

187

The Madras Agricultural
Journal

1930 - January.

~~Vol.~~ 18. No. 1

SL

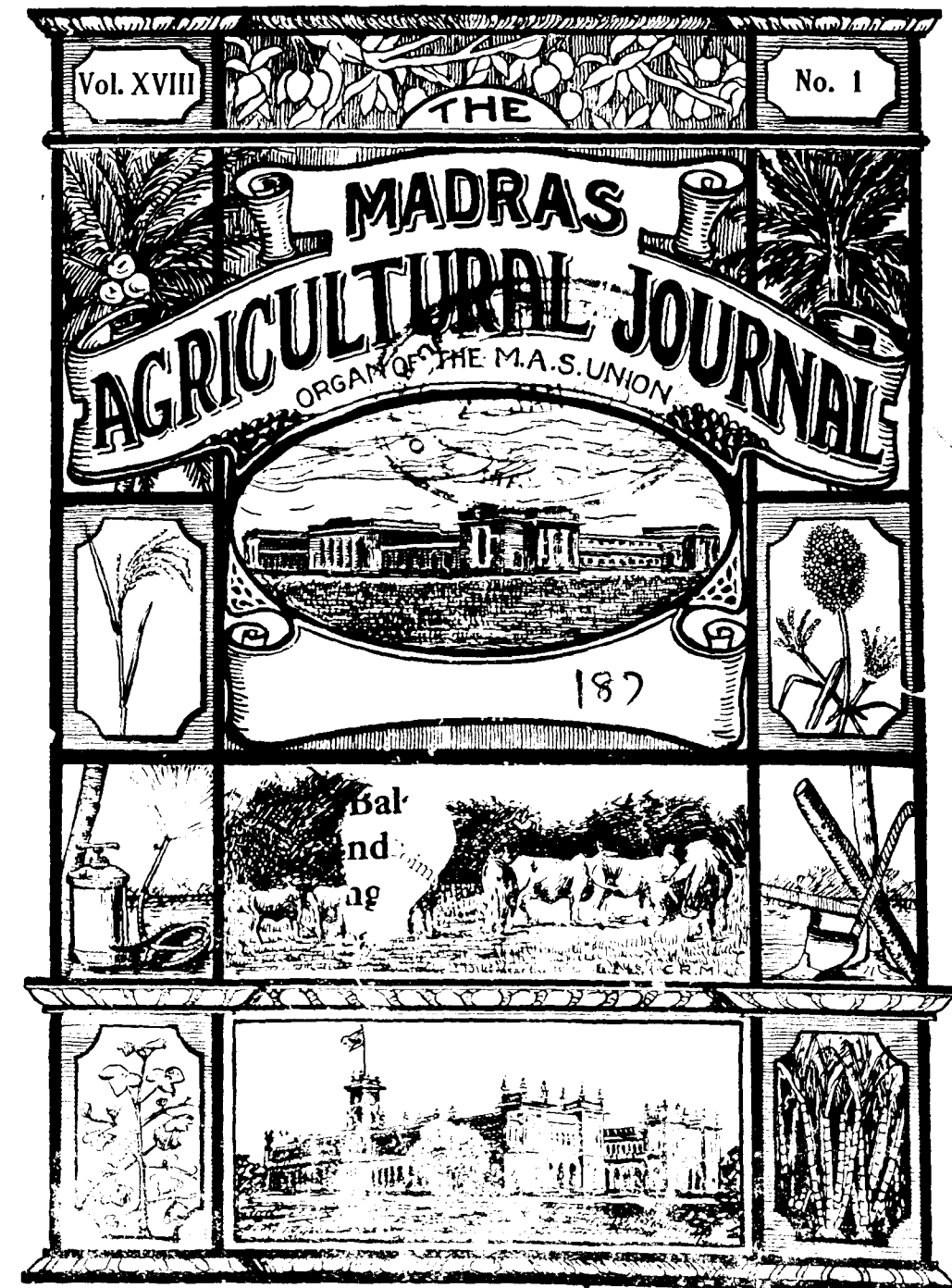
Jm 211, N13

N30-18.1

74560

Regd. No. M. 1155

JANUARY 1930



Annual Subscription Rs. 4

Single Number As. 6

PATRONS

V. Arumugam Pillai, Sundaikamuthur, Coimbatore District.

Dewan Bahadur C. Arunachala Mudaliar, Zamindar of Chunampet,
Chingleput District.

Lodd Govindoss, Madras.

Khan Bahadur Haji Abdulla Haji Kasim Sahib Bahadur, Udipi,
S. Kanara District.

A. M. Kalinga Rayar, Kumara Zamindar of Uttukuli, Coimbatore District.

Raja Sree Krishnachandra Gajapati Narayan Deo Garu,
Raja of Parlakimidi, Ganjam District.

Raja Sri Madana Mohana Simha Deo Garu, Zamindar of Dharakota.

V. Madhava Rajah, Kollengode, Malabar District.

Rao Bahadur Sir A. P. Patro, Berhampore.

Rao Bahadur T. A. Ramalingam Chettiar, Coimbatore.

Sir C. P. Ramaswami Ayyar, Madras.

Rao Bahadur C. S. Rathnasabapathy Mudaliar, Coimbatore.

M. Sambandam Mudaliar, Coimbatore.

Veerarayan Thirumalpad, Nilambur, Malabar District.

V. C. Vellingiri Gounder, Coimbatore.

Venganad Rajah Sir Vasudeva Rajah, Kollengode, Malabar District.

C. V. Venkataramana Ayyangar, Coimbatore.

R. Jeevandas, Varanasi, Parlakimidi.



(1)

PARRY'S

The Fertiliser Firm that has conducted
**A Quarter of a Century's
Research**

On Manures through their staff of
experienced Agricultural Chemists

The results are embodied in

**Parry's Complete Standard
Fertilisers for all Crops**

These are
Well Balanced Mixtures
of Organic and Inorganic constituents
containing optimum amounts
of each Plant Food

IF IT'S PARRY'S—IT'S RIGHT

Full information and prices on application to:

PARRY & Co., Ltd.,

Ryot Sales Dept.

Post Box 12

MADRAS

(2)

FERTILISERS

—*—

THERE ARE NO BETTER MANURES THAN THOSE
SUPPLIED BY

STANES

*We Manufacture all manures under
expert supervision and we supply mix-
tures and individual Fertilisers suitable
for all Tropical crops.*

DEAL WITH THE SPECIALISTS OF OVER
40 YEARS EXPERIENCE

T. STANES & Co., Ltd.
COIMBATORE.

(3)

When you think of buying Farm implements

:: *Remember* ::

KIRLOSKAR

Largest Farm Machinery Manufacturers
IN INDIA



We can supply you
Iron Ploughs,
Cane mills, Fodder
cutters, Mhote
wheels, Maize
shellers, etc.

Bulk production enables us to offer these implements
of proved quality at prices within easy reach of all
farmers. Ask for complete catalogue.

KIRLOSKAR BROTHERS, LTD.

MANUFACTURERS OF FARM MACHINERY
KIRLOSKARVADI, BOMBAY PRESIDENCY

Farming will never be a success unless the farmer
 had more voice in the disposal of
 his produce—P. MURRAY



The Madras Agricultural Journal

(ORGAN OF THE M. A. S. UNION)

Vol. XVIII]

JANUARY, 1930

[No. 1

NEW YEAR GREETINGS

187

With the dawn of the New Year on the 1st January 1930, our Journal enters on the eighteenth year of its existence, and we take this opportunity of conveying to our readers the greetings of the season and of wishing them a happy and prosperous New Year. We desire also to express to them our gratefulness for the continued patronage bestowed on us, through thick and thin, in spite of various faults of omission and commission. We sincerely trust that the birth of the New Year will mark a new era in the life-history of this Journal, and without rendering ourselves liable to a charge of undue optimism, we beg to assure our readers that steps will be taken to see that all causes of vexation are as far as possible obviated. In return we would make the request that they would not only continue to give their patronage, but also actively co-operate with us by recommending the Journal to as many of their friends as possible and thus help to increase its circulation—thereby making it financially possible for us to widen its scope and ensure greater service and usefulness.

