combating the disease is for those whose farms show the slightest trace of "gumming" to obtain their seed from a clean area. The Gin Gin and Bingera Mill areas are, I have every reason to believe, free of "gumming," though the same cannot be said, of course, as regards Mosaic. Of those fields I have seen, two of N.G. 15 are apparently free from "gumming." As this variety is badly damaged by the disease, it is to be discouraged at present. The main factors to concentrate on are—

1. Take every precaution to obtain only clean seed.
2. Avoid knife infection by sterilising knives when in infected fields. Immersion for thirty seconds in a kerosene tin of hot water causes sterilisation of any adhering organism.
3. Plough out infected fields as soon as economically possible.

Foot Rot is causing considerable losses in fields (mainly of M. 1900 Seedling), in which the farmer suspects merely "dry weather." These losses are minimised by a rotation cropping, preferably with a "legume" (pea or bean family). Rice bean is favoured in the North, and giant cowpea in the South (N.S.W.).

The Director of the Bureau of Sugar Experiment Stations, Mr. H. T. Easterby, has received the following report (28th June, 1926) from the Southern Assistant Entomologist, Mr. R. W. Mungomery:—

In May the districts of Childers, Gin Gin, and Bundaberg were visited. In nearly all cases grub damage in these canefields had ceased, and no further injury is likely to result until the spring months.

Experiments at Childers.

Experimenting with paradichlor. in the Isis district against the grubs of *P. furfuracea* has been carried out this year under probably the worst climatical conditions that have prevailed for many years, and the results so far obtained give no data that is of use in showing any increase in tonnage of the treated plots over the non-treated or control plots.

After the excellent growing conditions that were experienced there in the early part of January, no rain of any decided help came until Easter (4th April), the

few isolated showers that fell during the intervening period yielding at the most about a quarter of an inch of rain, which very quickly dried up under the great heat that was experienced in February and March. The cane remained more or less at a standstill during those months and the standover cane in many cases died out.

Grubs of the common cane beetle *P. furfuracea* during those dry times went deeper down in the soil seeking moisture, and week after week as the top soil dried out they were found to be at a still lower level. In the case of spring plant cane that was grub-smitten and which had the characteristic yellowish appearance, grubs were found right below the parent set and out of reach of the roots; so that under these circumstances it was not surprising to find that the cane in the "grubby" areas, for a time, tended to "green up," for the grubs were no longer gnawing at the roots.

Following on this, it is interesting to note further the sensitiveness of grubs of this beetle to moisture, and during the light falls of rain a certain amount of water would trickle down the cane stalk, making a small wet patch at the base of the stalk, and if this soil were disturbed with one's boot by gently raking it aside, several first-stage grubs would be exposed to view.

However, this droughty season through which we have recently passed has been of use in testing the limits of fumigation, coupled with dry weather, that the young cane plant will successfully resist, and in the experiments with paradichlor., using ½-oz. doses on both sides of the cane-stools, it was seen that this fumigant in adverse seasons may have a harmful effect on the growth of the young plant, and a few of these plants succumbed to treatment. Like carbon bisulphide, therefore, it appears that its effect is much more injurious to cane the drier the soil, and until more information can be gathered concerning its effect in the Southern drier areas, it would be wisest for growers to use it when there is a good moisture content in the soil. Plant cane under 2 ft. 6 in. only was affected, while any over that size withstood its effects quite well, and the young ratoon cane also suffered no ill-effects. Cane that survived the paradichlor. application is now stooling out well, and presents a much greener and healthier appearance than that in the control plot, and it was found that the mortality of the grubs in the treated block of plant cane was almost 100 per cent. Next season, experiments will be carried out to determine whether smaller doses such as 1/16 oz. will suffice.

The growers on whose areas these experimental plots were established are nevertheless pleased with results obtained up to the present, and are keen to give the fumigant, which is new to this district, further trials. Many of them are now experimenting on their own initiative during my absence, and I would like to impress on these growers, as well as others, the necessity for exact experimenting. Some are unable to get a proper ½ oz. or 1/16 oz. measure, but by using the lid of a cardboard matchbox, deep spoon (these are merely suggestions), or other instrument always holding a definite quantity, the exact doseage used can be found out if at any later date results are obtained by them which go to prove the efficiency of this fumigant for cane-grub control, and so the quantity that they have used per acre can be readily determined. Thus much useful information can be supplied to the entomologist, and incidentally to other growers, for it can be clearly understood that the depth and quantity of a dose of paradichlor. that suits one particular class of soil may have to be modified to suit another class of soil.

Activities of the Several Grubs.

In the Bundaberg district, third-stage grubs of *L. grata* in the canefields have finished feeding, but a good number were still to be found at the end of the month (30th May) on some newly-ploughed grass lands bordering the forest, where third stages as well as first and second stages were very plentiful. Grubs of *P. furfuracea* were very scarce in the Woongarra district.

In the Gin Gin district, all stages of *P. furfuracea* were met with, while *L. grata* was found chiefly in its second and third stages under the cane stools, but all were very cold and inactive after the heavy rain which fell on 23rd May in that district. Several of these grubs were diseased, and it is probable that should further rains supervene there will be a heavy mortality from disease in that district.

L. frenchi grubs of the third stage, which in the early part of the season had been very active at the Elliott Heads and Gin Gin, had ceased feeding and had gone deep in the ground to pupate.

FIELD REPORTS.

The Southern Field Assistant (Mr. J. C. Murray) reports (24th June, 1926):—

In the course of the month the cane districts of Waterview (Bundaberg), Bingera, Wallaville, and Nambour were visited. The cane for the greater part is making slow progress. Conditions of growth:—

Spring plant: Growing slowly. Healthy.

Autumn plant: Good strikes, slow growth. Healthy.

Ratoons: Slow growth, no great length of cane.

Standover: In fair condition, very slow growth.

Waterview.

Growers here have very satisfactory crops, taking the dry period into consideration. The soil, being richer in humus than the average Bundaberg farm land, has retained its moisture sufficiently to keep the cane growing moderately. Farmers have a fair weed growth in this locality which immediately becomes noticeable with the slackening of scuffling, also patches of Mosaic infected cane. However, great pains are being taken in plant selection, so that in a year or two this disease will have been reduced to a minimum.

The writer has identified about thirty varieties in this locality (there are probably more), those making the best showing being E.K.28, Q.813, H.Q.285, H.227, H.109, 7 R.428, and Q.855. The first named is doing very well here, and it would not be surprising if the farmers are not, before long, growing this variety extensively in soils of the class under review. E.K.28 was brought from Java in 1914 by the Bureau of Sugar Experiment Stations with several other varieties. It is extensively grown in the Dutch Indies, and gives a c.c.s. value from 14.5 to 16.5. H.227 is a variety that is continuing to improve. This cane was brought from Hawaii by the Bureau of Sugar Experiment Stations in 1917, and growers are recommended to keep it in cultivation.

Bingera.

These red soils have not the cane on them that the alluvial loams have. The volcanic earths dry up quickly if the rainfall is not well distributed. Cultivation without subsoiling in red soil creates a pan about a foot deep, and this also operates against the chances of the cane resisting a dry spell, as the roots cannot reach any moisture that may be in the sub-layer. Many growers of cane cannot see the force of having drains on high red land when the water gets away quickly, but there should be drainage for the following reason:—

If a "pan" is in existence, stirring the soil with a subsoil plough helps, since it loosens the soil deeper than the ordinary plough, thus enabling it to hold more water. But the loosened soil becomes compacted again in a few years: at best the results of subsoiling are only temporary. Under-drainage is permanent subsoiling; it takes away the water that has cemented the subsoil and permits the air to enter it, thus promoting all the loosening and mellowing influences of weathering. The value of this is illustrated on Bingera Plantation. Drainage, and especially under-drainage, is of greatest service upon land already under cultivation, but which is not yielding crops because of inequalities in the water supply.

Two cane varieties doing very well on the Bingera areas at the present time are Q.855 and Q.813. This latter is well known, being a Queensland seedling having Badila as one of its parents. These canes bear a considerable resemblance to each other, excepting that the Q.855 is more heavily waxed than the Q.813 and is a reddish-brown in colour.

Farmers in this area would find it advantageous to make greater use of green manure than they are doing. Analyses of these soils show a deficiency of nitrogen and humus. A crop of mauritius bean, yielding approximately 13½ tons per acre, will give 2½ tons of organic matter, 173 lb. nitrogen, 40 lb. phosphoric acid, 317 lb. lime, and 141 lb. potash.

Wallaville.

A big crushing is not anticipated here this season. Crops are light, growers having been unfortunate in not getting rain at the right time. The cane that came under observation was fairly healthy, however, and first class cultivation was noticeable. The farmers are recommended to try and meet the periodic setbacks by drought with more green cropping and drainage. It would pay at least one farmer well, if he had a piece of suitable land, to grow pea and bean seed exclusively for sale.

Cane varieties making the best showing in the district at present are M.1900, Malagache, Brown Goru, Q.813, and Q.H.285. The Goru is making a good showing on the river flats, and as some growers in Southern districts appear to be uncertain regarding the Goru canes, it can be said that N.G.24 is a greenish-brown to copper coloured cane, N.G.24A is the same colour, but with red stripes along the internode, while N.G.24B is a yellow to green cane.

Nambour.

There are fair crops in evidence, the ratoons making a better showing than was anticipated. No damage has so far been done by frost.

The Central Field Assistant, Mr. E. H. Osborne, reports (21*st June*, 1926):—

Proserpine.

About the third week in May this district was suffering very badly from dry weather, for after a fairly dry period at the end of last year only 20.81 inches had been registered (up to 2nd June) for 1926; the last eight weeks were rainless. One enterprising grower, Mr. E. Quod, whose farm is on the river, was irrigating his crop with a 6-in. pump, tractor driven.

The cane in general was faring badly, and the present estimate of 80,000 tons is a long way below last year's record crop of 104,000 tons. Practically no planting had been carried out, and nearly all ploughing had ceased, awaiting rain to moisten the baked soil. The general water supply was also very short. Despite adverse conditions as compared with last year, it was pleasing to notice how the town is steadily increasing in size and importance; several new shops have opened and it is pleasing to see the number of neat and well-kept cottages built within the past couple of years, emphasising the fact that the sugar industry is Queensland's best agency in promoting closer settlement.

Cane varieties were represented last year in the following proportions:—

Variety.	Per cent. of crop.
Q. 813	24.0
N.G. 15 (Badila)	18.7
H.Q. 426 (Clark's Seedling)	17.5
M. 1900	13.7
Goru	5.3
Malagache	5.1
D. 1135	3.9
Striped Singapore	2.4
Mixed and other varieties, including Q. 1121, Q. 114, Q. 116, B. 147, E.K. 28, Innis, &c.	9.4
	100.0

Of these Q. 813 shows 2.8 per cent. increase and Badila 5.6 per cent. increase upon the previous year's figures, whilst H.Q. 426 shows a decrease of 3.5 per cent. upon same. The increase in N.G. 15 is mainly through the new outside area recently planted, but the increase in Q. 813 is on account of the satisfaction that it is giving as a good striker, quick grower and good density cane at practically any period of the season. The decrease of 3.5 per cent. in H.Q. 426 is, on account of its being erratic to a certain extent, deteriorating in quality and growth. M. 1900 was practically grown in the same proportion as in the previous year and gave very good returns.

E.K. 28 was only grown in small areas, but gave so much satisfaction that many 10 or 12-acre paddocks have been planted out and will be harvested this year. All of these looked very promising.

E. 208.—A few stands of this cane were seen upon a Waterson farm, showing very promising growth and seemingly clear of Leaf Stripe (or Downy Mildew) which all growers know affect this variety so adversely. The owner, an experienced farmer from Childers, says that he knows the symptoms of the disease and will watch the cane very carefully, and only replant if the cane continues clean. He is also aware that though the plant crop may seem quite clean, yet ratoons the liable to be diseased, and thus provide the possibility of affecting other varieties, and inadvertently causing serious loss to the district.

As previously reported, extraordinarily high density returns are obtained from this variety in the Burdekin district, despite the fact that Downy Mildew is often noticed slightly in the plant crop, but very badly in the ratoons. What probably checks the disease there is, may be the fact that only a plant, and at most a first ratoon crop are harvested, before ploughing out; and after the fallow period care is taken to ensure clean seed being used. At Proserpine the tendency has been to harvest ratoon crops that should have been ploughed out long before, thus encouraging any disease that may be about. Further, in this report will be found notes that apply to B. 208 and Leaf Stripe.

Diseases.—So much damage had been caused by weather conditions that it was rather hard to find whether disease or the dry conditions had been the worse. Leaf Scald was, however, noticed to be very bad in some second ratoon (Green Goru) N.G. 24B.

In the plant crop a few stools were seen to be affected, while first ratoons showed it to a far larger extent, but in the present crop many of the stools had died right out and others are rapidly withering away. The owner was advised to plough out and after fallowing plant with a resistant variety, such as Q. 813. Mosaic was noticed in a couple of stools of second ratoons of Black Innis, whilst Leaf Stripe was seen in a couple of stools of first ratoons 7 R 428 (Pompey) upon the same farm.

These two stools were part of two 9-chain rows of this cane obtained from Mackay some two years ago, and as some other seed from there planted in the district was then showing "Stripe," the writer very carefully examined the two rows in question, but could find no trace of disease, and yet it is so apparent in the first ratoons. The owner, upon being told of the danger of its spreading, promised to grub the stools out.

It is most gratifying to notice that farmers in general are now taking a very intelligent interest in plant diseases. This is very encouraging to officers of this Department.

Pests.—As practically no early planting has been carried out the Chrysomelid grub or local wire worm has not done much damage this year. A great number of Shea-Oak trees have been felled along the river banks by growers whose farms have suffered from wire worms, the idea being to destroy the feeding ground of the Chrysomelid beetle. This had been done earlier in the year, and the results will be very interesting.

Cane Grubs.—Some slight damage from grubs was apparent, but under such dry conditions it is hard to say how much damage can be attributed to the grub.

Bowen.

This district was suffering very severely from a dry spell, for although 18.46 inches had been recorded up to 4th June, only 8 points had fallen in the course of the nine weeks prior to this date. Under such conditions the cane was dying on most farms, and as so far none had been planted for next year, the future of cane-growing locally is not at all bright. Mention has often been made that the irrigation plants in use are very small, quite inadequate to keep cane at its best growth in a dry time.

In a few isolated places the cane looked healthy, notably some 13 months old plant Badila of Mr. C. C. Boulter's. This had the benefit of a better watering than cane on most of the other farms.

The Northern Field Assistant, Mr. A. P. Gibson, reports (29th June, 1926):—

The Tully.

The Tully and Mossman Sugar Mill areas were inspected this month. The extensive Tully lands whence the local modern factory expects to derive its cane supply is sandwiched by wooded uplands, through which pass the Great Northern Coast and lesser gauge mill railroads. The great valley extends east and west, and for the greater part is of alluvial formation, having for its base decomposed granite. The general make-up of the soil is somewhat patchy; on the whole, it is not deep, and varies from clay to a coarse or fine grainy structure, according to deposition at time of inundations. Since my last inspection further areas have been denuded of their dense rain forest. Tracks some 2 chains apart have been cleared through the fallen and burnt jungle, sufficient to permit the use of portable trams. Men are undertaking to do the whole operation of brushing, felling, logging (after burning), holing, planting, replanting (if necessary), and freeing the crop of weeds to a stated stage, for prices varying from £24 per acre upwards.

The Crop.—Generally good coloured but very backward and surprisingly patchy. Two inches of rain over the previous week-end had freshened things. Some very satisfactory blocks of N.G. 15 (Badila) were observed on the deeper and superior lower Tully River deposits.

Farmers possessing shallow soils having a yellow grainy clayish subsoil are recommended not to plough too deeply. The surface soil probably would be improved by turning up this substrata gradually, when it will crumble and sweeten on exposure to the action of direct sunlight.

Drainage and Lime.—Liming obviously would improve some of the Tully sugar lands; it is not actually a plant food as is sometimes supposed. Its principal benefits are as follows:—(1) Aiding the decomposition of organic matters; (2) making available mineral plant foods; (3) chiefly acting on the soil by counteracting acidity and improving its physical condition.

Planting.—Too close planting in new scrub land is not recommended.

Disease.—Much has been written regarding diseases brought about mainly by ignorance, coupled with careless plant selection. Recently planted paddocks were found to be suffering from Leaf Scald. The parent block was inspected and the disease located, thus proving the immense importance of plant selection; this can only be brought about by the hearty co-operation of all concerned. Top Rot and the fungus which binds the leaf sheaths to the cane were noted.

Pests.—Termites (white ants), cane grubs, leaf hoppers are more numerous here than any other Northern sugar district; so is the Midrib borer. The Weevil borer at present is almost absent.

Tully estimate is as follows:—Tully Proper, 80,000; El Arish, 30,000; Silkwood, 25,000. Total, 135,000.

Mossman.

Seasonal.—Satisfactory rain fell up to the end of April, although 56 in. less than that recorded for the first five months of last year. May weather was decidedly dry; moderately warm days, coupled by delightful cool nights, were experienced. Light but welcome rain commenced to fall the fifth day of June.