*** A PRELIMINARY NOTE ON THE SUCCESSFUL TREATMENT
OF THE JASMINE BUG (*ANTESTIA CRUCIATA*) BY DUSTING
CALCIUM CYANIDE**

BY

RAO SAHIB Y. RAMACHANDRA RAO

Introduction. In December 1926, a report was received from a Flower merchant of Bellary regarding serious losses sustained by him by insect attack in his jasmine garden during the past seven years. After preliminary enquiries made through the Agricultural Demonstrator, Bellary, the garden was visited by the writer on the 28th February 1927 in his company and the actual conditions were studied. The insect responsible for the damage was found to be *Antestia cruciata*—known to be a pest of Coffee and Jasmine.

Conditions of Jasmine cultivation near Bellary. There are about a dozen Jasmine gardens in the neighbourhood of Bellary supplying Jasmine and other flowers and certain sweet herbs for the market and as there is a never-failing demand for flowers and aromatic herbs throughout the year for purposes of ladies' toilet, the garden owners form, on the whole, a flourishing and prosperous community. The garden reported to be infested is situated at Bisanahalli about 3 miles from Bellary on the Bellary-Gooty Road. It is about 2 acres in extent and located on the southern bank of a sandy water course and possesses a fresh water well from which water is baled out by means of a mhone for purposes of irrigation. The jasmynes and other flowers are all grown in bush form and since the different varieties of jasmynes have their own particular times of flowering, individuals of the same variety are usually planted together in small plots for convenience in watering and cultivation. One group of jasmynes—composed of varieties of *Jasminum sambac*, such as *Iruvantige* (*Iruvakshi*), *Dundu-mallige* (double jasmine and *Sogi-mallige* and *Jasminum angustifolium*. *Sooji-mallige* or *Man-mallige* (Sanskrit, *Vana-mallika*) was stated to yield flowers from March to June, while a second group consisting mostly of *Jasminum auriculatum*, locally known as *Sanna-mallige* or *Mondaralu moggi*, from June to September and a third mostly *Jasminum grandiflorum*, known as *Jajimallige* (Sanskrit, *Jati*), from August to November. From November to February flowers of *Rhinacanthus communis*—var *montana*—an Acanthaceous plant, locally called *Naga-mallige* were said to be placed on the market instead of

* Paper read at the Agrl. Section, Indian Science Congress, Calcutta, January 1928.

the true jasmynes which would not be in flower then. In addition to jasmynes other flowers like Oleander and certain sweet smelling herbs were also under cultivation.

These varieties were reported to receive special attention only just a month previous to the time of flowering. All the old leaves were pulled out and the beds were hoed, weeded, manured and irrigated. During the period of flowering the plants were given periodical irrigations, but when it came to a close they were left to themselves till the flowering season.

The pest—the nature and extent of its damage—The Jasmine Bug—*Antestia cruciata*—is a medium sized Pentatomid bug about 8 to 10 m.m. long, light brown with conspicuous yellowish markings. It generally hides inside the bushes among leaves and twigs, but at the time of flushing, seeks the tender shoots or flower-buds and sucks their juices so that ultimately they wilt and dry up. The eggs which are white and sculptured are laid in clusters of 10 to 20 on leaves or on the stalks of the inflorescence. The eggs and the young ones are generally present in large numbers on many of the bushes that have finished flowering. The young bugs do not appear to be able to do much harm and the real damage would appear to be caused by the adults puncturing the tissues of the tender leaf and flower-buds leading thereby to a considerable reduction in the yields of flowers. The owner of the garden under report stated he had been suffering a loss of about Rs 800 every year on account of this pest.

The life-history of the pest has not yet been studied, but it is not likely to be different from that of other similar Pentatomids about which data are available.

The eggs were found parasitised by two species of Chalcids, one bluish-black, and the other black with a light yellow abdomen.

Remedial measures. The garden-owner reported that he had been in the habit of setting coolies to handpick the bugs as far as possible and crush them, but had found no relief therefrom since he had, notwithstanding such efforts, found no appreciable reduction in the number of bugs or in the damage done. Handnetting was found impracticable owing to the denseness of the bushes and the secretive habits of the adult bugs. To test the effectiveness of Calcium cyanide on these bugs, two small badly infested bushes of *Jasminum sambac*, from which the coolies had been able to pick out only about 15 bugs, were taken up and dusted with the help of a small hand duster. As the dust enveloped the bushes, numbers of bugs were found to fall to the ground stupefied by the fumes. Subsequently on beating the gusted twigs a further number was observed to drop to the ground. On the whole about 78 bugs could be collected from these two bushes. The gardener was struck with the effectiveness of the dusting and realised how inefficient comparatively, the handpicking had really been.

The bugs picked up from the ground were kept under observation and as it was noted that about 50 per cent of them did come back to life after a time, it was found necessary to have the bugs picked up from the ground soon after dusting and killed by throwing them into kerosenated water.

Subsequently dusting was tried on a larger scale by means of a knapsack duster. While good results were obtained it was observed that several of the bugs escaped the fumes by flying away to neighbouring bushes. It was also noted that the consumption of the dust was rather heavy as about $\frac{1}{2}$ lb. was found necessary to cover each large bush effectively. Hence a small tent 2 yards square and 4 feet high was prepared of coarse cotton cloth—of a size capable of covering the larger bushes completely—and tried. It was slipped over the infested bushes and propped up by a few bamboo poles, after which Calcium cyanide dust was pumped in with the aid of the duster. The results were found to be very satisfactory, as thereby the escape of the bugs was prevented and the consumption of the dust reduced to one-third the former quantity.

Calcium cyanide is a new insecticide that promises to be of immense utility under certain conditions. When exposed to the atmosphere, this chemical absorbs water vapour and breaks down instantly into hydrocyanic acid gas and lime. During the process of dusting particles of calcium cyanide reach the spiracles of insects and since the hydrocyanic acid that is produced by such decomposition is very powerful in its nascent condition, the effect is instantaneous. On the other hand the residue left after the gas is set free, is lime, so that the dust becomes absolutely harmless to men and animals in a short time. Scorching of leaves is observed to take place only in cases where the chemical is dusted when the leaves are wet with dew or rain drops. Dusting should therefore be avoided at such times, but can be done with impunity when the weather is dry.

The dusting has so far been tried only in certain particular parts of the garden, but wherever the treatment has been made the garden owner acknowledges that he has had a very high degree of relief and is desirous of having his whole garden treated so as to obtain complete freedom from the pest. Following the advice given, he gave in March an efficient pruning to all resting bushes, so as to drive the bugs away from such bushes; but owing to various circumstances, as for instance, the conditions of weather, it has not yet been possible to give a thorough dusting to the whole garden. It is proposed to give a trial to this method before long in order to see whether it would be possible to check the pest completely.

The writer wishes to acknowledge with thanks the help rendered by the Deputy-Director of Agriculture, III Circle in having the garden examined periodically by the Agricultural Demonstrator, Bellary, and in having the remedies tried by him as per instructions.

Supplementary Note sent on 10th December 1929

Since January 1928, when this paper was read, much work has been done on this subject under the guidance of the writer, and the following notes have been written to bring the available knowledge up-to-date.

The life-history of the Jasmine Bug has since been studied by Mr. T. K. Venkatakrishnan, L. Ag., Probationer from Hyderabad (Deccan), and the detailed results are being published elsewhere. The bug was, under insectary conditions, found to remain alive as an adult, in certain instances, for periods up to 6 to 7 weeks. Presumably it is fairly long-lived, and may live longer under natural conditions. 75 eggs have been recorded to be laid by a single female. The whole life-history from egg to adult is about 30 days on the average. It is possible that there may be 5 or more generations during a year provided food is available throughout.

Besides Coffee and Jasmine, *Chomelia asiatica* has been recorded as a food-plant near Coimbatore. Although noted on various vegetables, such as Cluster-beans and Hibiscus, it does not appear to breed on them.

The bug has been recorded as a pest of jasmine also at Pamidi, Adoni, Penukonda and Ambur.

As to control, the best method of tackling the bug has been found to be by covering each individual bush with a bag of oil-cloth (or coarse thick cloth) 2 or 3 feet in diameter, and giving a few puffs of calcium cyanide through holes in the sides. Ten to fifteen minutes after fumigation, the bag is removed, and after beating the bushes to bring down all bugs clinging to the twigs, the bugs are picked up from the ground and destroyed. This operation has to be repeated again within a week or ten days; for the egg stage of the bug is not affected, and a second operation is necessary to tackle the bugs when they hatch out. If the affected garden is properly weeded, and the bushes kept pruned and neat, there is every prospect of the pest being completely controlled, by the adoption of the tent fumigation methods above indicated.

The cost of fumigation works out at about Rs 50 to Rs 75 per acre, and considering the heavy losses—at least about Rs 400 per acre—incurred by the owners, it would be a paying proposition to undertake the control method recommended.

GINGER CULTIVATION

BY

RAJAM

It is accepted on all hands that for any commodity to sell successfully in the market it should be of the best quality possible. Many of the commercial products marketed in India and exported to foreign countries like England, France and America, are often-times condemned on the score that they are only second or third rate in quality. If, therefore, a product should find a ready market outside and fetch a very good price it is essential that it should be prepared in the most careful manner. One such product which is prepared in fair quantities on the West Coast, and which requires improvement both in respect of cultivation and method of preparation is ginger. The importance of paying adequate attention to the manufacture of this product on the West Coast can scarcely be over-stressed because a fairly good percentage of the bulk of the world's supplies of dried ginger is at present produced within Malabar, Travancore, and Cochin, and a major portion of the product that is exported now is considered very inferior in quality to that produced for example in Jamaica. It is stated that the United Kingdom alone would absorb increased supplies of ginger and would pay better prices for it, if it could only be better in quality. In view of this circumstance it may be advantageous to draw the attention of present and potential producers of this crop to the best methods of cultivating the plant and preparing the yield for the market.

Soil and Climate. The essential requirements as regards climate for the successful cultivation of ginger are a good rainfall and a high temperature during the growing period. Fortunately for the West Coast the existence of these two conditions leaves nothing to be desired. But the one very important thing that the cultivators of these parts do not fully realise is that ginger is an exhaustive crop and unless manures are readily applied in suitable doses to the soil, the yield will be materially reduced. The ginger plant will not stand water stagnation at all and does not thrive in very gravelly or very sandy soils. The soil best suited to this crop is a rich vegetable loam. During cultivation the land must be thoroughly drained, for if at any time water collects about the rhizome, the latter is sure to rot. Virgin forest lands after clearing by fire and removal of stumps can be successfully utilised for ginger cultivation but care should be taken to abundantly manure the soil, each time a crop is raised, for otherwise the land will soon get depleted and will produce practically nothing after three or four crops.

Application of Manures. It is with regard to the methods of manuring this crop and preparing the final product that a reform is immediately necessary on the West Coast. The manures that are commonly employed at present are an application of some green leaves and cowdung at the time of planting followed by a periodical dressing of liquid manure prepared by keeping cattle manure in suspension. The latter process coupled with the invariably unsatisfactory nature of the drains often results in the incidence of a

disease commonly known as 'black rot' which causes considerable damage to the crop. The 'black rot' attacks the underground parts of the plant and brings about partial if not entire decay of the rhizomes with the result that not only is the yield very adversely affected but also the final product becomes extremely inferior in quality. The principal constituents removed from the soil by ginger are lime and phosphoric acid, and hence it is essential that the crop should be well-dressed with fertilisers containing these two ingredients. A number of field scale experiments conducted by the Travancore Agricultural Department have demonstrably shown that an application of lime at the rate of 600 lbs. per acre just before planting followed by the dressing of a manure mixture of 2,000 lbs. of oil cake, 600 lbs. of fish guano and 600 lbs. of ashes, per acre in two instalments, one about 4 weeks and the other about two months after planting would not only materially increase the outturn but would also improve the quality of ginger and prevent 'black rot'. Experiments carried out by the Jamaica Agricultural Society with a view to ascertaining the most suitable manures for ginger have shown that a mixture composed of lime with 10 per cent each of soluble phosphates, ammonia and potash salts applied at the rate of 1 ton per acre gave the best results. It is therefore imperative that for obtaining better yields the cultivators on the West Coast should alter their present mode of manuring and adopt either of the above two manure mixtures making slight modifications if any to suit local conditions.

Lifting the Rhizomes. Another matter to which the attention of the cultivators of this crop should be drawn is in regard to the method of lifting the rhizomes out of the ground when they are ready to be taken. It does not seem to have been sufficiently realised at present that the slightest injury done to the rhizome when it is lifted out tends to reduce its market value enormously. In Jamaica, which produces perhaps the best grade ginger in the world the practice is to twist the rhizomes out of the ground very carefully with a fork or hoe. Careless digging with *mamollies* often results in several of the rhizomes either partially damaged or completely mutilated.

Preparing the Final Product. It is in the preparation of the final product that the greatest attention should be paid but the West Coast cultivators do not seem to have realised this sufficiently well. They should bear in mind that it is the quality of the final product that always determines its ready sale and price. A good percentage of the product that is prepared for export now is unpeeled dry ginger and consequently 'rough' and graded as second or third rate. White peeled dried ginger fetches a price which is at least 50 per cent more than the unscraped dry ginger and the cost and labour involved in scraping, washing and drying will be more than amply compensated for, not only by the increased price which this product will fetch but also because the 'peelings' obtained during scraping which are wasted now constitute a valuable by-product. Laboratory investigations of these peelings show that they contain between 4 and 5 per cent of essential oil on the moisture free material and that this oil has all the normal characteristics of oil of ginger. On the basis of this examination it is reported that carefully prepared dry 'Peelings' are likely to find a good sale at the rate of about 60 shillings per cwt. in foreign markets. It would therefore be much more profitable to prepare scraped white dry ginger and to carefully preserve its peelings instead of exporting the products as such after drying without peeling.

To Prepare best white Ginger. For the preparation of the best white ginger the rhizomes when lifted out of the ground should at once be rid of their

fibrous roots and should be thoroughly washed free from all mud and dirt. The rhizomes should not be allowed to lie in heaps for a long time as they are likely to ferment and undergo decomposition. As soon as the rootlets and excess of dirt and soil have been removed the ginger should again be thrown into water ready for 'peeling'. This is best done by means of a knife consisting merely of a narrow straight blade riveted to a wooden handle. The use of the hands, spoons broken pieces of pottery, etc., which are commonly employed for the purpose is sure to destroy the cells immediately below the skin which contain most of the essential oil upon which the pleasant aroma of the best quality ginger depends. As the rhizomes are peeled they should again be thrown into water and washed. It should be noted that the more thoroughly the washing is done the whiter will be the resulting product. It would be better if the peeled rhizomes were allowed to remain in water overnight and a small proportion of lime juice at the rate of about half a pint to seven or eight gallons of water were added to it at this stage. Some planters in Jamaica do this and they get an exceedingly white finished product. After being thoroughly washed in the manner above described the rhizomes should be dried in the sun preferably on a platform of levelled ground covered with cement. For obtaining the highest grade ginger uniform drying is essential and to achieve this each rhizome should be turned over by the hand at least on the first day. It is better to put the ginger out early at sunrise and take it in soon after sundown instead of leaving it in the drying yard during night time. In this manner completely dried ginger of very good quality could be obtained in about a week's time. The finished ginger is usually graded according to the size and colour of the rhizomes the best grades consisting of large 'hands' and free from even the smallest traces of mildew.

The best grade ginger when exported to foreign countries often fetches a price varying between £ 125 and £ 150 per ton depending upon market fluctuations. This clearly shows that if the cultivation of ginger is carried on more scientifically and if the dried ginger is prepared properly care being taken to collect and preserve all the 'peelings' in the manner outlined above, there is considerable scope for a very profitable enterprise in this direction, much more than what is obtaining at the present day.—*The Hindu Illustrated Weekly*.

THE MEETING OF THE IMPERIAL COUNCIL OF AGRICULTURAL RESEARCH

December 1929

The first meeting of the Imperial Council of Agricultural Research was held at the Agricultural Research Institute at Pusa from the 2nd to 7th December 1929. A preliminary account of the origin of the Council based on the recommendations of the Royal Commission on Agriculture in India and the proposed constitution and functions of the Council as contained in a resolution of the Government of India No. 826—Agriculture, dated May 23, 1929, was published in Vol. XVII, Nos. 4 and 5 of this Journal.