Rainfall.	Jan.	Feb.	March.	April.	May.	Total.
1925	18.03	19.32	37.47	11.74	.04	86.60 in.
1926	12.82	4.94	8.71	3.96	.11	30.54 in.

The Crop.—The crop at first grew rapidly, but its progress later was retarded owing to the rather long stretches of dry weather. The area to harvest is greater, and the cane per acre is expected to yield a similar tonnage to that harvested last year. On the whole, the crop is looking well, more especially the plant cane, while ratoons are considered backward in comparison to that of 1925 season. Eighty thousand tons is estimated to be crushed for the coming season, but rain is required urgently to ensure this tonnage. Curling of the leaf is much in evidence, being very pronounced on cane growing in the shallower and drier textured soils.

Cultivation.—Motor tractors have reached a high degree of efficiency, and are playing an important part in speeding up and cheapening the cost of field work. Lately implements new to the district have been introduced. The Athens, a two-disc plough, is attached between the right front and rear wheel of the Fordson tractor; it is necessary to lengthen the front axle, thereby permitting its fitting. Farmers speak highly of their good work. Medium crops of Mauritius beans have been turned under with them, less turning space is required, and the discs are simply lifted when not in operation. The first rotary plough or pulveriser arrived in the district last week; this should prove an acquisition on a large farm.

Planting.—Planting was in progress. The cane drills are run out, having centres varying all the way from 4 to 5 ft.; these are too often made far in advance of planting, resulting in unnecessary loss of soil moisture. The injudicious practice of depositing whole canes in drills and cutting them into sets as they lie is still being carried on. This idea is condemned, mainly because diseased and damaged canes are more likely to escape notice. A guide for furrow-end planting on headlands is beneficial, thus reducing waste land cleaning and also improving appearance. The farmers here are great believers in plant soaking; this adds to the cost—plants are damaged. Altogether it is a very unnecessary practice when the fields have been thoroughly tilled and the soil moist enough for seed germination. Attention is drawn to the planting of pencil-like or weedy canes; these often germinate favourably, but

there is the tendency to produce like canes. The decadence of a variety may be brought about slowly by unintentional propagation of inferior seed, therefore such seed should be eliminated.

Manuring.—Opinions differ greatly regarding what, when, and how to apply fertilisers to plant cane. Soil analysis should aid us in pronouncing what to apply. Few growers manure and leave unmanured portions for comparison, therefore nothing definite is obtained. Accumulated experience rather favours applying at least one half of the mixture along with the plant in cane drill, for when the primary roots develop, they quickly assimilate the handy manure, thereby greatly promoting the crop growth, which naturally minimises the cultivation of the crop interspaces because of their earlier covering.

Varieties.—Many varieties are grown here, but various things have a controlling influence over this great and very important subject, such as soils, rainfall, air, and heat. The earth, its make-up, depth, fertility, and drainage determine to a large degree the variety most suitable. Secondly, variety qualifications such as high c.c.s., good cropper, ratooner, harvester, and one reasonably free from diseases have also a determining influence. The Mossman lands fortunately are benefited by a good rainfall; they are not deep, nor are they suitable for N.G. 15 (Badila), save in small pockets; however, the varieties considered suitable are as follows:—H.Q. 426, Q. 813, B. 147, D. 1135, E.K. 28, the Goru family, and 7 R. 28 (Pompey).

Last year 22.66 per cent. of the total crop harvested at Mossman was H.Q. 426. It yielded an average c.c.s. of 14.84—the highest coming to the mill. It is a good germinater, grower, and cropper on the medium lands, but is subject to disease.

Q. 813, a fair cropper and good sugar producer, is suitable for the somewhat shallower medium soils. Obviously it is an extremely shallow rooter, and in consequence suffers keenly when attacked by cane grubs.

B. 147 and D. 1135 are deeper rooters and hardier canes; the latter is more extensively grown in the area yielding a c.c.s. of 13.62. E.K. 28 and Pompey could be extended on the poorer classes of land.

Disease and Pests.—Leaf Scald and Leaf Stripe are the main diseases noted of any consequence. The latter is widespread; it is also known by "jump up," so called because of the fact that affected canes quickly jump up above the surrounding healthy ones. This disease is very prevalent, more so in varieties B. 147, M.Q. 1, and D. 1135, although all more or less are affected, save Badila. It is recommended to plough out affected areas as soon as possible, and it is imperative to see that none of the old stubble left is alive, otherwise the next crop may become affected. A variety change would help reduce disease; most of the affected canes are now dying or dead.

Rats and the Weevil borer are destroying cane in places; so far, the destruction is very much less than previous years. Wild pigs sometimes raid adjacent hillside areas.

Clearing is going on at Rocky Point. Some of the well-drained black forest soils that overlie a brownish red substrata should grow cane, though at least £40 per acre would be required to prepare and plant such lands.

Port Douglas and Mossman depend on the successful running of the mill. The factory is capable of treating some 120,000 tons, but has not the surrounding good land sufficient to produce its profitable requirements. The tendency is rather a decreasing tonnage instead of an increasing one, due mainly to the poorer lands not being able to produce profitable crops at present cane prices, therefore it seems imperative that more and superior land is required for the profitable running of the factory. It would perhaps be possible to raise the cane tonnage per acre of this district by the following methods:—

(1) More thorough cultivation prior to and after planting.

(2) Assisting to restore some of the apparent depleted soil humus by the growing and turning in of green crops.

(3) Study more the varieties suitable for the many and various soils and the eradication of diseases by judicious plant selection.

(4) Some areas appear rather big for the grower, and weeds have overmastered the crop. A small farm well and wisely tilled is more profitable than a neglected big one.

Railroads.—The freeing of tramlines of grass, &c., is a costly item. The tramways have been extended further out into the Whyanbeel Creek and Saltwater area.

Arrowing.—Flowering of the cane is fairly general, D. 1135 and Black Innis perhaps being the worst.

Answers to Correspondents.

Piggery Management.

R.M. (Murgon)—

There is an old saying that "half the breeding is in the feeding," it is quite possible to reverse this and to believe that good results can only be expected from feeding when the animals carry good breeding. From a careful study of your letter, the Instructor in Pig Raising (Mr. Shelton) has but one line of action to suggest, and that is to dispose of your present stock of pigs, clean up the premises generally, fence in good-sized well-grassed pig paddocks, and start off afresh with another line of blood altogether. It does not pay to feed and handle stock that fail to develop properly and to give good results. It is only waste of time spending money on medicinal treatment when breeding is at fault, and it is quite evident from your letter that your pigs are not of a desirable strain. They appear to lack stamina and vitality and to be losing the powers of reproduction. Pigs can be tested with the Tuberculin test, but it is comparatively an expensive item and is unsatisfactory. Full details in regard to worm infestation will be found in the pamphlets forwarded, but it is almost impossible to free pigs of kidney worms by any method of drenching, for the worms imbed themselves in the fatty tissue surrounding the kidneys and in the kidneys themselves where they set up extensive inflammation. Kidney worms, or for that matter intestinal worms also, cannot be regarded as the cause responsible for paralysis of the hindquarters, though pigs heavily infested with internal parasites might go down in the back. It is evident also that your pigs are not receiving sufficient nutritious food and that the food is fibrous and somewhat indigestible. This is indicated by the sluggish action of the bowels and the lethargic condition of the animals.

China Wax Tree (*Sapium Sebiferum*).

F.W.T. (Ipswich)—

Mr. C. T. White, F.L.S., the Government Botanist, advises that your specimen is *Sapium sebiferum*, the China Wax Tree or Tallow Tree. It is also known as *Stillingia sebifera* and *Excaecaria sebifera*, but Sapium is the generic name used by the people at Kew. The Guide to the Museum of Economic Botany, Royal Botanic Gardens, Kew, contains the following:—"No. 453. Tallow from the seeds of *Sapium sebiferum* Roxb. largely collected in China for candle making. The seeds, which are enveloped in the tallow, are steamed, beaten, and sifted. The coarse tallow thus obtained is strained through a cylinder of twisted straw. The candles are usually dipped in wax, owing to the tallow becoming soft in warm weather."

Grass Identified—*Eragrostis curvula*.

"THYLUNGRA"—

The Government Botanist (Mr. C. T. White) has identified your specimen as *Eragrostis curvula*, a grass that is cultivated to a slight extent in New South Wales, and is also naturalised here and there in that State. Mr. White has, however, never previously seen a Queensland example, and the grass has evidently been introduced into Thylungra. Mr. E. Breakwell, in his "Grasses and Fodder Plants of New South Wales," remarks on this grass:—

"*Eragrostis curvula* does extremely well under cultivation, and has produced yields at Hawkesbury Agricultural College as high as 6 tons of green feed per acre. Owing to its drought resistance it was taken up by different farmers, and although it has been reported on favourably, both for drought resistance and for palatability, it does not seem to have taken on to any extent. Farmers of Taylor's Arm, Nambucca River, have found it an extremely useful grass for spreading over hillsides of poor country, and testify that cattle eat it very readily when it is young.

"Although *Eragrostis curvula* is looked on as a permanent grass, it seems to die out after a few years if subjected to hard conditions. New seedlings, however, are constantly appearing, and it could undoubtedly be maintained in a permanent pasture by allowing it to seed. Generally speaking, this grass may be recommended for spreading over burnt ashes in scrub country, of poor formation, where it will act as a good standby in times of drought."

Native Kapok ***(Cochlospermum Gillivraei).***

A.W. (Bowen)—

Your specimen, Mr. White (Government Botanist) has advised, proved to be *Cochlospermum Gillivraei*, sometimes known as "Native Kapok." It is a shrub or small tree that occurs on the North Queensland Coast. The flowers are yellow, large, and rather handsome. It is commonly more or less leafless when in full flower. The cottony material surrounding the seeds has no commercial value except perhaps as a poor quality Kapok.

Lawn Grasses—"Blue Grass," "Texas Blue Grass."

R.T.B. (Brisbane)—

The Government Botanist (Mr. C. T. White, F.L.S.) has kindly supplied the following replies:—

1. What is the botanical name of the grass known locally as "Blue" or "Nundah" Couch?—*Panicum didactylum.*
2. Is this grass a native of Queensland or an introduced one?—Rather doubtful; now generally conceded to be a native, but overlooked until comparatively recent years.
3. Can it be germinated from seed, or only sod planting such as is usually practised?—Yes. But seed is rather unreliable.
4. Does the Texas Blue Grass (*Poa arachnifera*) adapt itself to the Southern Queensland conditions?—The only place in Queensland we have records of this grass growing is the Darling Downs. It would probably do well there and possibly also in the Lockyer country, but I am rather doubtful about its doing well on the coast. The grass has never become very popular, largely on account of its inability to set much seed.
5. Does the Texas Blue Grass spread only by subsurface "shoots," as is the case with *Poa pratensis* or *Poa compressa*, and is the leaf or the flag of a similar fine texture as the others of the Poa species?—As far as I know Texas Blue Grass is very much similar in growth to the Kentucky Blue Grass (*Poa pratensis*), but is of a larger and coarser habit. It is not used for lawns in the same way as the Kentucky Blue Grass. I have seen this latter grass doing well about Brisbane during the later winter and the spring months, but it seems to die out with the approch of the summer.

"Tar Tree" ***(Carpus australiensis)*****—N.Q. Bolly Gum** ***(Blepharocarya involucrigera).***

"C.P." (Cairns)—

The Government Botanist, Mr. C. T. White, F.L.S., advises that the tree known about Cairns as the "Tar tree" is *Semecarpus australiensis* of the family Anacardiaceae, a family of about 500 species, widely distributed over the tropics and subtropics of the world; a few species extend into the temperate parts of the world. A well known number of the family is the common Mango (*Mangifera indica*). Many of the species are characterised by the possession of a blistering sap. This is even noticeable in the common Mango, the sap of which has the tendency to blister the skin. The well known state of "Mango Mouth," in which small blisters occur in the soft parts of the mouth, is no doubt well known to you; this is caused mostly by the sap from the skin of the fruit. Two of the best known skin irritants are, of course, the "Poison Ivies" of North America (*Rhus toxicodendron* and *Rhus venenata*) which cannot be handled by many people without their skin coming out in a rash which takes a long time to heal. Some persons cannot even bear being near the plants, others are quite unaffected by them. The North Queensland Bolly Gum (*Blepharocarya involucrigera*) belongs to this family, and the sap of the wood, if it gets into cuts or wounds on hands, arms, &c., causes severe swellings and pains. The active principle of many of these Anacardiaceous plants has not been isolated, but it doubtless varies in different species, so that treatment would vary according to the species involved. In the poison Ivies of North America the poison is a sticky non-volatile oil which is slowly oxidised in contact with the air to a resin. Under such circumstances the treatment by ointment tends to spread the trouble rather than check it. The reason is that these ointments become almost liquid at body temperature and so dissolve the oil and carry it to other parts of the body. Well scrubbing with soap and water has been found the most effective treatment. Possibly similar treatment would prove best for those affected by the "Tar Tree," but on this matter we have no very reliable data.

Hoya Poisoning.

J.J. (Boompa)—

The Government Botanist (Mr. C. T. White, F.L.S.) advises that Hoya is poisonous at any stage of its growth. It is not known whether or not it is more toxic after rain. Mr. A. McGown, M.R.C.V.S., Government Veterinary Surgeon, has recommended the following treatment for affected stock:—1 lb. Epsom salts and 1 lb. treacle should be given as soon as the animal is noticed to be sick, which should be followed daily with 2 dr. potassium iodide dissolved in half a pint of water.

Green-topped Stringybark and White Stringybark.

M.L.P. (Toowoomba)—

The Government Botanist, Mr. C. T. White, F.L.S., advises that your identification of the specimens submitted is quite correct. No. 1 is the Green-topped Stringybark (*Eucalyptus hæmastoma* var. *micrantha*). No. 2 is the White Stringybark (*Eucalyptus eugenioides*), except the small dried fruits with seed pods. To understand the differences between the flowers and fruits of the two species it is necessary to know a little of the structure of the Eucalyptus flower. The petals are missing; one of their functions in the flower is to protect the interior parts (stamens and pistil) in the young stage; in Eucalyptus their place is taken by an "operculum," a little cap formed by the welding together of the calyx-lobes or sepals. The shape and length of both calyx tube and operculum, but particularly the latter, are important distinguishing characters between the species. In the Gum-topper Stringybark the operculum is short in comparison to the tube, thus the seed capsules are on long stalks and have a broad rounded ring. In the White Stringybark the tube and cap are more nearly the same length, thus the seed capsules are larger and on much shorter stalks, sometimes quite sessile "stalkless."

Eucalyptus.

O.V. (Wondai)—

The Government Botanist, Mr. C. T. White, F.L.S., advises that the leaves you submitted are not those of the Citron-scented gum (*Eucalyptus citriodora*), the tree which occurs about Gladstone and elsewhere, and which produces an oil of high commercial value. It is very difficult to name accurately leaves from young trees or stump shoots, but Mr. White thinks there is little doubt that your specimen belongs to the Red Stringybark (*Eucalyptus resinifera*). The yield of oil is rather low in this species (0.48 per cent.), but the cineol content is high, so the oil conforms to the requirements of the British Pharmacopœia. The price, however, of such oils is low, about 10d. in comparison with 6s. to 7s. for the oil of the tree from the Gladstone district.

Plants Identified.

A.B. (Townsville)—

The Government Botanist, Mr. C. T. White, F.L.S., advises that the specimens forwarded with your letter of the 24th ultimo proved to be—

1. *Asclepias curassavica.*—The "Milky Cotton Bush," also known as "Wild Oleanda," "Red Head," and "Wall-flower Cotton Bush." It belongs to a family—the Asclepiadaceae—which contains a number of plants known to be poisonous. Eaten in quantity the present plant may prove harmful, but Mr. White has often seen stock trim the plants without ill effects following. It has been suspected, but nothing has been definitely proved against it by feeding tests or otherwise.

2. *Solanum torvum.*—"Devil's Fig." The substance you refer to as giving the chemical reactions for Atropine would no doubt come from the plant. If the sheep were eating the green berries, as possibly they would, ill effects would most likely follow. This is the plant Mr. White is inclined to suspect as the source of the trouble.

3. *Tremna aspera.*—"Peach-leaf Poison Bush," "Peach Poison," or "Wild Peach." This plant is generally regarded as one of our worst poisonous, but Mr. White has times without number seen stock feed very freely on it without any ill effects following. The plant at rather rare periods develops a prussic-acid yielding glucoside and when fed freely on by stock at such times may cause death.

Red Natal Grass *(Tricholaena rosea).*

L.G.A. (Cooroy)—

The Government Botanist (Mr. White) advises that the grass you forwarded is the Red Natal Grass (*Tricholaena rosea*); as its popular name indicates, it is a native of South Africa. It has been naturalised in Queensland for many years and is very abundant along railway cuttings, edges of cultivation paddocks, &c. It has rather a mixed reputation, many people speaking highly of it as a fodder. Mr. White regards it as, at best, of only secondary quality; it is also very easily pulled up by the roots, and does not stand heavy stocking. Breakwell in his "Grasses and Fodder Plants of New South Wales" says that where White clover has proved a failure, Red Natal Grass may have a distinct advantage when grown in conjunction with paspalum in providing an alternative food-plant. However, White Clover does well with you, and you have Rhodes, Prairie, and other grasses, which are ar superior to the Red Natal.

Tropical Plants.

F.B. (Kolijo)—

The Government Botanist, Mr. C. T. White, F.L.S., does not think that under Queensland conditions there is much possibility of any of the plants you mention being profitably grown here on a large scale.

1. Turmeric Roots and Cardamon Seeds.—These are not obtainable here so far as Mr. White knows, and would have to be imported. These products are imported principally for use in the manufacture of curry powders and condiments. The plants are grown extensively in India and Ceylon; the demand in Australia is limited.
2. Yam Bean (*Pachyrhiza angulata*) is occasionally seen about Chinamen's gardens, &c., in North Queensland. It is grown as a green manure and also as a food, but the tubers are low in food value and do not appeal to the European palate.
3. Cloves.—Seed would have to be imported.
4. Pimento.—There is a tree in the Brisbane Botanic Gardens that seeds freely. No doubt we could obtain some for you from the next crop if so desired.
5. *Parinarium Laurinum* (Fiji Oil Laurel).—Seeds would be difficult to obtain.
6. Jute.—Seed would have to be imported from India.
7. Breadfruit.—Plants might have to be imported. The better variety is, of course, seedless; it may be obtainable here, but inquiries would have to be made. The fruit is primarily a native food, and would have little general commercial value in Queensland. It must be used quite fresh and would not carry.
8. Jack-fruit.—Growing fairly commonly in Queensland, but mostly as an ornamental tree; there is very little demand for the fruit.
9. Betel-nut.—The demand is very limited. Seeds would have to be imported.
10. African Oil Palm.—One is growing in the Brisbane Botanic Gardens, but does not seed. It occurs in one or two North Queensland Gardens and seed might be obtained from them. The possibility of this palm as a commercial crop in Queensland seems almost nil.
11. Ramie.—This has been tried here but did not prove a commercial success.

If you desire further information on these matters or other crops likely to take the place of cane, write to the Under Secretary of this Department. Your queries will be answered as far as possible.

Tree Identified *(Albizzia Lebbek).*

W.D.A. (Gatton)—

The Government Botanist, Mr. C. T. White, F.L.S., advises that the tree, of which you forward a specimen, is *Albizzia Lebbek*, the "Siris" tree of India. It is much planted in Queensland as an ornamental tree and stands dry conditions fairly well; on this account it is planted rather extensively in Western Queensland, particularly in the Central West, where it is commonly known as "Acacia." In the wild state the trees attain a good size, and the dark heart-wood seasons, works and polishes well. The leaves and twigs are said to be given as fodder to camels.

Queensland Flora—(*Alstonia*).

A.H.B. (Townsville)—

1. The best works on Queensland Flora are:—"Queensland Flora," by the late F. M. Bailey, 6 vols. Price 30s. the set. "Comprehensive Catalogue of Queensland Plants," by the late F. M. Bailey. Price 15s. The latter is probably the work you saw in Melbourne. It is really a profusely illustrated companion to the "Queensland Flora." As a general text-book you might find Mr. Cyril White's (Government Botanist) "Elementary Text-Book of Australian Forest Botany" of some use.

2. Mr. White advises that several species of *Alstonia* occur in Papua. The most common is *A. scholaris*, which occurs throughout the East, through New Guinea to North Queensland. In Queensland it goes under the name of "Milk Pine." Both the bark of this species and of *A. constricta* are, Mr. White thinks, now official in the British Pharmacopœia.

"Scented Top" Grass—*Chrysopogon Parviflorus*.

J.H.McC. (Dalby)—

Your specimen has been identified by Mr. White as *Chrysopogon parviflorus*, the Scented Top. The local name is derived from the peculiar and rather pleasant scent of the seed head; this scent is very noticeable if the seeds are rubbed between the hands. It is a native grass, fairly common in some places, and is looked on as a comparatively good feed and fairly drought resistant. Horses and cattle are fond of it, but it is generally regarded as rather coarse for sheep.

Macadamia and Helicia—Queensland Species.

H.J.R. (Dundas, N.S.W.)—

Mr. White (Government Botanist) has kindly supplied this list of the Queensland species of the two genera referred to:—

MACADAMIA.

1. *M. ternifolia*. The "Common Queensland Nut" or "Bush Nut." In a wild state ranges from the Tweed River to the Dawson River.

2. *M. ternifolia* var. *integrifolia*. Much the same range as the normal form.

3. *M. minor*. Gympie district. This species possesses a very small nut; the nut was regarded as poisonous by the natives; it is bitter in flavour and contains a cyanophoric (prussic acid yielding) glucoside.

4. *M. Whelani*. Bellenden-Ker region, North Queensland. Most abundant in the "scrubs" (rain forest) of the Gympie district; the nuts are only eaten by the natives after prolonged immersion in running water.

5. *M. praealta*. Southern Queensland. Most abundant in the Gympie district. Nut valueless.

Excluded Species.—M. Lowii. I think this hardly separable from *Macadamia minor*.

HELICIA.

1. *H. Youngiana*. Known in Queensland as the "Spice Bush," from the scent of the flowers. Not uncommon in the scrubs or rain forests of Southern Queensland.

2. *H. Cribbiana*. Only known from one or two localities in North Queensland.

3. *H. ferruginea*. All "scrubs" (rain forests) from Brisbane to Cairns.

4. *H. glabriflora*. In "scrubs" (rain forests) from the Maepherson Range to the Eungella Range (Mackay district).

5. *H. Heyana*. Only known from the Bellenden-Ker region. Nut unknown.

6. *H. australasica*. Cairns timber district, North Queensland.

7. *H. diversifolia*. Atherton Tableland, North Queensland. The fruit is rather large, blue, and fleshy. It contains a pitted, stony endocarp, enclosing a pleasantly flavoured kernel. The other species of Helicia are valueless as nut producers.

Excluded Species.—H. Nortoniana. I cannot see how this can very well be separated from *H. ferruginea*.

WEANING THE PIG.

E. J. SHELTON, H.D.A., Instructor in Pig Raising.

Among matters worthy of special attention on the pig farm is that dealing with the correct age at which to wean the pigs. There is no hard and fast rule that must be followed to ensure success, as the age at which to wean the pigs will depend largely on the system of management that is followed on the farm.

If it is intended (as it should be) that the sow is to produce two litters yearly, it will be necessary to wean the pigs as early as practicable in order to allow of the sow being mated in time for the next farrowing. For this reason, it is advisable to wean the pigs when they are eight weeks old. The sow carries her pigs for four months (the gestation period is usually 112 days), and suckles them for two months, making six months in all with each litter. In general the sow will come in season three days after farrowing, and every three weeks (or twenty-one days) after that, although it rarely happens that the sow will "show" as being "on heat" before the ninth week after farrowing, and it is at this ninth-week period when it is advisable that she should be mated to the boar.

Some breeders are able, in the case of a sow with a very small litter, to induce the sow to come "in season" by keeping her and her litter separated for several nights in succession at about the sixth week after birth or even sometimes at the three-day or three-week period. In cases of this description, it is sometimes an advantage to feed the sow more liberally after going "in pig" and to allow her to suckle her pigs for a longer period, but this system can only be recommended in cases where the sow has a small litter or where the sow is carrying plenty of condition, for the gestation and lactation periods are severe on the dam and impose a double burden on her at a time when she should be storing nutrients and building up her body generally in preparation for the litter to arrive and be suckled.

If the young pigs, when about three or four weeks old, are provided with a small trough (a concrete, steel, or block tin trough preferred) placed in some convenient spot where the sow cannot get at the trough, they will soon learn to eat and drink freely, and if they are also allowed good pasture, the process of weaning will not prove a hardship, nor will the pigs be checked in growth. The strain on the sow will not be as great either if the young pigs are handled in this way. Both sow and suckers should also be allowed an abundant supply of drinking water. If, on the other hand, care and attention are not bestowed on both sow and litter, and if the young pigs have to depend on battling and fighting at the trough for a mouthful of feed while the sow and perhaps other pigs are feeding, then the weaning period will be a very severe one on the pigs, and the sow will not do as well.

For three or four days previous to weaning time, the sow that is to be weaned off her pigs should only receive about one half of her ordinary ration; this will cause a decrease in the milk flow. It is usually then advisable to take the sow away from the litter, leaving the young pigs in the same pens or pasture that they have been accustomed to. These pens and pastures should be clean, sanitary, and of goods area, and so be conducive to rapid growth and gain in weight.

The sow should be handled carefully until her milk flow dries up. Some breeders allow the smallest pigs to remain with the sow for a week or so longer after the largest ones have been weaned, and this practice is to be commended, particularly if the sow has an abundant supply of milk and has been rearing a large litter. At any other time, weaning might take place when the pigs are eight weeks old. It is a decided advantage, if it can so be arranged, to allow a small weakly litter to remain on the sow until the pigs are about ten or twelve weeks old, in order to give them the additional benefit of the sow's milk, but this will hardly be necessary if the young pigs have been taught to eat from a separate trough whilst still suckling the mother.

Young pigs should be given an allowance of lime-water in their milk or other food two or three times a week, they should always have access to a water supply, and should be provided with charcoal, bone meal, and wood ashes, as well as with a lump of rock salt to lick at their leisure.

Given these conditions, weaning should not check their development.

Further reference is made to the subject of losses due to weaning pigs at too early an age in a series of articles on marketing pigs in Queensland, copies of which, with other information relative to the industry, can be obtained on application to the Department of Agriculture and Stock, Brisbane.

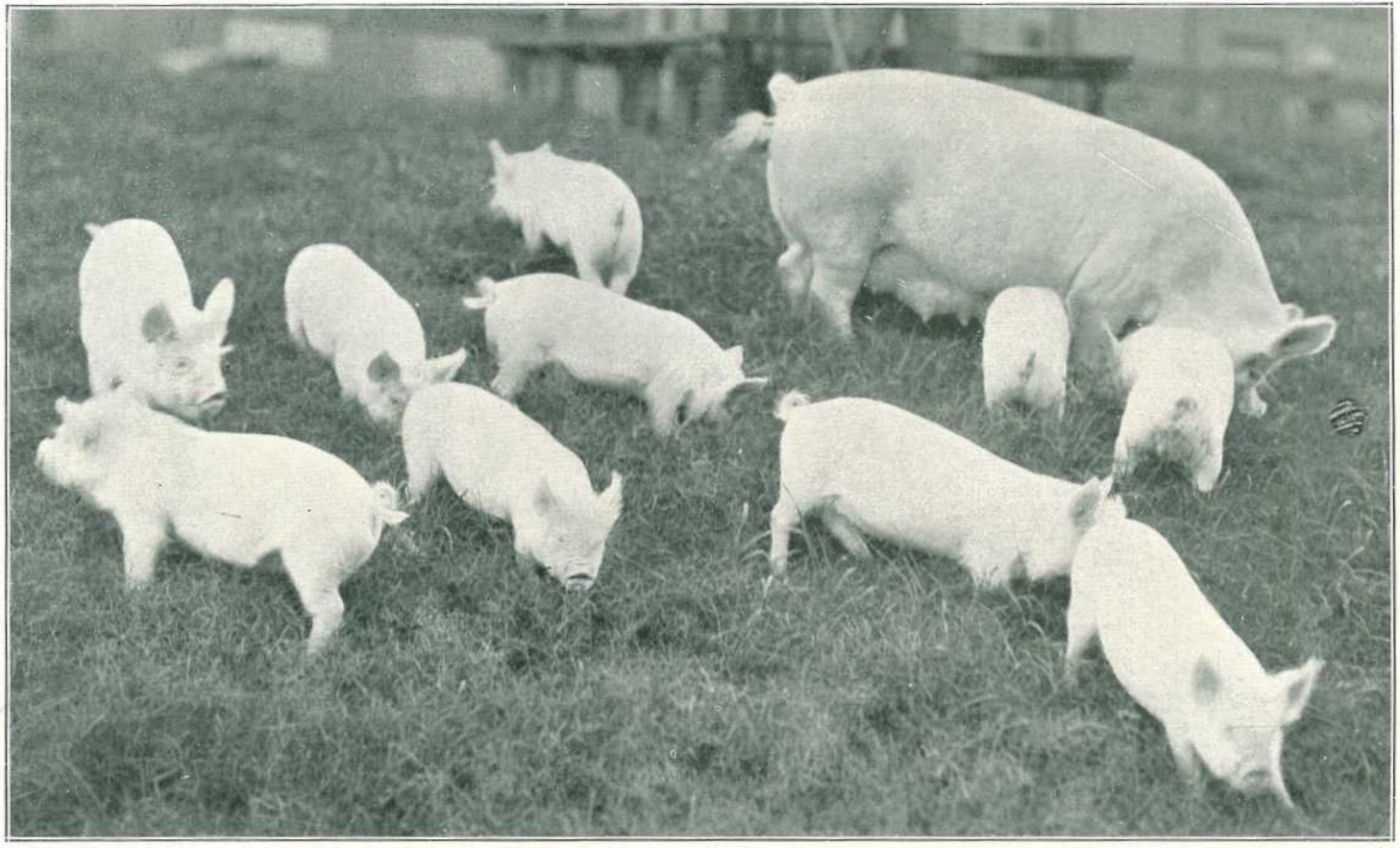


PLATE 8.—A BONNY LITTER JUST READY FOR WEANING.

A Prize-winning Litter at Sydney Show, exhibited by the owner, Mr. M. Marshall, Herdsman for Mr. Ralph Joyce, of Kyabram, Victoria. These pigs were sired by the Champion Boar "Drayton's Chief," and were from that well-known prize-winning sow "Leona."

Pigs of this quality are not difficult to handle for they have become accustomed to other food in addition to the mother's milk before weaning. Note their even development, splendid quality, and rapid growth.

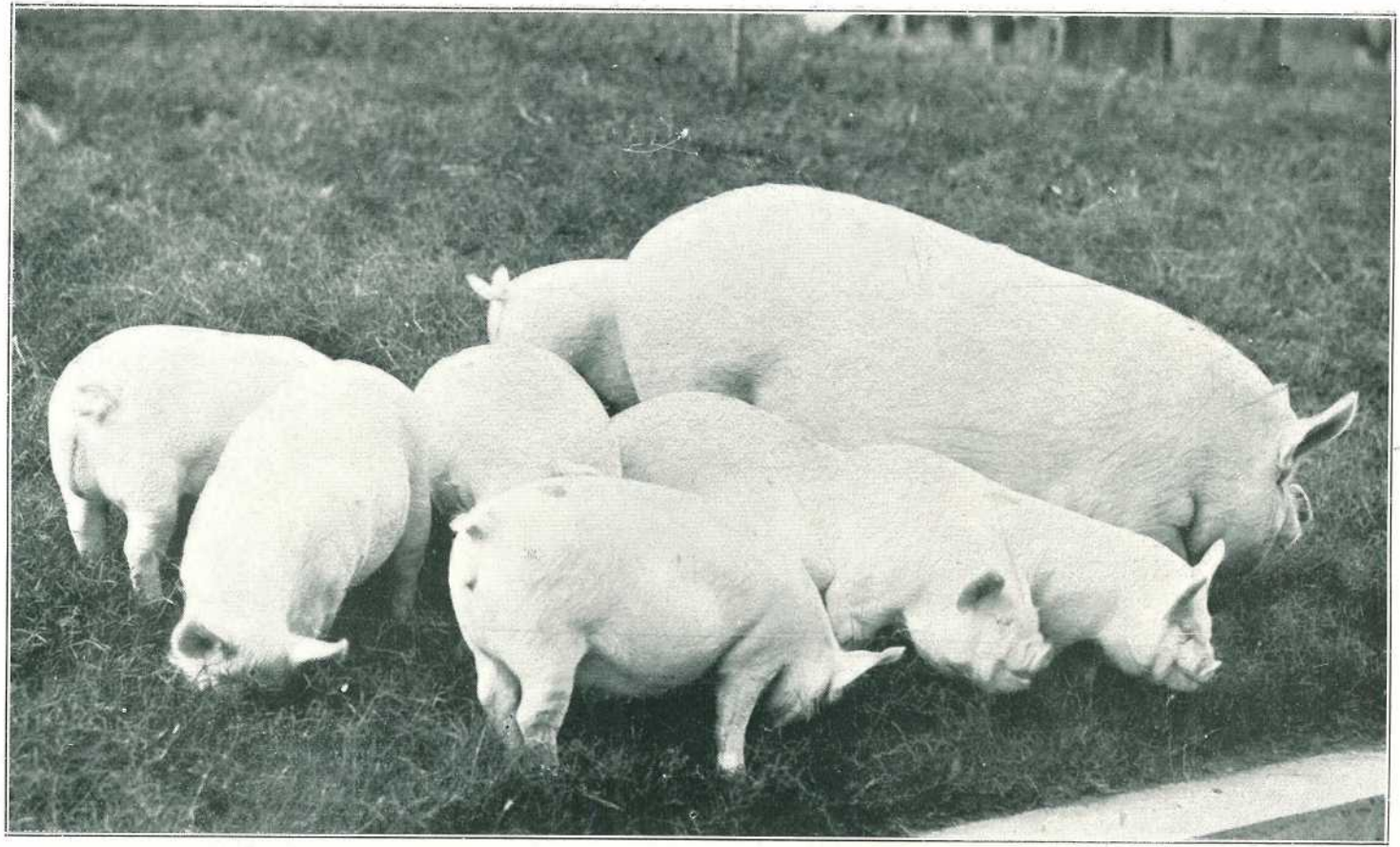


PLATE 9.—FIRST PRIZE MIDDLE YORKSHIRE SOW WITH LITTER, SYDNEY SHOW.