Further details of the constitution, functions, rules and regulations of the Research Council and a brief report of the Proceedings of the Meetings of the Imperial Council of Agricultural Research, of the Advisory Board and the Governing Body are given below.

Imperial Council of Agricultural Research

OBJECTS

The main objects for which the Imperial Council of Agricultural Research is established are :

1. To aid, develop and co-ordinate agricultural and veterinary research in India by promoting scientific (including technological) research, instruction and experiments in the science, methods and practice of agriculture (including the marketing of agricultural produce) and by promoting veterinary research and instruction in veterinary science, by the diffusion of useful information and by such other means as appear calculated to develop agricultural and veterinary research.
2. To act as a clearing house of information not only in regard to research but also in regard to agricultural and veterinary matters generally.
3. To establish and maintain a research and reference library in pursuance of the objects of the Society with reading and writing rooms and to furnish the same with books, reviews, magazines, news-papers and other publications.

The first members of the Governing Body are :

NAMES	OCCUPATIONS
1. The Hon'ble Khan Bahadur Sir Muhammad Habibullah Sahib Bahadur, K.C.S.I., K.C.I.E., Kt.	Member of the Council of His Excellency the Governor-General.
2. The Hon'ble Mr. M. R. Setu Ratnam Ayyar.	Minister for Agriculture, Madras.

NAMES	OCCUPATIONS
3. The Hon'ble Mr. Baskar Rao V. Jadhav, M.A., L.L.B.	Minister for Agriculture, Bombay.
4. The Hon'ble Sir A. Ghuznavi, Kt.	Member in charge of Portfolio of Agriculture, Bengal.
5. The Hon'ble Maharaj Kumar Mahijit Singh.	Minister for Agriculture, United Provinces.
6. The Hon'ble Sardar Sir Jogendra Singh, Kt.	Minister for Agriculture, Punjab.
7. The Hon'ble Sir Lee Ah Yain, Kt.	Minister for Agriculture, Burma.
8. The Hon'ble Sir Sayyid Muhammad Fakhruddin, Khan Bahadur, Kt.	Minister for Agriculture, Bihar and Orissa.
9. The Hon'ble Sir Arthur Edward Nelson, Kt., C.I.E., C.B.E., I.C.S.	Member in charge of Portfolio of Agriculture, Central Provinces and Berar.
10. His Excellency Sir Egbert Laurie Lucas Hammond, K.C.S.I., C.B.E., I.C.S.	In charge of Portfolio of Agriculture, Assam.
11. The Hon'ble Mr. V. Ramadas Pantulu.	Member, Council of State.
12. Mian Muhammad Shah Nawaz.	Member, Legislative Assembly.
13. Chaudhry Mukhtar Singh.	Member, Legislative Assembly.
14. Sir Joseph Kay.	Representative of the Associated Chambers of Commerce of India and Ceylon.
15. Mr. Walchand Hirachand, C.I.E.	Representative of the Federation of Indian Chambers of Commerce and Industry.
16. Sir Frank Noyce, Kt., C.S.I., C.B.E., I.C.S.	Officer on special duty, Department of Education, Health and Lands.

Members of the Council

The members of the Research Council consist of the members of the Governing Body and of the Advisory Board. The former is the executive part and manages all the affairs and the funds of the Council; the latter examines proposals referred to it by the Governing Body and advises on their feasibility or otherwise.

The Governing body consists of the following :

1. The Honourable Member of the Council of His Excellency the Governor-General for the time being in charge of the port-folio of Agriculture.
Chairman (*ex-officio*).
2. The Principal Administrative Officer of the Society—appointed by the Government of India.
Vice-Chairman (*ex-officio*).

The Ministers of Agriculture for the time being or the Members of the Governor's Executive Council in charge for the time being of the port-folio of Agriculture in

3. Madras.
4. Bombay.
5. Bengal.
6. The United Provinces.
7. The Punjab.
8. Burma.
9. Bihar and Orissa.
10. The Central Provinces.
11. Assam.
12. The Member of the Society elected by the Council of State.
13. The two members of the Society elected by the Legislative Assembly.
14. The member of the Society representing the European business community elected by the Associated Chambers of Commerce of India and Ceylon.
15. The member of the Society representing the Indian business community elected by the Federation of Indian Chambers of Commerce and Industry.
16. Two members of the Advisory Board to be elected by the Board in such manner as the Society may decide.
17. Sir Frank Noyce, Kt., C. S. I., C. B. E., I. C. S., appointed by His Excellency the Governor-General in Council.

And such other persons as His Excellency the Governor-General in Council may from time to time may appoint.

The Advisory Board of the Society consists of :

1. The Vice-Chairman of the Society.
2. The two members of the Society appointed by the Government of India as whole-time expert advisers.
3. Director for the time being of the Pusa Research Institute.
4. Director for the time being of the Imperial Institute of Veterinary Research, Muktesar.
5. Director for the time being of the Indian Institute of Science, Bangalore.

The Directors of Agriculture for the time being in

6. Madras.
7. Bombay.
8. Bengal.
9. The United Provinces.

10. The Punjab.
11. Burma.
12. Bihar and Orissa.
13. The Central Provinces.
14. Assam.

The members of the Society representing the Provincial—Veterinary Departments of the Governments of

15. Madras.
16. Bombay.
17. Bengal.
18. The United Provinces.
19. The Punjab.
20. Burma.
21. Bihar and Orissa.
22. The Central Provinces.
23. Assam.
24. The member of the Society representing minor administrations under the Government of India.
25. The member of the Society representing the Forest Research Institute, Dehra Dun.
26. The member of the Society representing the Co-operative Department.
27. The member of the Society representing the Indian Research Fund Association.
28. The four members of the Society representing the Indian Universities.
29. The member of the Society representing the Indian Tea Association and the United Planters' Association of Southern India.
30. The member of the Society representing the Indian Central Cotton Committee.
31. Not more than five non-official members nominated by the Government of India on the recommendation of the Society on the ground of scientific knowledge or other special qualifications.

And such other persons as His Excellency the Governor-General in Council may from time to time appoint.

Duration of membership

1. Where a member of the Society becomes a member by reason of the office or appointment he holds, his membership of the Society shall terminate when he ceases to hold that office or appointment.

2. The members of the Society elected by the Council of State and the Legislative Assembly respectively shall cease to be members on the dissolution of the Council or Assembly by which they were elected.

3. Unless their membership of the Society is previously terminated as provided in the Rules, all other members of the Society shall relinquish their membership on the expiry of three years from the date on which they became members of the Society but shall be eligible for reappointment to it.

List of members of the Imperial Council of Agricultural Research as it stood on 2nd December 1929

THE GOVERNING BODY

- The Hon'ble Khan Bahadur
Sir Muhammad Habibullah Sahib Bahadur, K.C.S.I., K.C.I.E., Kt.,
Chairman, Imperial Council of Agricultural Research.
- Dewan Bahadur Sir T. Vijayaraghavacharya, K.B.E.,
Vice-Chairman, Imperial Council of Agricultural Research.
- The Hon'ble Mr. M. R. Seturatnam Ayyar,
Minister for Agriculture, Madras.
- The Hon'ble Mr. Baskar Rao V. Jadhav, M.A., L.L.B.,
Minister for Agriculture, Bombay.
- The Hon'ble Alhadj Sir Abdelkerim Ghuznavi, Kt.,
Member in charge of port-folio of Agriculture, Bengal.
- The Hon'ble Maharaj Kumar Mahijit Singh,
Minister for Agriculture, The United Provinces.
- The Hon'ble Sardar Sir Jogendra Singh, Kt.,
Minister for Agriculture, Punjab.
- The Hon'ble Sir Lee Ah Yain, Kt.,
Minister for Agriculture, Burma.
- The Hon'ble Sir Sayyid Muhammad Fakhruddin, Khan Bhadur, Kt.,
Minister for Agriculture, Bihar and Orissa.
- The Hon'ble Mr. Ramrao Madhaorao Deshmukh, Barrister-at-Law.,
Minister for Agriculture, Central Provinces and Berar.
- The Hon'ble Maulavi Abdul Hamid, B.L.,
Minister for Agriculture, Assam.
- The Hon'ble Mr. V. Ramadas Pantalu,
Member, Council of State.
- Mian Muhammad Shah Nawaz, M.L.A., Lahore.
- Chaudhry Mukhtar Singh, M.L.A., Meerut City.
- Sir Joseph Kay, Bombay.
- Walchand Hirachand, Esq., C.I.E., Bombay.
- Sir Frank Noyce, Kt., C.S.I., C.B.E., I.C.S.,
Secretary to the Government of India, Department of Education,
Health and Lands, New Delhi.