Ralph Joyce's "Kyabram Beauty" 2465. The litter is sired by "Coleraine" 2234, who won the Progeny Group Prize, Royal Show, Melbourne, 1922. This litter was line-bred. The sow only had the seven pigs, but made an exceptionally good job rearing them. The small black stain on the backs of the suckers are sale (paint) marks only. An exceptionally well-developed lot.

PLATE 10.—A THRIFTY, PROFITABLE LITTER.

Litter of Berkshire–Tamworth Pigs, fourteen in number, 8 weeks old, the property of Mr. George Stanfield, "Stanberry," Wondai. The sire was a pedigreed Berkshire boar, purchased at Wyreema, and the dam a Gatton College Tamworth sow.

PLATE 11.—FINDING THE PEAS.

A group of young pigs at the Warren State Farm after weaning. These young pigs had the benefit of a roomy pasture, portion of which had been well littered over with cow pea hay. The pigs appear to be enjoying the search for the hidden peas.

THE HAMILTON COLD STORES.

The Minister for Agriculture (Hon. W. Forgan Smith) stated in the course of a recent Press interview that he had read the remarks of Mr. Wilkin, the President of the Queensland Butter and Cheese Manufacturers' Association, in his address delivered at the recent Factory Managers' Conference. He, Mr. Wilkin, referred to the Hamilton Cold Stores and mentioned the poor support given by the manufacturers of dairy produce to the Cold Stores. Mr. Wilkin stated he considered, too, that the site of the Cold Stores was not suitable, either for shipping or for the drawing of butter for local or interstate sales. It is recognised, said the Minister, that the adverse season has affected the production of dairy produce and, incidentally, this has reduced the amount normally available for cold storage. It can be definitely stated that the cold storage facilities at the Hamilton are equal, if not superior, to anything in the Southern Hemisphere, and the storage charges could not be reduced without causing a deficiency which would have to be made good by the general taxpayer. The site of the Cold Stores was selected after careful consideration of the whole of the circumstances, and if Brisbane continues to expand at the present rate it will not be long before the Cold Stores will be practically in the heart of the city. The site selected allows of special facilities in the matter of loading of produce from the Cold Stores into the ship's hold, which is quite a consideration in the hot summer weather. The oversea liners of all shipping companies trading to this port have, with one exception, berthed their vessels at the Cold Stores Wharf and many shipping masters have made complimentary reference to the splendid facilities that are provided there. While the conference was sitting a vessel called to pick up a small parcel of butter and this limited amount of cargo would not have enticed the vessel to berth specially at the wharf if the facilities were not complete and convenient. Mr. Wilkin made special reference to the interstate and local trade in butter. With the advent of methods for the organised marketing of dairy produce the Minister pointed out that it is possible that the interstate trade in butter may be reduced in volume, and the experience of this season goes to show a reduced tonnage called for by Southern States. Little or no butter required for local sales is cold stored, and consequently this class of trade is not affected to any material extent.

GESTATION CHART FOR PIGS.

Jan.	Date of Farrowing	Feb.	Date of Farrowing	March.	Date of Farrowing	April.	Date of Farrowing	May.	Date of Farrowing	June.	Date of Farrowing	July.	Date of Farrowing	Aug.	Date of Farrowing	Sept.	Date of Farrowing	Oct.	Date of Farrowing	Nov.	Date of Farrowing	Dec.	Date of Farrowing
1	22 April	1	23 May	1	20 June	1	21 July	1	20 Aug.	1	20 Sept.	1	20 Oct.	1	20 Nov.	1	21 Dec.	1	20 Jan.	1	20 Feb.	1	22 Mar.
2	23 ,,	2	24 ,,	2	21 ,,	2	22 ,,	2	21 ,,	2	21 ,,	2	21 ,,	2	21 ,,	2	22 ,,	2	21 ,,	2	21 ,,	2	23 ,,
3	24 ,,	3	25 ,,	3	22 ,,	3	23 ,,	3	22 ,,	3	22 ,,	3	22 ,,	3	22 ,,	3	23 ,,	3	22 ,,	3	22 ,,	3	24 ,,
4	25 ,,	4	26 ,,	4	23 ,,	4	24 ,,	4	23 ,,	4	23 ,,	4	23 ,,	4	23 ,,	4	24 ,,	4	23 ,,	4	23 ,,	4	25 ,,
5	26 ,,	5	27 ,,	5	24 ,,	5	25 ,,	5	24 ,,	5	24 ,,	5	24 ,,	5	24 ,,	5	25 ,,	5	24 ,,	5	24 ,,	5	26 ,,
6	27 ,,	6	28 ,,	6	25 ,,	6	26 ,,	6	25 ,,	6	25 ,,	6	25 ,,	6	25 ,,	6	26 ,,	6	25 ,,	6	25 ,,	6	27 ,,
7	28 ,,	7	29 ,,	7	26 ,,	7	27 ,,	7	26 ,,	7	26 ,,	7	26 ,,	7	26 ,,	7	27 ,,	7	26 ,,	7	26 ,,	7	28 ,,
8	29 ,,	8	30 ,,	8	27 ,,	8	28 ,,	8	27 ,,	8	27 ,,	8	27 ,,	8	27 ,,	8	28 ,,	8	27 ,,	8	27 ,,	8	29 ,,
9	30 ,,	9	31 ,,	9	28 ,,	9	29 ,,	9	28 ,,	9	28 ,,	9	28 ,,	9	28 ,,	9	29 ,,	9	28 ,,	9	28 ,,	9	30 ,,
10	1 May	10	1 June	10	29 ,,	10	30 ,,	10	29 ,,	10	29 ,,	10	29 ,,	10	29 ,,	10	30 ,,	10	29 ,,	10	1 Mar.	10	31 ,,
11	2 ,,	11	2 ,,	11	30 ,,	11	31 ,,	11	30 ,,	11	30 ,,	11	30 ,,	11	30 ,,	11	31 ,,	11	30 ,,	11	2 ,,	11	1 April
12	3 ,,	12	3 ,,	12	1 July	12	1 Aug.	12	31 ,,	12	1 Oct.	12	31 ,,	12	1 Dec.	12	1 Jan.	12	31 ,,	12	3 ,,	12	2 ,,
13	4 ,,	13	4 ,,	13	2 ,,	13	2 ,,	13	1 Sept.	13	2 ,,	13	1 Nov.	13	2 ,,	13	2 ,,	13	1 Feb.	13	4 ,,	13	3 ,,
14	5 ,,	14	5 ,,	14	3 ,,	14	3 ,,	14	2 ,,	14	3 ,,	14	2 ,,	14	3 ,,	14	3 ,,	14	2 ,,	14	5 ,,	14	4 ,,
15	6 ,,	15	6 ,,	15	4 ,,	15	4 ,,	15	3 ,,	15	4 ,,	15	3 ,,	15	4 ,,	15	4 ,,	15	3 ,,	15	6 ,,	15	5 ,,
16	7 ,,	16	7 ,,	16	5 ,,	16	5 ,,	16	4 ,,	16	5 ,,	16	4 ,,	16	5 ,,	16	5 ,,	16	4 ,,	16	7 ,,	16	6 ,,
17	8 ,,	17	8 ,,	17	6 ,,	17	6 ,,	17	5 ,,	17	6 ,,	17	5 ,,	17	6 ,,	17	6 ,,	17	5 ,,	17	8 ,,	17	7 ,,
18	9 ,,	18	9 ,,	18	7 ,,	18	7 ,,	18	6 ,,	18	7 ,,	18	6 ,,	18	7 ,,	18	7 ,,	18	6 ,,	18	9 ,,	18	8 ,,
19	10 ,,	19	10 ,,	19	8 ,,	19	8 ,,	19	7 ,,	19	8 ,,	19	7 ,,	19	8 ,,	19	8 ,,	19	7 ,,	19	10 ,,	19	9 ,,
20	11 ,,	20	11 ,,	20	9 ,,	20	9 ,,	20	8 ,,	20	9 ,,	20	8 ,,	20	9 ,,	20	9 ,,	20	8 ,,	20	11 ,,	20	10 ,,
21	12 ,,	21	12 ,,	21	10 ,,	21	10 ,,	21	9 ,,	21	10 ,,	21	9 ,,	21	10 ,,	21	10 ,,	21	9 ,,	21	12 ,,	21	11 ,,
22	13 ,,	22	13 ,,	22	11 ,,	22	11 ,,	22	10 ,,	22	11 ,,	22	10 ,,	22	11 ,,	22	11 ,,	22	10 ,,	22	13 ,,	22	12 ,,
23	14 ,,	23	14 ,,	23	12 ,,	23	12 ,,	23	11 ,,	23	12 ,,	23	11 ,,	23	12 ,,	23	12 ,,	23	11 ,,	23	14 ,,	23	13 ,,
24	15 ,,	24	15 ,,	24	13 ,,	24	13 ,,	24	12 ,,	24	13 ,,	24	12 ,,	24	13 ,,	24	13 ,,	24	12 ,,	24	15 ,,	24	14 ,,
25	16 ,,	25	16 ,,	25	14 ,,	25	14 ,,	25	13 ,,	25	14 ,,	25	13 ,,	25	14 ,,	25	14 ,,	25	13 ,,	25	16 ,,	25	15 ,,
26	17 ,,	26	17 ,,	26	15 ,,	26	15 ,,	26	14 ,,	26	15 ,,	26	14 ,,	26	15 ,,	26	15 ,,	26	14 ,,	26	17 ,,	26	16 ,,
27	18 ,,	27	18 ,,	27	16 ,,	27	16 ,,	27	15 ,,	27	16 ,,	27	15 ,,	27	16 ,,	27	16 ,,	27	15 ,,	27	18 ,,	27	17 ,,
28	19 ,,	28	19 ,,	28	17 ,,	28	17 ,,	28	16 ,,	28	17 ,,	28	16 ,,	28	17 ,,	28	17 ,,	28	16 ,,	28	19 ,,	28	18 ,,
29	20 ,,	—	—	29	18 ,,	29	18 ,,	29	17 ,,	29	18 ,,	29	17 ,,	29	18 ,,	29	18 ,,	29	17 ,,	29	20 ,,	29	19 ,,
30	21 ,,	—	—	30	19 ,,	30	19 ,,	30	18 ,,	30	19 ,,	30	18 ,,	30	19 ,,	30	19 ,,	30	18 ,,	30	21 ,,	30	20 ,,
31	22 ,,	—	—	31	20 ,,	—	—	31	19 ,,	—	—	31	19 ,,	31	20 ,,	—	—	31	19 ,,	31	22 ,,	31	21 ,,

NOTE.—Black figures in above table indicate date of service.

This chart presents in an instructive form figures relating to the gestation period of brood sows. For example, a sow mated to the boar on 1st January is due to farrow on 22nd April; a sow mated on 1st July is due on 20th October. The chart should be preserved for future reference by breeders of all classes of pigs. The normal period of gestation, *i.e.*, the period from the time of conception to the birth of the young pigs, is 112 days, this period is sometimes remembered as roughly three months three weeks three days, or 16 weeks. With very young sows the period is sometimes of shorter duration, and instances are on record where young sows have farrowed at from 100 to 108 days after becoming pregnant; on the other hand, old sows in abnormal condition have been known to carry their young for more than 140 days.—E. J. SHELTON, H.D.A., Instructor in Pig Raising.

HONEY SORGHO.

N. A. R. POLLOCK, H.D.A., Northern Instructor in Agriculture.

A variety of sorghum that has given exceptionally fine results in several trials in the Northern Division of the State is that known as Honey Sorgho, seed of which was secured from the Bureau of Agriculture, Washington, U.S.A., some three years ago. The first trial in 1924 on O. T. M. Hansen's farm at Carbeen, on the Atherton Tableland, yielded at the rate of 25 tons 5 cwt. 2 qr. 12 lb. per acre.

The trials the following year on the same farm, sown at different periods, yielded at the rate of 31 tons 16 cwt. 1 qr. 20 lb. and 33 tons 15 cwt. 2 qr. 24 lb. respectively.

A further trial this year on Mr. C. Daybell's farm, at Proserpine, yielded at the rate of 34 tons 9 cwt. 1 qr. 24 lb. per acre, the growth being made between 15th January and 1st May.

The following interesting particulars are taken from Mr. Daybell's crop record:—The soil on the experimental plot is heavy alluvial scrub, over clay, on which sugar-cane had been previously grown. The land preparation covered one ploughing, three harrowings, and once over with a spring-tooth. The condition of the soil at the time of planting was rough and moist. "Stud" seed was used. Drills were 3 ft. apart, and the seed was spaced thinly at the rate of 4 lb. per acre. Germination was 100 per cent. In subsequent cultivation the plot was scarified three times. The rainfall record in the course of the period of growth was 2,209 points from January to May. The quality of the crop was excellent and true to type. It was cut for green feed mainly, but some was held back for seed.

This year at Charters Towers, on the farm of Mr. T. James, under irrigation from an overhead tank filled from a windmill-driven pump and without any irrigation, a growth of 7 ft. immature was obtained in eight weeks.

Honey Sorgho, as its name implies, is very sweet, and is greatly relished by stock of all kinds. Its generally high yield in the North indicates that it will eventually displace saccharline in popular favour.

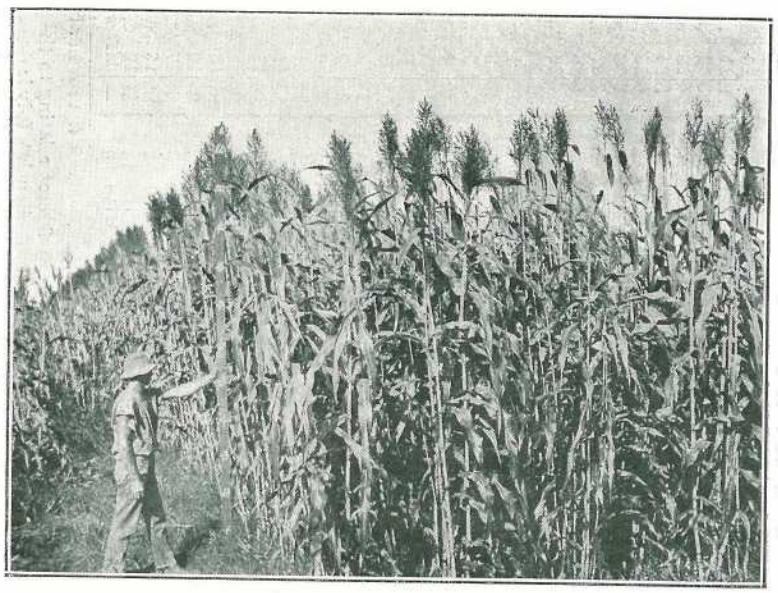


PLATE 12.—HONEY SORGHO, EXPERIMENTAL PLOT, C. R. DAYBELL'S FARM, PROSERPINE.

Sown, 11th January, 1925; Estimated, 1st May, 1925; Seed just set but not hard; Yield per acre, 34 tons 9 cwt. 1 qr. 24 lb.

PLATE 13.—HONEY SORGHO, HALF GROWN, O. T. M. HANSEN'S FARM, CARBEEN, ATHERTON TABLELAND.

PLATE 14.—HONEY SORGHO UNDER IRRIGATION AT T. JAMES'S FARM, CHARTERS TOWERS, MAY, 1926.

Height 7 feet in 8 weeks' growth.

PLATE 15.—HONEY SORGHO, O. T. M. HANSEN'S FARM, CARBEEN.

QUEENSLAND SHOW DATES, 1926.

The following is the official list of Queensland Show Dates for 1926, as issued by the Queensland Chamber of Agricultural Societies:—

Charters Towers: 14th and 15th July.
Caboolture: 15th and 16th July.
Ingham: 16th and 17th July.
Mount Gravatt: 17th July.
Maleny: 21st and 22nd July.
Rosewood: 23rd and 24th July.
Ayr: 23rd and 24th July.
Ithaca: 24th July.
Barcaldine: 27th and 28th July.
Bowen: 28th and 29th July.
Nambour: 28th and 29th July.
Proserpine: 30th and 31st July.
Pine Rivers: 30th and 31st July.
Redcliffe: 4th and 5th August.
Sunnybank: 7th August.
Royal National: 9th to 14th August.
Crow's Nest: 25th and 26th August.
Coorparoo: 28th August.
Wynnum: 3rd and 4th September.
Imbil: 8th and 9th September.
Zillmere: 11th September.
Gympie: 15th and 16th September.
Beenleigh: 16th and 17th September.
Stephens: 18th September.
Pomona: 22nd and 23rd September.
Malanda: 22nd and 23rd September.
Esk (Camp Drafting): 24th and 25th September.
Melbourne Royal: 16th to 25th September.
Rocklea: 25th September.
Nundah: 1st and 2nd October.
Kenilworth: 7th October.
Southport: 9th October.
Enoggera: 9th October.
Balmoral: 16th October.
Brookfield: 23rd October.