THE ADVISORY BOARD

- B. C. Burt, Esq., M.B.F., B.Sc., I.A.S.,
Agricultural Expert, Imperial Council of Agricultural Research.
- Dr. W. H. Harrison, D.Sc., I.A.S.,
Offg. Director, Imperial Institute of Agricultural Research, Pusa.
- F. Ware, Esq., F.R.C.V.S., I.V.S.,
Offg. Director, Imperial Institute of Veterinary Research, Muktesar.
- Dr. M. O. Forster, F.R.F.,
Director, Indian Institute of Science, Bangalore.
- G. R. Hilson, Esq., B.Sc.,
Offg. Director of Agriculture, Madras.
- Dr. W. Burns, D.Sc.,
Offg. Director of Agriculture, (Bombay), Poona.
- G. P. Hector, Esq., M.A., D.Sc.,
Director of Agriculture, Bengal, Dacca.
- G. W. Clarke, Esq., F.L.C., F.C.S., C.I.E.,
Director of Agriculture, Shahjahanpur.
- D. Milne, Esq., B.Sc., C.I.E., I.A.S.,
Director of Agriculture, The Punjab, Lahore.
- A. McKerral, Esq., M.A., B.Sc., Director of Agriculture, Burma,
The Director of Agriculture, Bihar and Orissa.
- F. J. Plymen, Esq., C.I.E., A.C.G.I., I.A.S.,
Director of Agriculture, Central Provinces, Nagpur.
- Rai Bahadur Radha Nath Phukan, M.A., B.L.,
Director of Agriculture, Assam.
- P. T. Saunders, Esq., O.B.E., M.R.C.V.S., I.V.S.,
Offg. Director of Veterinary Services, Madras.
- P. J. Kerr, Esq., M.R.C.V.S., I.V.S.,
Director, Civil Veterinary Department and Veterinary
Adviser to Government, Bengal.
- Captain S. G. M. Hickey, I.V.S.,
Director, Civil Veterinary Department, United Provinces.
- W. Taylor, Esq., M.R.C.V.S., D.V.H., I.V.S.,
Offg. Director of Civil Veterinary Department, Punjab.
- P. B. Riley, Esq., M.R.C.V.S., F.R.S.T., M.K.H., I.V.S.,
Director, Civil Veterinary Department and Veterinary
Adviser to Government, Bihar and Orissa.
- Major R. F. Stirling, F.R.C.V.S., F.R.G.S., D.V.S.M., F.Z.S.,
Offg. Veterinary Adviser to Government, Central Provinces.
- W. Harris, Esq., M.R.C.V.S., I.V.S.,
Superintendent, Civil Veterinary Department, Assam.
- W. Robertson-Brown, Esq.,
Agricultural Officer, North-west Frontier Province.
- A. Rodger, Esq., O.B.E., I.F.S.,
Forest Research Institute, Dehra Dun.

- G. K. Devadhar, Esq., M.A., C.I.E.,
President, Servants of India Society, Poona.
- Colonel J. D. Graham, C.I.E., I.M.S.,
Secretary, Indian Research Fund Association, New Delhi.
- Dr. N. N. Gangulee, B.Sc., Ph. D., C.I.E.,
Khaira Professor of Agriculture, University of Calcutta.
- Dr. Leslie Coleman,
Director of Agriculture, Mysore.
- C. Tadulinga Mudaliar, Esq., F.L.S.,
Principal, Agricultural College, Coimbatore.
- Dr. L. K. Hyder, B.A., Ph. D., M.L.A.,
Professor of Economics, Aligarh University.
- P. H. Carpenter, Esq.,
Chief Scientific Officer, Indian Tea Association, Assam.
- S. D. Saklatvala, Esq.,
Vice-President, Indian Central Cotton Committee.
- Brigadier A. J. Williams, D.S.O., F.R.C.V.S.,
Director of Veterinary Services in India, New Delhi.

Proceedings in brief of the meetings of the
ADVISORY BOARD
of the Imperial Council of Agricultural Research
held on 2nd, 3rd and 4th December, 1929 at Pusa

The Chairman, Sir T. Vijayaraghavacharya, opened the proceedings with a few words of welcome. The Board then proceeded with the election of two of its members to the Governing Body (item 1 of the Agenda.) The ballot resulted in Mr. P. H. Carpenter and Mr. K. Hewlett being elected.

2. *Interim Report of the Sugar Committee.* (Item 2 of the Agenda.)

As several members required time to study the report, discussion of this item was postponed till the meeting on the 3rd December, 1929.

3. *Measures for the destruction of locusts.* (Item 3 of the Agenda.)

It was resolved that the Advisory Board should recommend to the Governing Body of the Imperial Council of Agricultural Research to appoint a special sub-committee under Rule 30 (1) to work out the technique and organisation required for the control of the desert locust including measures not involving the use of poisons, (2) to make recommendations for the scientific study of the desert locust in India and to work out the staff, equipment and funds required to carry this out, (3) to recommend to what extent locust research should be carried out by Imperial and by Provincial agencies respectively, and (4) to report what action should be taken on the recommendations of the Committee of Civil Research.

4. *The Conservation of indigenous manurial resources and the development of the use of indigenous fertilisers. The preparation of a programme of research on fertilisers.* (Item 4 of the Agenda.)

It was decided to appoint a sub-committee to prepare a programme of research on fertilisers and to conduct an investigation into the economic utility of indigenous manures.

5. (a) *The editing of the 'Pusa' series of Agricultural and Veterinary Publications in the future.*

(b) *Abstracts of Agricultural Literature.*

(c) *Free Interchange of Agricultural Publications throughout India.* (Item 5 of the Agenda.)

After a general discussion the sense of the Board was that instead of the present *Agricultural Journal of India* and the *Journal of the Central Bureau of Animal Husbandry and Dairying*, there should be three Journals—one Agricultural, the other Veterinary—of a purely scientific nature and a third Journal of a more popular type containing articles on both Agricultural and Veterinary subjects; further, that the *Memoirs of the Department of Agriculture in India* should be discontinued and that instead, the Council should establish a series of monographs in those cases where publication in special form was desired.

It was resolved that the Imperial Council of Agricultural-Research do publish three Journals, namely, (1) a Scientific Journal to be entitled *The Journal of Tropical Veterinary Science*, (2) an *Indian Journal of Agricultural Science*, (3) an *Indian Journal of Agriculture and Animal Husbandry*; that, further, the Council do also establish a series of monographs to meet cases where publication in special form was required.

In regard to the Editorial Committees for the two Scientific Journals, the following was passed:

That the Editorial Committee of the *Journal of Tropical Veterinary Science* and of the *Indian Journal of Agricultural Science* be composed of the permanent staff of the Council plus in the case of each Journal of two others eminent in Veterinary and Agricultural Science respectively; and further, that these latter be nominated by the Governing Body of the Imperial Council and that the Editorial Committee of the *Indian Journal of Agriculture and Animal Husbandry* do consist of the permanent staff of the Imperial Council plus the two others nominated respectively to the Editorial Committee of the *Journal of Tropical Veterinary Science* and the *Indian Journal of Agricultural Science*.

It was further decided that the two scientific journals should each have two parts—one for papers contributed and the other for abstracts; that Agricultural and Veterinary abstracters should be appointed in each Province who should be remunerated at such rates as the Governing Body might decide; but that every contributor to the two scientific journals should also send in an abstract of the contribution.