HINTS ON BANANA CULTURE IN NORTH QUEENSLAND.

By WILLIAM ELLISON, junr., Packing Instructor.

Planting.

Selection of Locality.—Be particularly careful to see that the site selected is well protected from heavy wind.

Selection of Suckers.—Select suckers having good corms with a tapering stem with narrow leaves. Trim all roots and loose matter off the corms.

Holing.—Dig the holes about 18 inches deep by about 1 foot across.

Planting.—Set the corm on the bottom of the hole, and only put about 4 inches of soil over the top of the corm and chip in the sides of the hole with a mattock to supply the soil, thus leaving the plant set in a basin. Do not plant closer than 12 feet apart each way.

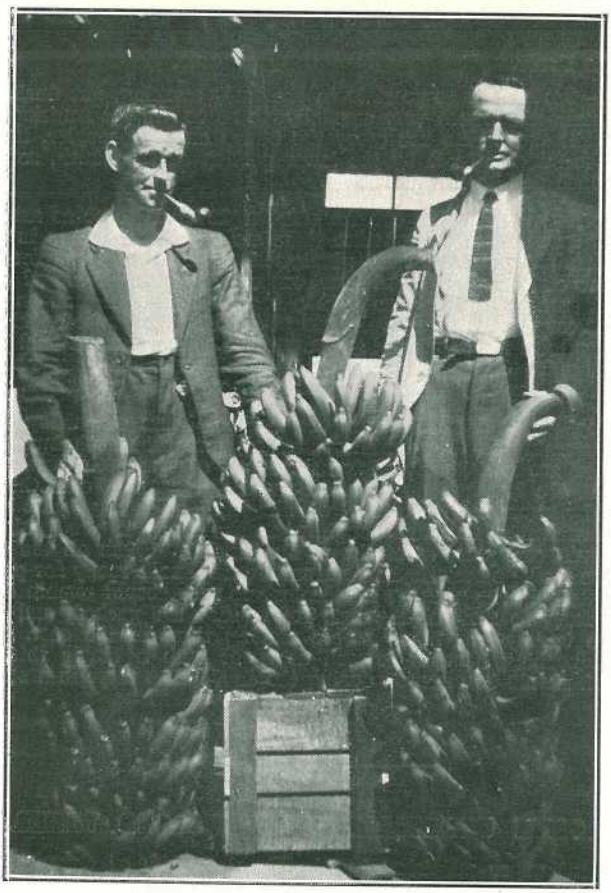


PLATE 16.—TYPICAL BUNCHES OF NORTHERN-GROWN CAVENDISH BANANAS.

Chipping.—During spring and summer only surface chipping is to be done in order to keep down weed growth. Deep chipping, using a mattock by preference, should be done during winter from May to July inclusive. Where horse implements can be employed, do not use a mouldboard plough as it will only tear and bruise the roots, but use a disc plough that will cut the roots clean. This work must only be done from May to July. During the rest of the year do not use horse cultivation at all, but depend upon surface chipping.

Suckering.—If the corm when planted has had its surplus eyes removed, there is no necessity to desucker until the maiden bunch appears. Then two suckers, properly placed in relation to the maiden plant, are left, one of which should be about three or four months older than the other. When the bunch is cut from the maiden plant, allow the third sucker to take its place, this sucker to be some weeks younger than the previous younger sucker. If this is done the banana stool will eventually consist of three plants showing bunches, one bunch ready to cut, one half matured, and one ready to shoot, as well as three followers in the same order.

Suckering can be done at two periods of the year; first, from September to January, when a heavy suckering can be given, and secondly, in June, when a light suckering can take place. When suckering see that the suckers left to bear are directly off a bearing plant or one that has recently borne a bunch, not from a sucker that has not produced a bunch.

Suckering is best done by means of a draining spade, commonly known as a grafting tool, as this implement will disturb the plants that are left less than any other, and will cut the sucker to be removed clean away from the parent bulb.

Handling the Fruit.

Cutting.—Cut as far as possible in the early morning, not during the heat of the day. Handle the bunch very carefully, so as to prevent bruising, as a bruised fruit is a spoilt fruit. Do not carry the bunch on the shoulder, but use a yoke, and attach the bunches to it by the lower portion of the bunch, so that the stem end of the bunch will be downwards.

When cutting the bunches cut the plant right down to or as near the corm as possible in order to determine whether there are any beetle borers in the corm, and if beetle borers are present in the plantation, poison the cut surface of the corm with a mixture of Paris green and flour, one of the former to six of the latter, and cover the cut surface of the corm with a banana leaf. As soon as the corm rots out dig it out completely, using a draining spade for the purpose. By doing this a breeding ground for the beetles will be destroyed. This work should be carried out from September to January, and when the old corm has been removed place a quantity of fresh topsoil in the hole from which it has been taken.

Dehanding.—Dehand the bunches within three hours of cutting, and carry out this work preferably in the plantation, taking care that both bunches and hands when dehanded are well protected from the sun, otherwise the fruit will be badly blackened. If the bunches are dehanded in the plantation, cart the hands to the packing shed by means of a sled lined with bagging, so as to prevent the fruit being bruised. On arrival at the shed, rough grade the hands to size, taking care not to bruise any fruit, and place carefully on the benches. When all the fruit has been brought to the shed, go over the hands carefully and grade ready for packing, leaving the graded hands on the packing benches, where they should remain during summer for at least forty to forty-eight hours before they are packed, and during winter not less than twenty-four hours before placing them in the case. Keep all the fruit on the packing benches covered at night with a single thickness of corn sacking, which should be removed during the day, unless there is a strong dry wind blowing.

SOME UNDESCRIBED QUEENSLAND TREES.

In a recent paper published by the Royal Society of Queensland Mr. C. T. White, Government Botanist, and Mr. W. D. Francis, Assistant Botanist, in the course of their work of keeping the botanical records of the State up to date, described a number of plants which had previously escaped the notice of botanists and others. In this issue there appear illustrations of two of these previously undescribed plants. Plate 17 shows specimens of *Sideroxylon singuliflorum*, which is a small tree found recently by Mr. C. T. White near the summit of Bellenden-Ker, the highest mountain in the State. Sideroxylon, the genus to which the newly described tree belongs, is represented in the Queensland flora by thirteen species, the most common of which is, perhaps, the Black Plum of Black Apple *Sideroxylon australe*. In Plate 18 specimens of *Polyosma rhytophloia* are shown. This species is a small tree of the Eungella Range, westward of Mackay. Flowering specimens of it were collected by Mr. W. D. Francis in 1922, and from them the species was named and described.

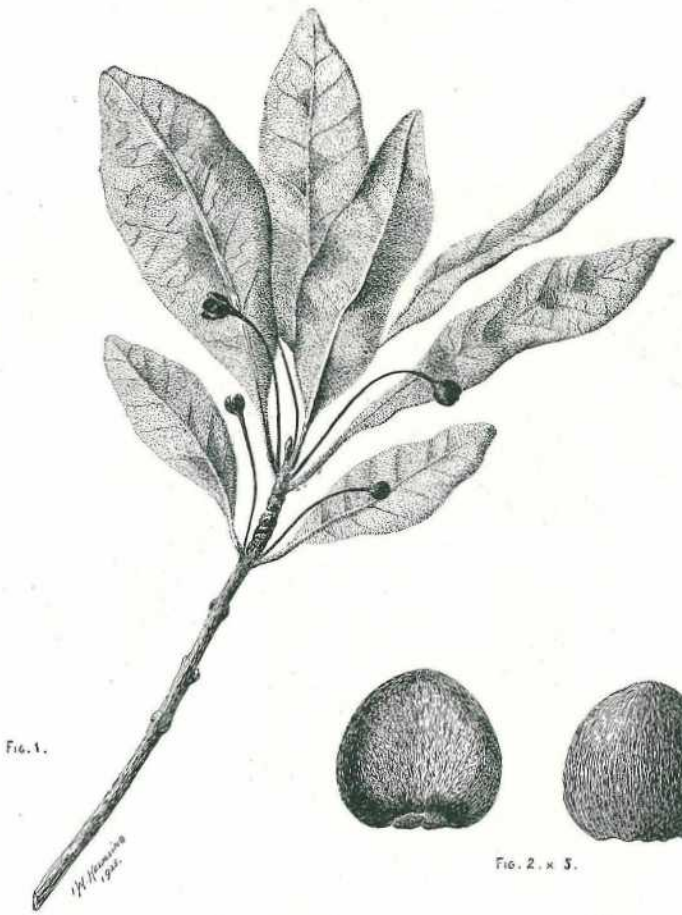


FIG. 1.

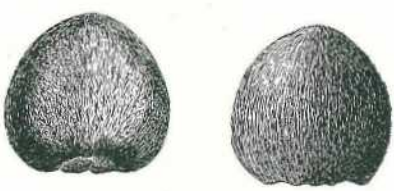


FIG. 2. × 5.

FIG. 3. × 10.

FIG. 4. × 2.

FIG. 5 × 4.

PLATE 17.—*Sideroxylon singuliflorum* (new species). 1, about one-half natural size; 2, calyx lobes; 3, anther; 4, bud; 5, flower, with calyx and corolla removed.

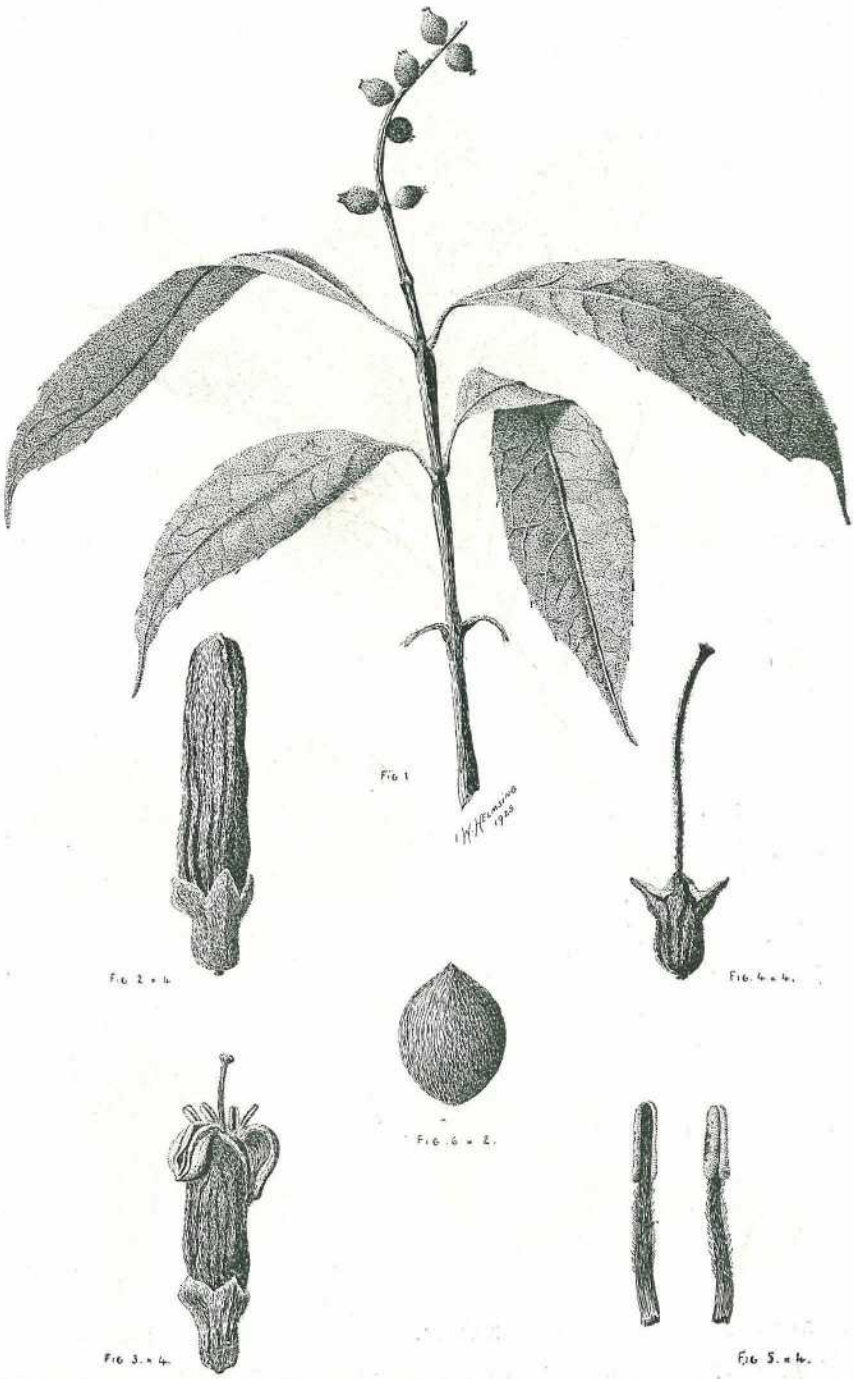


PLATE 18.—*Polyosma rhytophloia* (new species). 1, fruit-bearing twig about one-half natural size; 2, flower bud × 4; 3, flower × 4; 4, flower with petals and stamens removed; 5, stamens × 4; 6, seed × 4.

SUNDRY NOTES ON INJURIOUS INSECTS OF THE STANTHORPE DISTRICT.

BY HUBERT JARVIS.

Army Worms.

The larvæ of certain species of Noctuid moths have this season caused a good deal of destruction to young tomato plants, cabbages, &c. Unfortunately, these caterpillars have not confined themselves to "truck crops." One of them, *Cirphis unipuncta*, has been found attacking peaches and plums on the trees. This is, as far as I am aware, the first record of this species attacking fruit; the damage in one orchard was fairly extensive, and the fruit of several peach trees was entirely ruined by these insects. The caterpillars in this case ate their way right into the fruit, generally setting up a destructive rot, and rendering the fruit unfit for human consumption. The mode of attack is well illustrated in the accompanying photograph.

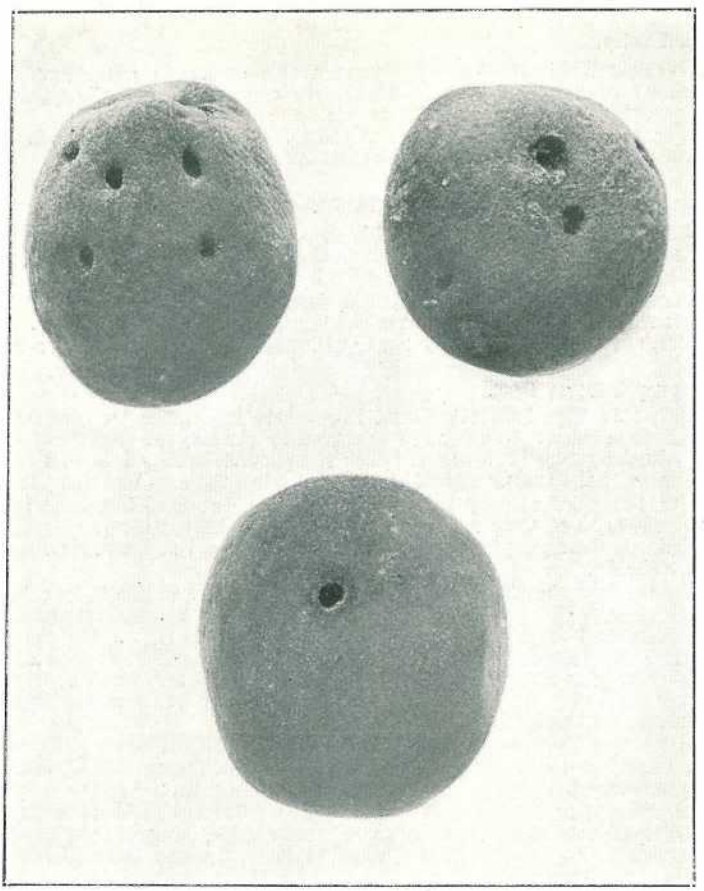


PLATE 19.—PEACHES ATTACKED BY THE CATERPILLARS OF *Cirphis unipuncta*.

I have found this caterpillar attacking almost all kinds of garden plants in addition to crops. The caterpillar is just over an inch long, varying in colour from greenish to brown, and having white longitudinal stripes down its sides and back. The moth measures about 1½ inches across the expanded wings, and is, on the upper wing, of a uniform fawn colour; the lower wings are lighter in colour, and clouded with dark brownish-black along the lower margin of the wings.

The most effective spray I have found in combating this pest is the following:—

Paris green	3 oz.
Black leaf (40 per cent.)	2¼ oz.
Sunlight or soft soap	12 oz.
Water	9-10 gallons

This spray has proved very effective indeed in controlling not only army worms but also cabbage moth (*Plutella cruciferarum*) and pumpkin beetle.

Inspector J. Munro has used the following army worm poison with great success, and has, in fact, obtained, in regard to tomatoes, when planting, an 80 per cent. control of the pest:—

Bran or pollard	1 quart
Paris green or arsenate of lead	2-3 oz.

Thoroughly mix the arsenical with the bran, dry; when mixed, dust a little around each plant after planting.

Two other Noctuid caterpillars have been notably prevalent in this district this season—viz., (*Heliothis obsoleta*) and a species of Agrotis not yet determined—the former attacking cabbages and young tomato plants, and the latter the fruit of the tomato.

Inspector H. St. J. Pratt reports army worm damage in the Broadwater district, and army worms were also, in fact, present in every district in the Granite Belt.

Pumpkin Beetle.

This destructive insect has been present this season in great numbers in the district, and has done considerable damage to egg plants (*vide* Inspector Pratt's report), pumpkins (all varieties), vegetable marrow, watermelons, rockmelons, cucumber, and, in fact, all cucurbitaceous plants. The spray mentioned in relation to army worm has been found helpful in controlling pumpkin beetle.

Chrysolophus spectabilis (Diamond Beetle).

This large and handsome weevil has this season been reported damaging the young wood of grape vines in the Spring Creek district. Specimens of the insect and its damage were submitted to this office by Mr. T. Costin, of Spring Creek.

The damage to the vines is due to the insect cincturing the young wood, which thus weakened easily breaks off. I have not known this beetle to attack any economic plant before, and I do not consider that it will become a pest of any importance.

An Anthomyid Bean Pest.

On 10th December Inspector Pratt brought to my notice an insect injuriously related to French beans. The damage is caused by the maggot of a small Anthomyid fly which attacks young bean plants below the ground, boring into and finally completely eating out the succulent root, thereby causing the death of the plant.

Mr. Pratt supplied abundant material, which enabled us to breed out the fly, and obtain a good series of the maggots and puparia. In 1924 I secured the maggots of this fly similarly damaging French beans at Applethorpe, but I was then unsuccessful in breeding the fly.

The fly is about the size of a small house fly, and not unlike it in colour, but is of a more slender build. The thorax is grey, with four longitudinal rows of black dots, and from each of these dots springs a long black bristle. On the scutellum, which is similarly coloured to the thorax, are four additional dots, two at the apex and one on each side; these dots also each support a long black bristle. The abdomen is uniformly dark grey, pubescent, and clothed with fine bristles; the legs are long and black, and well clothed with hairs.

The puparium is about 5-6 mm. in length, and reddish-brown in colour, not unlike the puparium of *Lonchaea splendida* (the Green Tomato Fly). The maggots, which attain a length of just under half an inch, pupate in the soil just beneath the bean plant. The period of the life cycle of the fly has not yet been ascertained.

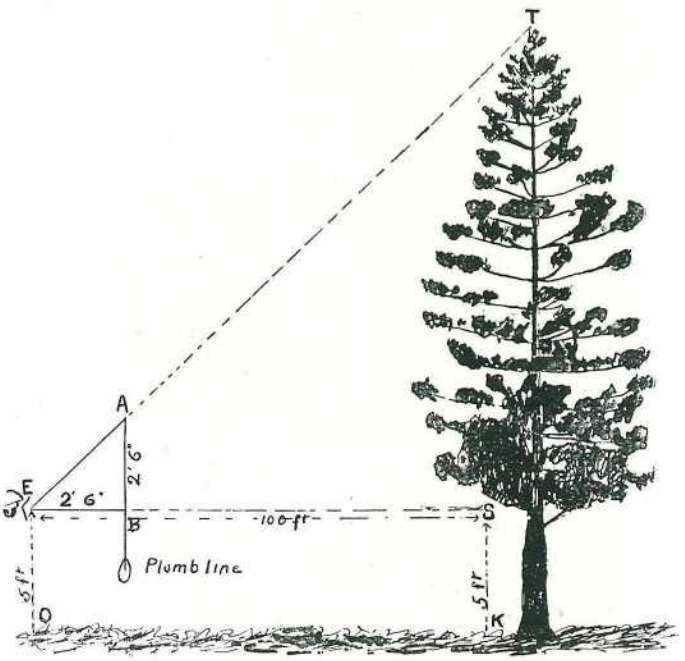
It is difficult to suggest, at present, any satisfactory control measure in dealing with this pest, which is somewhat similar to the notorious Bean Fly (*Agromyza phaseoli*) in regard to the destructive effect which it produces. It does not, however, like the latter fly, lay its eggs on the under surface of the leaf. Probably in the case of the Anthomyid fly the egg is deposited just below the surface of the soil, close to the young bean plant.

Tenebrionid Larva *(Pterohelaeus piceus)*.

The larva of a Tenebrionid beetle (*Pterohelaeus piceus*) was found by Inspector Pratt to be attacking young tomato plants in the Broadwater district. The damage caused by this insect was not extensive, and it is, in fact, rather unusual for it to attack a healthy plant. I have bred it from rotting prickly-pear. It is probable that the dry condition of the soil at the time, and the absence of any humus in the soil, such as the decaying roots of weeds, &c., was responsible for this beetle larva attacking the living roots of tomato plants. I do not consider that it will prove to be a pest of any importance.

MEASUREMENT OF STANDING TIMBER.

Selectors and others frequently want to find out the quantity of timber in a standing tree. The method described here will give the contents of timber in a tree approximately, and does not take into account accurately the whole of the limbs. Cut a piece of pine or deal board into a right-angled triangle at (B). Let the observer place the long edge of board to his eye, and move backward or forward (on level ground) until the edge of board exactly coincides with top of tree, taking care that the plumb line is along edge AB, and hangs steady. Now measure from eye to butt of the tree (say, 100 ft.). This distance, plus the height of eye from the ground, is the height of the tree. (*See* example in illustration.) ES plus EO equals TK. ES equals 100 ft.; SK or EO equals 5 ft.; therefore height of tree is 105 ft. To find the cubic contents of tree, multiply the square of half the diameter of tree by 3.14, and multiply this product by half the height of tree:—Diameter of tree is 4 ft.; square of half diameter equals 4 by 3.14 by 52.5 equals 659.4 cubic ft.



Another simple method of ascertaining the height of a tree can be used on a sunny day.

Cut a stick about 12 in. long. Place it upright in the ground. Note the height of the stick above the surface and measure the length of the shadow thrown by it. Then measure the shadow of the tree. Suppose this to be 20 ft., and the shadow of the stick to be 6 in. The question then is:—If a stick 12 in. high throws a shadow 6 in. long, how tall is a tree which throws a shadow 20 ft. long (240 in.)? By simple proportion—

$$6 : 240 :: 12 : 480, \text{ or } 40 \text{ ft.}$$

This example obviously requires no calculation, as both stick and tree throw a shadow equal to half their height.

ANOMALIES IN EGG PRODUCTION.

By P. RUMBALL, Poultry Instructor.

Eggs are frequently laid in anything but a perfect condition, many forms exciting much wonder, but if the manner in which the egg was formed is borne in mind reasonable conclusions for abnormalities can be advanced.

Reproductive Organs.

The reproductive organs of the hen consist of an ovary and oviduct. The ovary is usually situated on the left of the body near the kidney. The illustration conveys a very good impression of its appearance during the stages of production. The oviduct commences near the ovary, and after making several bends in its course terminates at the entrance to the cloaca. It is connected to the spinal column by a thin membrane. Both the ovary and oviduct are very vascular during the laying period, but shrink considerably in size when the bird is not producing. The enlargement of the ovum 2 and 3 is due to the collection of egg yolk. This causes the yolk sack to become distended and become very thin upon its non-vascular area 4 (stigma), where it eventually ruptures and releases the yolk into the opening of the oviduct. The empty sack collapses and is eventually reabsorbed.

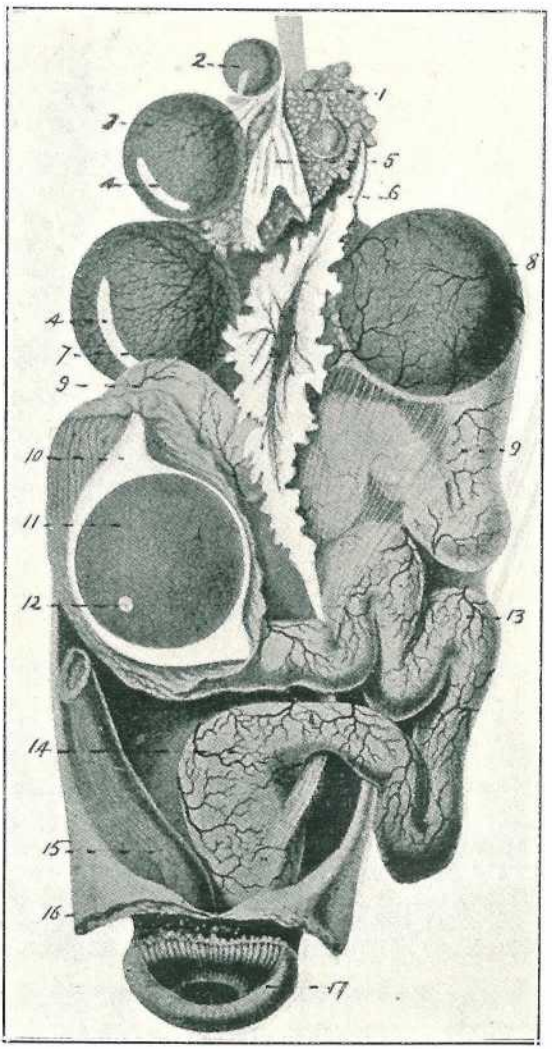


PLATE 20 (Fig 1).

The yolk when it enters the oviduct induces the secretion of albumen. A dense layer is placed on the yolk in the upper portion. In its course down the oviduct several layers of thinner albumen are secreted, and finally two layers of very dense albumen form the membranes and ultimately become the lining of the shell. The egg then enters the uterus or shell-forming portion of the oviduct. Here a thick white calcareous fluid is deposited upon the membrane which condenses and becomes the shell. The time it takes for an egg to do this naturally varies. Some authorities give it as eighteen to twenty hours. It will, however, be understood that the process of forming the shell would take several hours, and that the egg would be retained in the uterus during this process, therefore frights to laying birds should always be avoided.

FIG 1.

This shows the reproduction organs of the hen. Two ova are shown in different parts of the oviduct. Under normal conditions one only is present.

1. The Ovary. Young follicles (ovules), white, and various shades of yellow to reddish orange.
2 and 3. Larger follicles (ovules), reddish egg-yolk colour and highly vascular.
4. Stigmata. A non-vascular area along which rupture of the follicle takes place when the ovum is ripe.
5. An empty follicle from which a ripe ovum has been shed. These are generally yellow in appearance.
6. Cephalic lip of ostium.
7. Funnel of oviduct (ostium tubæ abdominale).
8. Ovum in the upper part of the oviduct.
9. Region of oviduct where the egg white (albumen) is secreted.
10. Egg white (albumen) surrounding the ovum or yolk.
11. The ovum (or yolk).
12. Germinal disc (blastoderm, including the germinal vesicle).
13. Region of the oviduct in which the superficial layers of egg white (or albumen) and the shell membranes are secreted.
14. Lower portion of oviduct—the uterus, in which are the glands which secrete the calcareous matter which forms the shell. Here also are the pigment-secreting cells which add colour to the shell of the eggs of some breeds of fowls.
15. Rectum (lower portion of bowel).
16. Wall of abdomen reflected.
17. Anus (or vent), external opening of cloaca, the pouch into which both bowel and oviduct discharge.

An Egg Within an Egg.

A Black Orpington hen owned by Mr. P. Boughey, Perse street, Grange Estate, must have established a record in the laying of abnormal eggs.

She commenced by laying an egg weighing 6.75 ounces, and at intervals of about seven days repeated the act with eggs of slightly less weight, laying in all five eggs. In each instance there was an egg within an egg. The accompanying plate (fig. 2) shows the outside shell and the smaller or normal egg which was within.

This anomaly is not infrequent. It can be accounted for by the irregular contraction of the uterus (shell-forming portion of the oviduct) forcing the egg upwards for a certain distance where it met another egg in the course of manufacture. These two eggs were then returned to the uterus and enclosed in the one shell.

Blood Clots in Egg.

The presence of blood clots in eggs is due to hemorrhage. This may take place on the ovary or oviduct. In the former case the clot will be found upon the surface of the yolk, while, if hemorrhage has taken place in the oviduct, the clot will be found in the albumen. Hemorrhage is the result of congestion due to the great functional activity of the reproductive organs, and when the trouble is prevalent it should indicate to the breeder that the birds are being fed on ration which is too stimulating. This state of affairs is best rectified by the liberal feeding of green feed and a reduction in the amount of the animal content of the ration.

Soft-Shelled Eggs.

The production of soft shelled eggs may be due to either the lack of shell-forming material in the ration, to the inflammation of the shell-forming glands, fright, and over fat stock. Eggs without shells are more difficult to lay and are therefore retained for a longer period in the uterus. This retention is the cause of irritation or inflammatory condition, and occasionally causes prolapsus or eversion

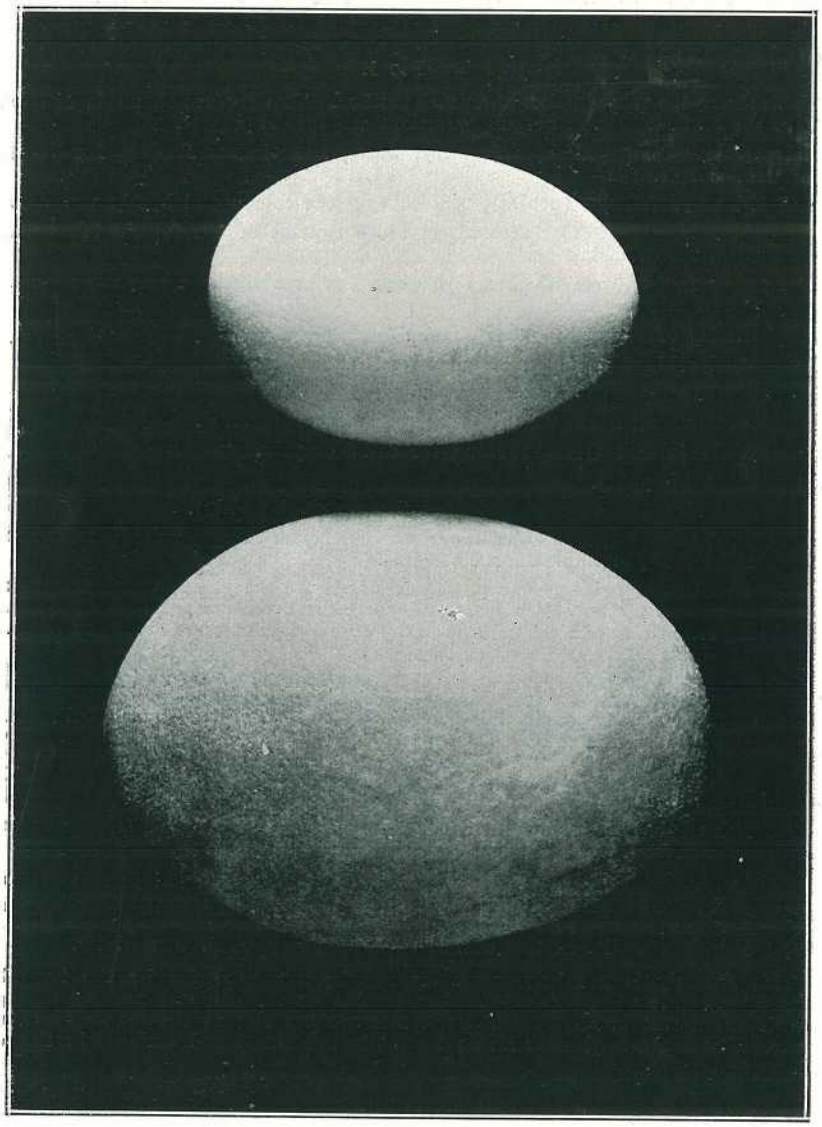


PLATE 21 (Fig. 2).

of the oviduct. Breeders should take careful note of any bird laying soft-shelled eggs. To treat fowls in these cases the cause needs to be located. If due to the lack of mineral matter, give crushed oyster shell, bone meal, broken mortar, and plenty green feed. If inflammation is the cause, feed a less stimulating ration, and in the case of fat stock, reduce their condition by making them work for their living by feeding all grains in litter.