In regard to the Free Exchange of Publications, it was resolved that the Imperial Council do undertake to supply free a reasonable number of

copies of its publications for the use of Agricultural and Veterinary officers in those Provinces which will reciprocate by supplying all their Agricultural and Veterinary Publications free to the Imperial Council of Agricultural Research and any reasonable number to other reciprocating bodies.

6. *Future contributions to the Imperial Bureau of Mycology and the International Veterinary Bureau, Paris.* (Item 6 of the Agenda.)

It was resolved that the Advisory Board should strongly recommend to the Governing Body of the Imperial Council that India's contributions to the International Veterinary Bureau be continued for a further period of seven years and that a representative of India be deputed to attend, whenever possible, the annual meeting of the Bureau, and that the Advisory Board do strongly recommend to the Governing Body of the Imperial Council that India's contribution to the Imperial Bureau of Mycology be continued.

7. *Production of Agricultural Cinema Films.* (Item 7 of the Agenda.)

It was agreed that if funds were available with the Council, (1) one or more Indian Officers should be selected and sent to England for training in Cinema production, and (2) obtain with the assistance of the Empire Marketing Board the services of an Expert from England who will train local officers in the work, but if funds were not available for both to take recourse to the former step.

8. *The improvement of Indian Hemp with special reference to its marketing in a condition which will enable it to compete more successfully with Italian Hemp in European markets.* (Item 8 of the Agenda.)

The following resolution was put to the vote and carried:

That it be recommended to the Governing Body of the Imperial Council of Agricultural Research that the Council do employ one whole-time officer to study and report on the conditions under which Hemp is marketed in the provinces concerned in India and that the period of such officer's appointment be limited to one year.

The Board also recorded the opinion that when it came to consider the report of the Marketing Officer, if appointed, it should also consider the results of experiments which were now being conducted by certain Provinces in regard to retting.

9. *Board of Agriculture—(a) Future constitution of the Board of Agriculture, (b) arrangements which should be made in future for meetings of the Cattle Conference, All-India Veterinary Conference and Sectional Meetings of the Board.* (Item 9 of the Agenda.)

It was resolved that the Advisory Board of the Imperial Council of Agricultural Research should recommend that the Board of Agriculture be, in future, known as the 'Board of Agriculture and Animal Husbandry' and be divided into two branches: (a) Crops and Soils, (b) Animal health and Husbandry; that each branch should meet biennially, meetings being arranged in alternate years and in conjunction with the meeting of the Advisory Board of the Imperial Council; that sectional meetings of the Board of Agriculture be in future years

organised in conjunction with the meeting of the appropriate wing of the Board of Agriculture and Animal Husbandry and that the Advisory Board of the Imperial Council do recommend that the Board of Agriculture be henceforward convened under the auspices of the Imperial Council of Agricultural Research.

It was agreed that it should be left to the Advisory Board to decide where the Board of Agriculture and Animal Husbandry should meet in future years, in view of the fact that the meeting of either wing of the Board would be in conjunction with the meeting of the Advisory Board.

10. *Establishment of a Journal of Dairy Research by the Dairy Research Committee of the Empire Marketing Board.* (Item 10 of the Agenda.)

There was no discussion, this item being for information only.

11. *Award of an annual prize for the most striking agricultural improvement of the year.* (Item 11 of the Agenda.)

It was resolved that at present it was not desirable to make any recommendation in regard to the award of an annual prize for the most striking agricultural improvement of the year.

12. *Interim Report of the Sugar Committee.* (Item 2 of the Agenda.)

It was resolved that the Advisory Board of the Imperial Council do adopt the Interim Report of the Sugar Committee and recommend the proposals contained therein to the favourable consideration of the Governing Body of the Council; and that while endorsing generally the application of the Government of the United Provinces for a grant to the Harcourt Butler Technological Institute, the Advisory Board recommend that the Sugar Committee examine the details of the scheme and report direct to the Governing Body.

13. *Financial assistance to the National Horse Breeding and Show Society of India.* (Item 12 of the Agenda.)

At the request of members, consideration of this item was postponed till the meeting on the 4th December 1929.

14. *Application from the University of Dacca for financial assistance towards Agricultural Research in the University.* (Item 13 of the Agenda.)

It was agreed that a small sub-committee be appointed to report immediately on the application from the University of Dacca for financial assistance towards Agricultural Research in the University.

15. *Application from Dr. K. C. Mehta, Professor of Botany, Agra College, for a grant-in-aid for investigation on 'Rusts of Wheat and Barley.'* (Item 14 of the Agenda.)

It was decided that the Advisory Board do recommend to the Governing Body that a grant be made to Dr. K. C. Mehta, Professor of Botany, Agra College, of a sum not exceeding Rs 45,000 spread over a period of three years for an investigation on the 'Rusts of Wheat and Barley.'

16. *Scheme for Rice Research in Bihar.* (Item 15 of the Agenda.)

It was decided that the Advisory Board of the Imperial Council should defer consideration of this scheme until the next meeting of the Advisory Board and so enable the Provinces concerned to submit if they so desired, schemes for Rice Research; and further that all such schemes should be considered together.

17. *Financial assistance to the National Horse Breeding and Show Society of India.* (Item 12 of the Agenda.)

After hearing the reasons in support of a grant to the National Horse Breeding and Show Society of India, it was decided that the Advisory Board of the Imperial Council should recommend to the Governing Body that a grant of Rs 3,000 per annum for five years be made to the National Horse Breeding and Show Society of India.

18. *Board of Agriculture:*

(a) *Future constitution of the Board of Agriculture,*

(b) *Arrangements which should be made in future for meeting of the Cattle Conference, All-India Veterinary Conference and Sectional meetings of the Board.* (Item 9 of the Agenda—contd.)

Based on the recommendations of the sub-committee, it was decided that the Board should recommend that the proposed wing of 'crops and soils' of the future Board of Agriculture and Animal Husbandry should consist of the following:

- 1 Vice-Chairman of the Imperial Council of Agricultural Research *ex-officio* Chairman of the Board.
- 2 Expert Advisers of the Imperial Council of Agricultural Research.
- 1 Secretary of the Imperial Council of Agricultural Research who will be *ex-officio* Secretary to the Board assisted by one or more Technical Joint Secretaries appointed for each meeting.
- 1 Director, Imperial Institute of Agricultural Research.
- 1 Director-General of Commercial Intelligence (or an officer deputed by him).
- 1 Imperial Agricultural Chemist.
- 1 Imperial Economic Botanist.
- 1 Imperial Bacteriologist.
- 1 Imperial Mycologist.
- 1 Imperial Entomologist.
- 1 Imperial Agriculturist.
- 1 Imperial Sugarcane Expert.
- 8 All Class I Officers of the Imperial Institute of Agricultural Research, Pusa.
- 1 Director, Plant Research Institute, Indore.
- 1 Secretary, Indian Central Cotton Committee.
- 1 Scientific Officer to the Indian Tea Association.
- 1 Scientific Officer to the United Planters' Association of Southern India.
- 1 Director, Lac Research Institute.

- 5 University Representatives of Science and Economics nominated by the Inter-University Board in consultation with the Chairman of the Board.
- 2 Representatives of the Co-operative movement in India appointed by the Chairman of the Board.
- 8 Director of Agriculture or representatives of the Agricultural Departments of Indian States which are already represented on the Board.
- 20 Two Un-official members from each Province including the North-west Frontier Province appointed by the local Government from the Provincial Board of Agriculture, Provincial Committee for Agricultural Research or a similar organisation.
- 30 Three Agricultural Officers from each Province including the North-west Frontier Province.
- 3 Representatives from the Central Irrigation Board when formed.
- 7 Members nominated by the Chairman.