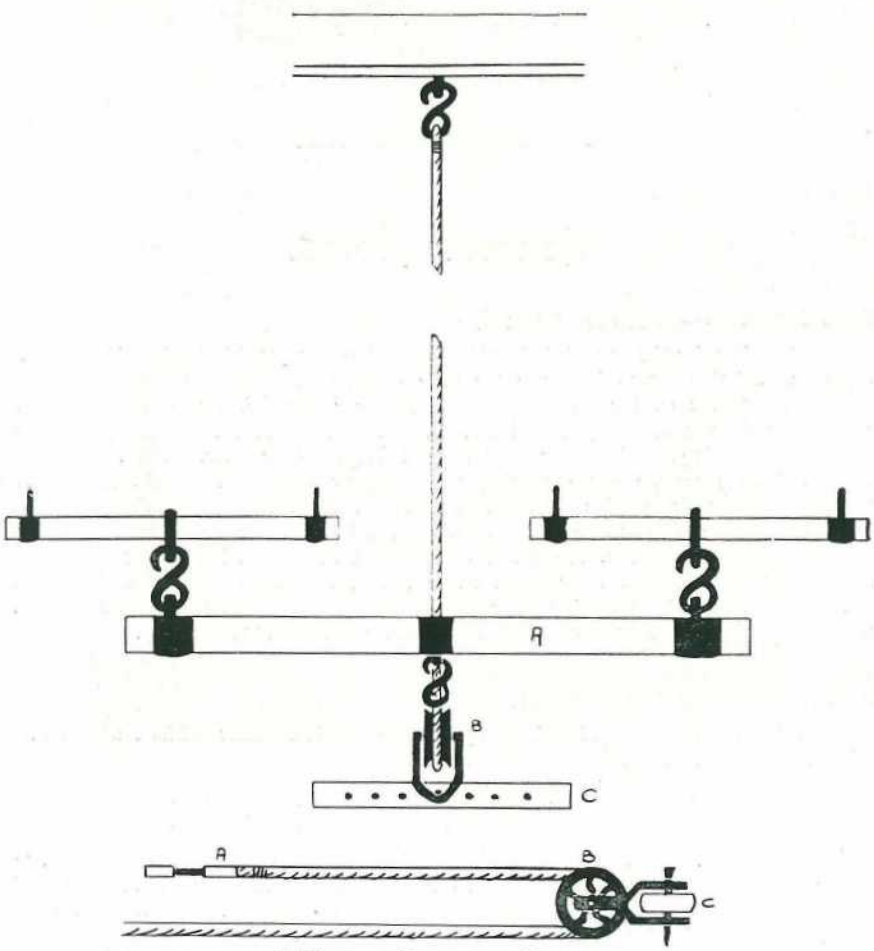
Double-Yolk Eggs.

Eggs with two and sometimes three yolks are formed. This is the result of two yolks being released from the ovary in close proximity. These yolks descend the oviduct so near together that they are encased in the one shell. They are generally larger than single yolk eggs and consequently are liable to cause injury to the oviduct.

Incomplete Eggs.

Eggs a quarter or less of the normal sized egg containing no yolk are not uncommon. The causes vary. Irritation of the central portion of the oviduct is advanced as a cause by one authority. It is a common occurrence for poultry keepers to collect this class of egg at the latter end of the laying season. It is then possibly due to hens that are just terminating their lay.

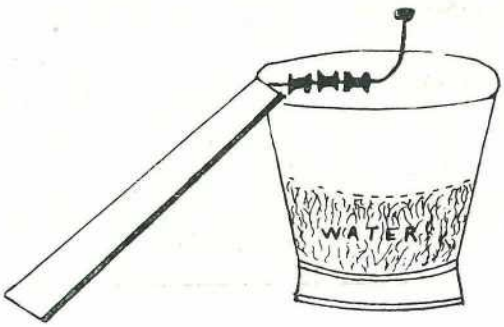
A rather interesting case came under the notice of the writer quite recently. A hen in public competition laid 100 or more normal eggs during the first six months of the test. She then commenced to lay these small yolkless eggs, and within six months had produced about 100 of them. With the owner's sanction the bird was destroyed and opened for examination. The ovary was in perfect order, and producing yolks at a normal rate. These eggs were released in the abdominal cavity, owing to a derangement of the upper portion of the oviduct, and reabsorbed by the system. There were quite a number of what had once been egg yolks loose in the body, and in the uterus a small yolkless egg.



A TANDEM HITCH FOR TEAMS.

A NOVEL MOUSE TRAP.

The illustration is self explanatory. All that is required is a small board into one end of which is fixed a short length of No. 8 wire shaped as shown. Three cotton reels are then strung on the wire, the free end of which is baited with a piece of cooked bacon or toasted cheese. Tallies as high as 150 mice in a single night have been obtained by this simple device.



General Notes.

State Insurance—Continued Success.

As the time for the annual declaration of the bonuses payable in the Life Department on participating policies for the year ended 31st December last is drawing near, the remarks of the Premier and Treasurer (Hon. W. McCormack), in the course of a Press statement, are interesting. He stated that the Insurance Commissioner had received preliminary advice from the Actuary (Mr. T. W. Bremner, F.F.A., A.I.A.) that, after providing all necessary reserves for liabilities under policies, there was a surplus sufficient to provide a reversionary bonus 20 per cent. greater than in previous years. Bonus certificates, the Premier added, were in course of preparation, showing a reversionary bonus for 1925 of £1 16s. per £100 sum assured (as against £1 10s. for 1924) on participating whole life policies and £1 4s. per £100 (as against £1 for 1924) on endowment insurance and endowment policies. The Premier added that the increased bonus was more than satisfactory.

Staff Changes and Appointments.

Mr. St. John Robinson has been appointed an officer under "*The Animals and Birds Acts*, 1921 *to* 1924."

The resignation of Mr. A. F. Robertson as Assistant to Cane Tester at the Proserpine Mill for the forthcoming sugar season has been accepted.

Messrs. C. H. Jorgensen and W. J. Richardson have been appointed Cane Testers for the 1926 sugar season at the Farleigh and Isis Central mills respectively, and Messrs. T. P. Brown and G. O. Doherty have been appointed Assistants to Cane Testers at the Farleigh and Moreton Central mills respectively.

The Naming of Woods—Corrigenda.

Corrigenda to "The Naming of Woods," by E. H. F. Swain, Chairman Provisional Forestry Board, published in the "Queensland Agricultural Journal" on the 1st May, 1926 :—

Page 435—Below Albizzia toona—Red Siris, insert—

Albizzia spp.	Yellow Bean (Atherton) ..	Yellow Siris
Albizzia procera	White Siris (India) ..	Brown Siris

Page 437—Eugenia hemimampra—delete hemimampra and insert hemilampra.

Page 439—Casuarina Luchmanni—delete Luchmanni and insert Luehmanni ; in last line, delete Threaded and insert Flame.

Page 440—Delete—

Hemicyclia australasica	Grey Birch (Imbil) ..	Grey Marara

Vitex lignum vitæ—delete Satin and insert Yellow, to read Yellow Hollywood.

Below Pittosporum rhombifolium, insert—

Siphonodon australe ..	Ivorywood (Imbil)	Ivory Hollywood
	Wild Guava, Floorwood	
Scolopia Brownii	..	Pink Hollywood
Lucuma sericea	Silky Hornbeam	Brown Pearwood
Chrysophyllum pruniferum	..	Pink Pearwood

Bottom of page, delete—

Siphonodon australe ..	Ivorywood (Imbil).. ..	Ivorywood
	Wild Guava	
	Floor Wood	
Scolopia Brownii	..	Pink Pearwood

In Box group, insert—

Strychnos arborea	Needle and Thread Wood	Threaded Box
	Sago Wood	

Page 441—Delete—

Strychnos arborea ..	Needle and Thread Wood	Threaded Boxwood
	Sago Wood	
Lucuma sericea	Silky Hornbeam	Brown Boxwood
Chrysophyllum pruniferum	..	Pink Boxwood

Insert after Sideroxylon Pohlmanianum—

Sideroxylon myrsinioides ..	..	Yellow Boxwood

and delete same seven lines below.

Page 441—After Sideroxylon Pohlmanianum, insert—

Hemicyclia australasica ..	Grey Birch (Imbil) ..	Grey Boxwood

The Coming Royal National Show.

Great preparations are being made by the Council of the Royal National Agricultural and Industrial Association for their fifty-first show scheduled for 9th to 14th August next. With an ever increasing schedule the show programme necessitates an extension into the night, and ever onward the association is planning for night like day, and with a brilliantly illuminated ring will stage at least two great night show carnivals with ring programmes that will hold interest for every country visitor and the thrills of bushland for every city resident. Such a scheme of electric lighting is being planned as will make the carrying out of the ordinary day programmes easily possible.

Great ground improvements have been effected. Wholesale extensions have been made in the poultry, sheep, and pig sections. The accommodation for horses is provided for in a new and commodious building on the Gregory terrace-Brookes street corner. Adjacent to these stalls are the beef and fat cattle sections which have been remodelled on the best lines. The whole plan spells convenience for exhibitor and spectator, buyer and seller alike.

Schedules are ready, and will be sent post free to every applicant.

The Royal National Association has broken records all along the line, and anticipates, with its 1926 show, which marks its advent into the second half century of its progressive endeavour in the interests of agriculture and industrial development, to stage what will be, by reason of its many distinctive features, the finest show in the Commonwealth.

A Notable Visitor.

Among the visitors to this office in the course of the month was Mr. H. L. Russell, of the University of Wisconsin (U.S.A.) and Dean of the College of Agriculture and Director of the Agricultural Experiment Station in that State. Mr. Russell, whose mission to Queensland is connected with a scheme for a world-wide study of agricultural practice and problems, found much to interest him, and the geniality of our climate impressed him immensely.

RAINFALL IN THE AGRICULTURAL DISTRICTS.

TABLE SHOWING THE AVERAGE RAINFALL FOR THE MONTH OF MAY, IN THE AGRICULTURAL DISTRICTS, TOGETHER WITH TOTAL RAINFALLS DURING MAY, 1926 AND 1925, FOR COMPARISON.

Divisions and Stations.	Average Rainfall.		Total Rainfall.	
	May.	No. of Years' Records.	May, 1926.	May, 1925.
North Coast.	In.		In.	In.
Atherton	2·04	25	0·22	0·15
Cairns	4·55	44	1·43	0·10
Cardwell	3·74	52	0·29	0
Cooktown	3·02	50	0·73	0·09
Herberton	1·69	39	0	0·03
Ingham	3·51	34	0·24	0·25
Innisfail	12·59	45	1·08	2·77
Mossman	3·97	13	0·11	0·04
Townsville	1·35	55	0	0
Central Coast.				
Ayr	1·16	39	0	0
Bowen	1·33	55	0·08	0
Charters Towers ...	0·80	44	0·18	0
Mackay	3·86	55	0·57	0·44
Proserpine	4·83	23	0	0·89
St. Lawrence ...	1·83	55	0·38	0·81
South Coast.				
Biggenden	1·73	27	1·20	0·93
Bundaberg	2·59	43	9·95	0·59
Brisbane	2·85	75	1·27	5·94
Childers	2·18	31	4·58	0·91
Crohamhurst ...	5·14	30	5·37	7·61
Esk	2·06	39	0·80	3·12
Gayndah	1·53	55	3·93	0·89
Gympie	2·97	56	2·57	3·00
Caboolture	2·92	39	3·05	4·39
Kilkivan	1·91	47	1·29	2·97
Maryborough ...	3·06	54	9·64	1·18

Divisions and Stations.	Average Rainfall.		Total Rainfall.	
	May.	No. of Years' Records.	May, 1926.	May, 1925.
South Coast—continued:	In.		In.	In.
Nambour	4·99	30	5·89	6·30
Nanango	1·58	44	0·34	1·71
Rockhampton ...	1·50	39	1·42	0·89
Woodford	2·99	39	1·65	4·10
Darling Downs.				
Dalby	1·34	56	1·18	2·54
Emu Vale	1·19	30	0·65	2·31
Jimbour	1·24	38	0·88	3·73
Miles	1·47	41	3·61	1·81
Stanthorpe ...	1·93	53	0·85	2·86
Toowoomba ...	2·22	54	1·41	1·89
Warwick	1·58	61	1 01	1·92
Maranoa.				
Roma	1·42	52	4·59	1·32
State Farms, &c.				
Bungeworgorai ...	0·59	12	4·45	1·04
Gatton College ...	1·70	27	0·44	1·55
Gindie	0·99	27	0	0·37
Hermitage ...	1·26	20	0·86	2·17
Kairi	1·99	12	0·03	0
Sugar Experiment Station, Mackay	3·44	29	0·53	0·86
Warren	0·95	12	1·12	0·22

NOTE.—The averages have been compiled from official data during the periods indicated; but the totals for May this year, and for the same period of 1925, having been compiled from telegraphic reports, are subject to revision.

GEORGE G. BOND, Divisional Meteorologist.

FEEDING PIGS.

WHY WE SHOULD STUDY FEEDING PROBLEMS.

E. J. SHELTON, H.D.A., Instructor in Pig Raising.

To correctly understand this important aspect of pig raising, it is necessary first that we should get right down to bedrock, as it were, and to begin at the beginning by studying the objects aimed at in feeding stock. All life requires food (and also warmth and moisture) and water, whether it be the minutest form of germ or animal life, or whether it be the fully developed male or female plant or animal; indeed, this is not only true of the physical, but of every other part of our bodies, and though in stock raising we aim mainly at developing the body, we also aim at the reproduction of bodies equally as well prepared as are the parents for the battle of life. We understand, therefore, that the animal body requires food to supply the material necessary for its growth. The animal stomach might, for purpose of comparison, be likened to a locomotive boiler and engine, in which both water and fire operate towards the production of the steam and power which represent the driving force. As the steam is required in considerable quantities constantly, it is necessary to continually stoke the fire, to keep the ashes and cinders well raked out and a sufficient draught of air passing under and through the fire, and to keep up the water supply in order that pressure may be retained, or as it is commonly referred to, "that there may be a sufficient 'head' of steam to do the necessary work." Thus there is not only a constant pressure or production of steam in building up, but there is also a constant waste going on in the utilisation of both the fuel and water, and these losses need to be made good by the addition of fresh supplies which must be at hand all the time. The animal body is constantly being built up as a result of the strength generated from the food, as it is absorbed in the form of "digestible nutrients" from the food stream as it passes through the stomach and bowels, and there is also a constant breaking down of tissue or waste as it has been referred to above; so it is equally necessary that fresh supplies of nutritious, succulent, and appetising food be at hand to feed the body as occasion requires.

In stock feeding, certain specific objects must be kept in view, and we must thoroughly understand each of these objectives in order to gain the maximum benefit from a study of our feeding problems.

The Objects of Feeding.

Technically speaking, the objects of feeding are—

(1) To maintain bodily heat and strength.

(2) To repair waste of tissue (muscle, flesh, fat, bone, sinew, blood, &c.).

(3) To prepare for the reproduction of young.

(4) To form new tissues and organs.

(5) To enable the animal to perform muscular labour, or to fatten in preparation for slaughter for the purpose of converting the carcase into bacon, &c.

(6) To allow of the secretion of various products, such as milk, blood, digestive juices, &c.

(7) To allow of a reserve of stores being laid by in the form of fat, &c.

To Maintain Bodily Heat and Strength.—In a normal state the bodily temperature of various animals differs somewhat, though all reach the century mark. The normal temperatures of domestic stock are as follows:—

Horse	.. .. ..	100	to	101	degrees	Fahr.
Cow	.. .. ..	101	to	102	„	„
Dog	.. .. ..	101	to	102	„	„
Pig	.. .. ..	102.6	to	103	„	„
Sheep	.. .. ..	103	to	104	„	„
Fowl	.. .. ..	105	to	107	„	„

The cat has about the same temperature as the horse. The temperature of the healthy animal body does not fluctuate, however, to more than a very slight extent. The heat required to maintain temperature is provided from the food. Thus it is important that the food supply should be of sufficiently good quality and quantity at all times.

To Repair Waste of Tissue, &c.—As with the locomotive, so with the body there is a constant wear and tear. Bodily activity involves the destruction of the various elements of which the body is composed. No sooner is this destroyed than it needs replacing, hence the food supply must not only be sufficient and of good quality, but it must be given at regular periods and in sufficient bulk to enable the digestive organs to handle it to advantage, for some bulk is necessary, though the pig does not require the same bulky food as does the cow and the horse.

It matters not whether an animal such as the horse is at regular and at hard work or is at rest, there is still a waste of tissue going on; it cannot stop, and when there is a greater supply of fuel than is actually needed at the moment the energy is produced, the balance is stored in the form of fat for future use.

Even where an animal is at rest a certain amount of energy is needed for the performance of the internal work of the body. The heart is constantly beating, the acts of inspiration and respiration keep the lungs in regular movement; these, in company with the labour involved by the action of the stomach and intestines in the process of digestion, are a constant drain on the energy thus stored. All this energy thus required and stored comes from the food.

To Prepare for the Reproduction of Young, &c.—It stands to reason that a brood sow carrying a litter of, say, a dozen young pigs, must require more food than a sow not in pig, for not only must the sow's own body be kept going, but the development of the young pigs in her breeding sac must be kept provided for; these absorb large quantities of nutrients as they develop and mature.

Nature will even provide for their maintenance at the expense of the sow's own body if the food supply of the sow is insufficient or of poor quality. Breeding sows require abundant supplies of succulent green foods in preference to more limited supplies of concentrated food, such as maize, wheat, or barley, &c.

To Form New Tissues and Organs and to Enable the Animal to Perform Muscular Labour, &c.—It is not difficult to understand why the horse requires food when he is regularly occupied in farm or team work, or to understand why it is that an in-pig sow should have additional food, but many farmers find it difficult to realise that when the pig is fattening or even when he is growing it is performing something of the same muscular labour (though certainly the strain is not so severe) as is being performed by the horse. Here it is then that we see again the urgency of providing for an abundant supply of succulent, nutritious food of an appetising nature and sufficiently laxative in its action to keep the bowels working freely.

To Provide for the Secretion of Various Products.—The brood sow once relieved, internally, of her young pigs at birth, then takes on their feeding by way of the teat, and as young pigs usually have very vigorous appetites, the sow requires suitable milk-producing foods in liberal quantities in order to be able to secrete sufficient milk to maintain her growing litter. The milch cow, the brood mare, the lambing ewe, &c., all require similar study, nor are these the only ones, for the young pigs require careful tending even when they have reached a stage when they can be removed from the care of the sow and be weaned.

The young pigs and the pigs that are fattening in preparation for sale to the butchers and bacon curers are secreting and laying up stores both of flesh and fat. The horse stores his energy in the form of strong muscular tissue, capable of standing a heavy strain during the day's work. Animals fatten readily on good food, and the fat animal can be maintained for a long period on a much reduced ration of food.

Nor do we need to understand the objects of feeding alone; it is equally important that we understand the composition of the various constituents of the ration the pig consumes. We must also understand something of the composition of the tissues that need rebuilding.

The breaking down and the building-up processes going on in the body are frequently referred to under the term metabolism, to which further reference will be made in future articles.

Farm and Garden Notes for August.

Land which has been lying fallow in readiness for early spring sowing should now be receiving its final cultivation prior to seeding operations. Potato-planting will be in full swing this month, and in connection with this crop the prevention of fungoid diseases calls for special attention. Seed potatoes, if possible, should be selected from localities which are free from disease; they should be well sprouted, and, if possible, should not exceed 2 oz. in weight. Seed potatoes of this size are more economical to use than those large enough to necessitate cutting. If, however, none but large-sized seed are procurable, the tubers should be cut so that at least two well-developed eyes are left. The cut surfaces require to be well dusted with slacked lime, or wood ashes, as soon as possible after cutting. Where it is necessary to take action to prevent possible infection by fungoid disease, the dipping of potatoes in a solution of 1 pint of 40 per cent. formalin to 15 gallons of water, and immersing for one hour, will be found effective. Bags intended for the subsequent conveyance of tubers to the paddock should also be treated and thoroughly dried. After dipping, spread out the potatoes and thoroughly dry them before re-bagging. Where the tubers are cut, the dipping is, of course, carried out prior to cutting.

Arrowroot, yams, ginger, and sugar-cane may be planted this month in localities where all danger from frosts is over.

Maize may be sown as a catch crop, providing, of course, that sufficient soil moisture is available.

Sweet-potato cuttings may also be planted out towards the end of the month.

Weeds will now begin to assert themselves with the advent of warmer weather; consequently cultivators and harrows should be kept going to keep down weed growths in growing crops and on land lying fallow, as well as on that in course of preparation for such crops as sorghums, millets, or panicums, maize, and summer-growing crops generally.

Tobacco seed may be sown on previously burnt and well prepared seed-beds.

KITCHEN GARDEN.—Nearly all spring and summer crops can now be planted. Here is a list of seeds and roots to be sown which will keep the market gardeners busy for some time: Carrots, parsnips, turnip, beet, lettuce, endive, salsify, radish, rhubarb, asparagus, Jerusalem artichoke, French beans, runner beans of all kinds, peas, parsley, tomato, egg-plant, sea-kale, cucumber, melon, pumpkin, globe artichokes. Set out any cabbage plants and kohl-rabi that are ready. Towards the end of the month plant out tomatoes, melons, cucumbers, &c., which have been raised under cover. Support peas by sticks or wire-netting. Pinch off the tops of broad beans as they come into flower to make the beans set. Plough or dig up old cauliflower and cabbage beds, and let them lie in the rough for a month before replanting, so that the soil may get the benefit of the sun and air. Top dressing, where vegetables have been planted out, with fine stable manure has a most beneficial effect on their growth, as it furnishes a mulch as well as supplies of plant food.

FLOWER GARDEN.—All the roses should have been pruned some time ago, but do not forget to look over them occasionally, and encourage them in the way they should go by rubbing off any shoots which tend to grow towards the centre. Where there is a fine young shoot growing in the right direction, cut off the old parent branch which it will replace. If this work is done gradually it will save a great deal of hacking and sawing when next pruning season arrives. Trim and repair the lawns. Plant out antirrhinums (snapdragons), pansies, hollyhocks, verbenas, petunias, &c. Sow zinnias, amaranthus, balsam, chrysanthemum, marigolds, cosmos, coxcombs, phloxes, sweet peas, lupins; and plant gladiolus, tuberoses, amaryllis, pancratium, ismene, crinums, belladonna, lily, and other bulbs. In the case of dahlias, however, it will be better to place them in some warm, moist spot, where they will start gently and be ready to plant out in a month or two. It must be remembered that this is the driest of our months. During thirty-eight years the average number of rainy days in August was seven, and the mean average rainfall 2.63 in., and for September 2.07 in., increasing gradually to a rainfall of 7.69 in., in February.

Orchard Notes for August.

THE COASTAL DISTRICTS.

The remarks that have appeared in these notes during the last few months respecting the handling and marketing of citrus fruits apply equally to the present month. The bulk of the fruit, with the exception of the latest ripening varieties in the latest districts, is now fully ripe, and should be marketed as soon as possible, so that the orchards can be got into thorough order for the Spring growth. All heavy pruning should be completed previous to the rise in the sap; and where Winter spraying is required, and has not yet been carried out, no time should be lost in giving the trunks, main branches, and inside of the trees generally a thorough dressing with lime and sulphur wash.

Where citrus trees are showing signs of failing, such as large quantities of dead or badly diseased wood in the head of the tree, they can (provided the root system is healthy) be renovated by cutting back the entire top of the tree till nothing but sound healthy wood is left. This should be thinned out, only sufficient main limbs being left from which to form a well-balanced tree, and the trunk and limbs so left should receive a dressing of lime sulphur, or Bordeaux paste.

Healthy trees that are only producing inferior fruit should be treated in a similar manner, and be either grafted with an approved variety direct or be allowed to throw out new growth, which can be budded in due course. The latter method is to be preferred, and an inferior and unprofifitable tree can thus be converted in the course of a couple of years into a profitable tree, producing good fruit.

Where orchards have not already been so treated, they should now be ploughed so as to break up the crust that has been formed on the surface during the gathering of the crop, and to bury all weeds and trash. When ploughed, do not let the soil remain in a rough, lumpy condition, but get it into a fine tilth, so that it is in a good condition to retain moisture for the tree's use during Spring. This is a very important matter, as Spring is our most trying time, and the failure to conserve moisture then means a failure in the fruit crop, to a greater or lesser extent.

Do not be afraid if you cut a number of surface roots when ploughing the orchard, but see that you do cut them, not tear them. Use a disc plough and keep the discs sharp, and the root-pruning the trees will thus receive will do more good than harm, as it will tend to get rid of purely surface roots.

Planting of all kinds of fruit trees can be continued, though the earlier in the month it is completed the better, as it is somewhat late in the season for this work. The preparation of land intended to be planted with pineapples or bananas should be attended to, and I can only reiterate the advice given on many occasions—viz., to spare no expense in preparing the land properly for these crops—as the returns that will be obtained when they come into bearing will handsomely repay the extra initial expense. Growers of pineapples and bananas who send their fruit to the Southern markets should take more care in the grading and packing of such fruit, as their neglect to place it on the market properly means a big difference in price, and entails a loss that could be avoided had the necessary care and attention been given. The same remarks apply to the marketing of citrus fruits, papaws, custard apples, strawberries, cucumbers, and tomatoes, all of which are in season during the month.

The pruning of all grape vines should be completed, and new plantings can be made towards the end of the month. Obtain well-matured, healthy cuttings, and plant them in well and deeply worked land, leaving the top bud level with the surface of the ground, instead of leaving 6 or 7 in. of the cutting out of the ground to dry out, as is often done. You want only one strong shoot from your cutting, and from this one shoot you can make any shaped vine required. The spraying of vines for downy mildew is not compulsory, but an application eliminates black spot.

Fruit-fly will make its appearance during the month, and citrus and other fruits are likely to be attacked. Every grower should, therefore, do his best to destroy as many flies as possible, both mature insects and larvæ, the former by trapping or otherwise, and the latter by gathering and destroying all infested fruit. If this work is carried out properly, a large number of flies that would otherwise breed out will be destroyed, and the rapid increase of the pest be materially lessened. The destruction of fruit-flies early in the season is the surest way of checking this serious pest.

Keep a careful lookout for orange-sucking bugs, and destroy every mature or immature insect or egg that is seen. If this work is done thoroughly by all citrus growers there will be far fewer bugs to deal with later on, and the damage caused by this pest will be materially reduced. Destroy all elephant beetles seen on young citrus trees, and see that the stems and main forks of the trees are planted with a strong solution of lime sulphur.

GRANITE BELT, SOUTHERN AND CENTRAL TABLELANDS.

The pruning of all deciduous trees should be finished during the month, and all such trees should be given their annual winter spraying with lime sulphur. The planting of new orchards should, if possible, be completed, as it is not advisable to delay. Later planting can be done in the Granite Belt, but even there earlier planting is to be preferred.

Peach trees, the tops of which have outlived their usefulness and of which the roots are still sound, should be cut hard back so as to produce a new top which will yield a good crop of good fruit the following season in from fifteen to eighteen months, according to the variety.

Apple, pear, or plum trees that it is desirable to work over with more suitable varieties should also be cut hard back and grafted. All almond, peach, nectarine, and Japanese plum trees should be carefully examined for black peach aphis, as, if the insects which have survived the winter are systematically destroyed, the damage that usually takes place from the ravages of this pest later on will be materially lessened.

Woolly aphis should also be systematically fought wherever present. The best all-round remedy for these two pests is spraying with black leaf 40.

In the Granite Belt the pruning of vines should, however, be delayed to as late in the season as possible, so as to keep the growth back and thus endeavour to escape late Spring pests.

Where orchards and vineyards have been pruned and sprayed, the land should be ploughed and brought into a state of as nearly perfect tilth as possible, so as to retain the moisture necessary for the proper development of the trees or vines and the setting of their fruit.

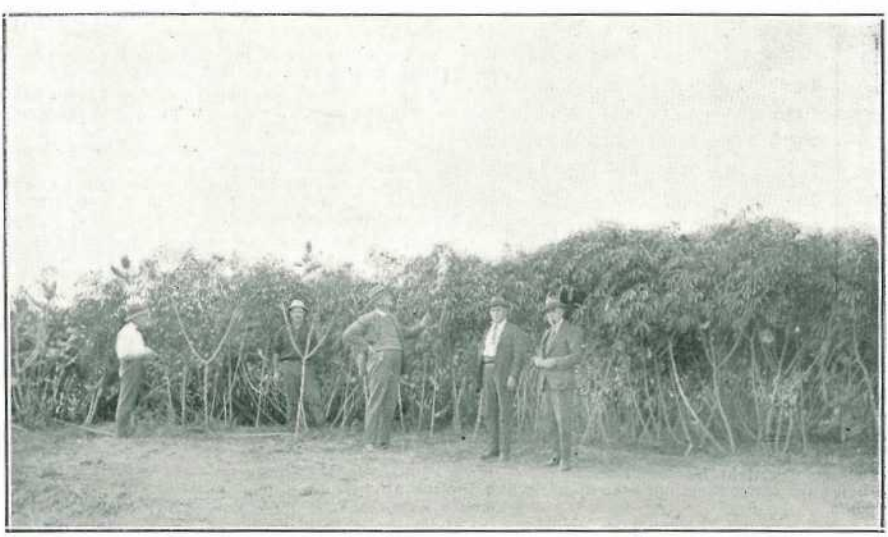


PLATE 22.—CASSAVA GROWING AT PLANE CREEK, MACKAY.

ASTRONOMICAL DATA FOR QUEENSLAND.

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

TIMES OF SUNRISE, SUNSET, AND MOONRISE.

AT WARWICK.

1926	JULY.		AUGUST.		MOONRISE. JULY.	AUGUST
Date.	Rises.	Sets.	Rises.	Sets.	Rises.	Rises.
					p.m.	a.m.
1	6·46	5·6	6 36	5·20	10·57	nil
2	6·46	5 6	6·35	5·21	11·57	12.51
3	6 46	5 6	6·34	5·22	nil	1·50
					a.m.	
4	6·46	5·6	6 34	5·22	12·58	2·48
5	6 46	5·6	6 33	5·23	1 58	3·45
6	6 46	5 7	6·33	5·23	2 56	4·37
7	6·46	5·7	6 32	5·23	3 56	5·26
8	6·46	5 8	6·31	5 24	4·53	6·11
9	6 45	5·8	6 31	5·24	5·48	6 53
10	6 45	5·9	6 30	5·24	6 41	7·29
11	6 45	5·10	6·29	5·25	7·27	8·5
12	6 44	5 11	6 28	5 26	8·14	8·37
13	6·44	5 12	6·27	5 27	9 5	9 8
14	6·44	5·12	6 26	5·28	9 29	9·40
15	6·44	5·12	6·25	5 29	10 4	10·13
16	6·43	5 12	6·25	5 29	10 36	10·47
17	6·43	5·13	6·24	5·30	11·6	11·24
					p.m.	p.m.
18	6·43	5·13	6 23	5·30	11·40	12·18
					p.m.	
19	6·43	5·13	6 22	5·31	12·14	12·58
20	6·43	5 13	6 21	5 31	12·51	1·53
21	6·42	5 14	6 21	5 31	1·32	2·6
22	6·42	5·14	6 20	5·32	2·40	4·3
23	6·42	5 15	6·20	5 32	3·14	5·14
24	6·41	5·15	6·19	5·32	4·15	6·23
25	6·41	5 16	6·18	5·32	5·21	7 31
26	6·40	5·17	6·16	5·33	6·29	8 35
27	6·40	5 17	6 14	5 33	7·36	9·38
28	6·39	5·18	6·13	5·34	8·44	10·42
29	6·38	5·18	6·11	5·34	9·51	11·43
30	6·37	5·19	6·10	5·35	10·51	nil
						a.m.
31	6·37	5 20	6 9	5·35	11·51	12.42

Phases of the Moon, Occultations, &c.

The times stated are for Queensland, New South Wales, Victoria, and Tasmania.

2 July	☽	Last Quarter	11 2 p.m.
10 ,,	●	New Moon	9 6 a.m.
18 ,,	☾	First Quarter	12 55 p.m.
25 ,,	○	Full Moon	3 13 p.m.

An anular or ring-shaped eclipse of the sun will occur on July 10th, visible at places far north of Queensland. North of a line from its south-west corner to a little above Rockhampton a partial eclipse of the sun will be more or less visible when it rises.

Mercury will be at its greatest elongation east (26 degrees 22 minutes) on the 11th. It should be noticeable in the west after sunset.

Jupiter will appear to be near the moon about 3.15 on the morning of the 27th.

1 August	☽	Last Quarter	5 24 a.m.
8 ,,	●	New Moon	11 48 p.m.
17 ,,	☾	First Quarter	2 38 a.m.
23 ,,	○	Full Moon	10 37 p.m.
30 ,,	☽	Last Quarter	2 40 p.m.

The conjunction of Venus with the moon on the 6th at 12·5 p.m. should form an interesting spectacle, although the nearness of the sun on the right will detract largely from the beauty of the phenomenon. Venus will appear to be remarkably close to the moon, less than half its diameter above it, and should be observable to the naked eye if due precaution is taken to screen off the sun.

At midnight on the 7th Mercury will be in inferior conjunction with the sun—that is in the part of its orbit which is nearest to the earth.

Saturn will be in conjunction with the moon on the 16th at 7·25 p.m.

Jupiter will be in conjunction with the moon on the 23rd at 8·32 a.m., when it will be four diameters of the moon north of it.

The star Upsilon Aquarii will be occulted by the moon a little before 10·30 p.m. on the 24th. As the moon will be nearly full a pair of binoculars or a telescope will be necessary in order to detect this small star of magnitude 4, 5.

Mercury will be at its greatest elongation (18 degrees 20 minutes) west of the sun on the 25th, and will therefore be visible near the eastern horizon about an hour before sunrise.

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

The moonlight nights for each month can best be ascertained by noticing the dates when the moon will be in the first quarter and when full. In the latter case the moon will rise somewhat about the time the sun sets, and the moonlight then extends all through the night; when at the first quarter the moon rises 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.