101 Total

For the proposed wing of Animal health and Animal Husbandry, the Board recommended to the Governing Body the following members :

- 1 Vice-Chairman of the Imperial Council of Agricultural Research *ex-officio* Chairman of the Board.
- 2 Expert Advisers of the Imperial Council of Agricultural Research, Pusa.
- 1 Secretary of the Imperial Council of Agricultural Research who will be *ex-officio* Secretary to the Board assisted by one or more technical Joint Secretaries appointed for each meeting.
- 1 Director of Veterinary Services in India or an Officer deputed by him.
- 1 Director of the Imperial Institute of Veterinary Research, Muktesar.
- 1 Director of Military Farms.
- 1 Principal, Lahore Veterinary College.
- 1 Imperial Dairy Expert.
- 1 Imperial Physiological Chemist.
- 1 Imperial Agriculturist, Pusa.
- 5 Section Officers of the Imperial Institute of Veterinary Research, Muktesar.
- 2 Assistant Controllers of Military Dairy Farms.
- 1 Assistant Imperial Dairy Expert.
- 1 Assistant to the Physiological Chemist.
- 1 An officer working on Nutrition problems nominated by the Indian Research Fund Association.
- 1 An officer deputed by the President, Forest Research Institute, Dehra Dun, for the consideration of grazing problems.
- 1 The Second Imperial Entomologist, (Dipterist), Pusa.

- Representative of the National Horse Breeding Association of India.
- 1 Principal, Forman Agricultural Institute, Allahabad.
- 2 Two co-operative representatives connected with Animal Husbandry, to be appointed by the Chairman.
- 4 Representatives of the Veterinary Departments in Indian States.
- 2 Livestock Officers from Indian States.
- 27 Three Veterinary Officers from each major Province.
- 3 One Veterinary Officer from Sind, North-west Frontier Province and Baluchistan.
- 20 Two Agricultural Officers connected with Animal Husbandry work from each major Province and the North-west Frontier Province.
- 10 One non-official interested in Animal Husbandry to be nominated by the Government of each major Province and the North-west Frontier Province.
- 2 University representatives connected with the Biological sciences to be nominated by the Inter-University Board.
- 5 Gentlemen interested in Animal Husbandry to be appointed by the Chairman.

100 Total

19. *Application from the University of Dacca for financial assistance towards Agricultural Research in the University.* (Item 13 of the Agenda—continued.)

On the report of the sub-committee appointed to examine the application, the Advisory Board made the following recommendation to the Governing Body :

The Board welcomes this offer of Co-operation by the Dacca University. A proposal is put forward for work on three problems ;

- (a) Methods for the mechanical analysis of soils ;
- (b) The Assimilation of Nitrogen by the rice plant ;
- (c) As a subsidiary portion of (a) a study of the organic matter in the soil.

The Board recommended that a part of the grant applied for should be made at once with the hope that Professor Ghose will be able to see his way to modify his proposals in certain respects in order that certain aspects of these problems to which the Board attaches particular importance may be worked out.

**Proceedings in brief of the meetings of the
GOVERNING BODY
of the Imperial Council of Agricultural Research
held on the 5th and 6th December, 1929 at Pusa**

1. The Chairman, the Honourable Khan Bahadur Sir Muhammad Habibullah Sahib Bahadur, K.C.S.I., K.C.I.E., Kt., explained, at the start, those proposals in the Interim Report of the Sugar Committee which were for the immediate decision of the Governing Body. These were:

- (1) that a recommendation be made to the Government of India to refer the general question of import duties on sugar for investigation by the Tariff Board;
- (2) that the proposals recommended by the Committee for converting the present *ad valorem* duty on low grade sugar into a specific duty in order to prevent unfair competition with Indian *gur* be supported to the Government of India;
- (3) that a grant of Rs 6,000 be made to the Shahjahanpur Research Station for a detailed examination of new seedling canes;
- (4) that a grant of Rs 8,000 each to the United Provinces, the Punjab and Bihar and Orissa be made for experiments in the designing of a satisfactory small power sugar mill;
- (5) that a Sugar Technologist be appointed for a period of three years and that Mr. Srivastava be approached through the proper channel for appointment to this post; the salary to range between Rs 2,000 to Rs 2,500 per mensem and also that, prior to taking up the appointment, Mr. Srivastava be sent abroad on deputation for a year to study sugar-factory practice in other parts of the World; and
- (6) that the Governing Body should authorise the Sugar Committee to examine in detail the scheme submitted by the Government of the United Provinces for a non-recurring grant of Rs 1,25,000 for the provision of an experimental sugar plant at the Harcourt Butler Technological Institute, Cawnpore, and for a recurring grant for 5 years of Rs 20,000 towards the expenses of its maintenance and report direct to the Governing Body of the Council.

After a long discussion, it was decided

- (1) That the Government of India be asked to refer the General question of the import duties on sugar for investigation by the Tariff Board; and further, that the Government of India be requested to take immediate action for the conversion of the present *ad valorem* duty on low grade sugar into a specific duty in order to prevent unfair competition with Indian *Gur*.
- (2) That a sum of Rs 8,000 be granted to each of the following Provinces: United Provinces, Bihar and Orissa and the Punjab, for experiments in devising a satisfactory small power sugarcane crushing mill

subject to a report being submitted at the end of the year on the work done.

- (3) That a sum of Rs 6,000 be given to Shahjahanpur Research Station for work on testing Coimbatore canes in Sub-tropical India.
- (4) That a prize of Rs 20,000 be awarded to any individual or firm for the invention of a satisfactory small power sugarcane crushing power mill, that the conditions governing the award of the prize should be definitely laid down but that no one should be debarred from competing and
- (5) That the Governing Body sanction the appointment of a Technologist on the suggestions made by the Sugar Committee and the Sugar Committee should be requested to examine the details of the application received from the Government of the United Provinces for a grant to the Harcourt Butler Technological Institute and to submit its report direct to the Governing Body.

2. * *Future contributions to the Imperial Bureau of Mycology and the International Veterinary Bureau, Paris, with the resolutions of the Advisory Board thereon.* (Item 2 of the Agenda.)

It was decided that

- (1) the Governing Body should sanction a contribution to the International Veterinary Bureau, Paris, for a further period of seven years at the rate of £ 300 per annum and that a representative of India be deputed to attend, whenever possible, the annual meeting of the Bureau and
- (2) the Governing Body continue the Council's subscription of £ 600 per annum to the Imperial Bureau of Mycology.

3. *Papers for information:*

Deputation of Dr. Clouston to visit the British Industries Fair in February 1930 and to report to the Council his impressions of the value of the Fair in bringing Indian Agricultural Products to the notice of European customers. (Item 3 of the Agenda.)

The opinion was expressed that this was an object on which it was worth spending money, as it was very important that someone should be sent from India in future years to attend the British Industries Fair, so that the impressions which he gathered and the suggestions which he made as a result of his visit may be of benefit to the people concerned in India. The Hon'ble the Chairman said that it was necessary to gain some experience before going to the expense of deputing a person all the way from India to attend this Fair but the suggestion put forward would be sympathetically considered when the occasion next arose.

4. *Resolutions of the Advisory Board for the consideration of the Governing Body.* (Item 4 of the Agenda.)

The Governing Body then took into consideration one by one, the various resolutions passed by the Advisory Board.

1. *Measures for the Destruction of Locusts.*

On the two resolutions in this connection, it was decided that the Governing Body should accept the recommendation of the Advisory Board of the Imperial Council for the appointment of a special Sub-committee with the composition and the terms of reference proposed; and, further, that it agrees to pay the Travelling Allowance of members of this Committee from the funds of the Council on the understanding that detailed proposals of the expenditure involved will, in due course, be submitted to the Governing Body for sanction.

ii. *The conservation of indigenous manurial resources and the development of the use of indigenous fertilisers. The preparation of a programme of research on fertilisers.*

As there was some opposition it was decided to postpone discussion till next day.

iii. *Publications.*

It was resolved:

'That the Governing Body accept the resolutions of the Advisory Board in this connection.'

iv. *The improvement of Indian Hemp with special reference to its marketing in a condition which will enable it to compete more successfully with Italian Hemp in European markets.*

It was decided to accept the resolution of the Advisory Board in this connection subject to detailed proposals of the expenditure involved being submitted to the Governing Body for final approval.

v. *Board of Agriculture.*

The Governing Body endorsed the recommendations of the Advisory Board in this connection.

vi. *The award of an annual prize for the most striking agricultural improvement of the year.*

The Governing Body of the Imperial Council was inclined to favour the award of an 'annual prize for the most striking improvement of the year' and that the object for which it should be awarded should be defined as, for example, for an improved implement; but that before arriving at a final decision in the matter, the Governing Body requests the Advisory Board of the Imperial Council to re-examine and report on the question at its next meeting.

vii. *Financial assistance to the National Horse Breeding and Show Society of India.*

As several members expressed the opinion that a grant to this Society was hardly appropriate as, except possibly in the case of the Punjab, the Governing Body did not accept the recommendation of the Advisory Board in favour of a grant of Rs 3,000 per annum to the National Horse Breeding and Show Society of India.

viii. *The conservation of indigenous manurial resources and the development of the use of indigenous fertilisers. The preparation of a programme of research on fertilisers.*

On the motion of the Hon'ble Mr. Ramadas Pantulu, the following resolution was carried:

Resolved that a Sub-committee be appointed for the investigation of problems relating to the conservation of indigenous manurial resources and the development of the use of indigenous fertilisers and the preparation of a programme of research on fertilisers, and that the proposed investigation should fall into the following main heads:

- I. The careful study of the existing data and the correlation of the results hitherto obtained from field trials of (a) Farmyard manure, (b) Green manure, (c) Oil cakes, (d) Bonemeal, (e) Fish manure and (f) Indian Saltpetre.
- II. The means by which the above manures may be conserved.
- III. The means by which indigenous manures may be cheapened and their use extended.
- IV. Further research in regard to the possibilities of indigenous manures, especially in unirrigated tracts and in tracts with defective irrigation facilities.

ix. *Application from the University of Dacca for financial assistance towards Agricultural Research in the University.*

It was decided to accept the recommendations of the Advisory Board in regard to the application from the University of Dacca for financial assistance towards Agricultural Research in the University.

x. *Application from Dr. K. C. Mehta, Professor of Botany, Agra College, for a grant-in-aid for investigation on 'Rusts of Wheat and Barley.'*

The Governing Body accepted the recommendation of the Advisory Board in this matter.

xi. *Scheme for Rice research in Bihar*

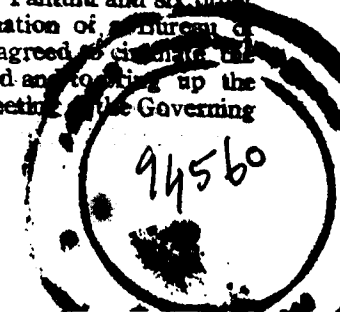
It was decided to accept the recommendation of the Advisory Board in regard to this scheme.

xii. *Production of Agricultural Cinema films.*

The Governing Body of the Imperial Council decided to select and send two Indians at once to England for training in Cinema production, at the expense of the Empire Marketing Board, provided that the men selected agree to serve the Council for a period of three years after their return to India.

Bureau of Agricultural Intelligence

On the suggestion of the Hon'ble Mr. V. Ramadas Pantulu and six other members of the Governing Body regarding the formation of a Bureau of Agricultural Intelligence, the Hon'ble the Chairman agreed to circulate the proposals among the members of the Advisory Board and to bring up the matter with the opinion of the Board before the next meeting of the Governing Body.



Before the proceedings closed the Hon'ble Sir Abdel Kerim Ghuznavi moved a hearty vote of thanks to the Hon'ble the Chairman; he referred to the great work which the Hon'ble Sir Muhammad Habibullah had performed towards the agricultural prosperity of India by the establishment of this Imperial Council whose second meeting they were now attending. He was sure that this would not be his last great work of public utility and that he would live for many years longer to serve the country. The Hon'ble the Chairman returned the thanks and the proceedings terminated.

**Proceedings of the meeting of the
IMPERIAL COUNCIL OF AGRICULTURAL RESEARCH
held on Saturday the 7th December, 1929 at Pusa**

In opening the proceedings of the general meeting (Joint Session of the Advisory Board and Governing Body) the Hon'ble the Chairman made the following speech:

Gentlemen,

Before we begin the proceedings, I wish to make an observation of a personal nature. The Agenda for to-day, in the preparation of which I had no hand, and for which I claim no responsibility, indicates that I propose to inflict an address upon you this morning. I had never intended to indulge in such an undertaking. I merely propose to speak to you a few words, as I fear I shall not have another opportunity of doing so, and I shall not detain you for more than five minutes for that purpose. I am sure this will cause no disappointment to you but that you will receive this announcement with a sigh of relief.

I am very glad, indeed, to meet you all once again. I know that most of you have come at the sacrifice of personal convenience. You have important affairs to attend to at home, and the ordinary dislocation of such business entailed by absence is, in the present case, combined with discomfort of travelling to an inaccessible spot like Pusa. To my pleasure at seeing you again is, therefore, added a sense of gratitude. I hope that the importance to India of the work which you have met to do here and the opportunity you have had of seeing the interesting work that is carried on in Pusa, which is the headquarters of Agricultural Research in India, may provide some compensation for the dust and strain of travel. I am sure I am voicing your feelings, as indeed I am doing my own, when I say that we are greatly beholden to the officers of the Institute for taking us round and enabling us to see their activities in the field of Agricultural Research and Animal Husbandry.

Though barely five months have elapsed since the Council of Agricultural Research came into being considerable work of far-reaching importance has already been started. In the forefront of its activities, I must place the appointment of a Committee to report upon the state of the Sugar Industry in India. Indian Agriculture in general, and the cane growing and sugar manufacturing Provinces of the country in particular, have for some time been gravely con-

cerned over the future of this industry. Competition with outside countries engaged upon the production of cane-sugar has steadily stiffened. It has even been alleged that this competition is not always fair, and that the Indian producer has to contend, *inter-alia*, against "dumping" which over-production abroad facilitates. The Council at once took up consideration of the question as to how it could best assist this industry, and came to the conclusion that in view of the complexity of the problem, it should entrust the task of investigation and study to a special committee. This body has worked with admirable expedition and submitted a valuable *interim report* which has been considered by us during the present session. I shall only express the hope that our conclusions may lead to bring about, at least, the inception of a considered and consistent policy of co-ordinated effort, both in the field and factory, designed to vitalise a drooping but all-important national industry.

The large number of other useful resolutions which we have passed during this session and the financial aid which we have been able to afford to such of the schemes which were submitted for our sanction by the Advisory Board may be regarded as an encouraging augury for the future. I will permit myself to make special reference to the resolution for the appointment of a Sub-Committee for the investigation of problems relating to the conservation of indigenous manurial resources and the development of the use of indigenous fertilisers. I will express the hope that the labours of this Sub-Committee may lead to a satisfactory solution of a problem which is of vital interest to the agricultural population.

As you are aware, gentlemen, I have spent the greater part of the time that has elapsed since our last meeting, outside India. Since my return, I have not been able to spare the time to acquire complete familiarity with all that the Council or its permanent staff has done since June last. But I have learnt enough to know that the task of establishing *liaison* with Provincial Governments and private Institutions, and of stimulating a spirit of All-India co-operation in Agricultural Research has been pursued with unostentatious but effective energy. Proposals for new undertakings in the field of Research and applications for financial aid are coming in from Provincial Governments and from Universities. Relations have also been established with International and Imperial Institutions an event which ought to have beneficial consequences both to Science and to the prosperity of the Agriculturist in India. By way of illustration, I may mention the generous decision of the Empire Marketing Board to share equally with the Government of Bihar and Orissa the expenditure on a scheme of Lac Research. An application from the Indian Tea Association for assistance in an important scheme of investigation in plant physiology is now pending before the Board.

You will observe, gentlemen, that our permanent staff is still incomplete in one important respect. We have not yet got our Expert Adviser on Veterinary matters, but we hope that this deficiency will be made good shortly.

More than once the purpose of this Council has been explained in language of eloquence and authority by His Excellency the Viceroy. It is unnecessary for me to repeat in my own imperfect way what has already been admirably said. I should only like to emphasize one point. An organization, such as our Council, has a great duty to perform, and public expectation of its utility, though tinged with scepticism which first meets all new ventures, is, if I have read the signs correctly, high. It must be our

endeavour to come up to this expectation, striving in a spirit of impartial service to Agriculture throughout India. Constituted as the Council is, I am confident that it will rise to the level of its obligations and its opportunities.

While I was deeply touched by the highly appreciative manner in which my esteemed friend the Hon'ble Sir Abdel Kerim Ghuznavi referred to my humble services in bringing this organization into existence, I am equally filled by a great regret when I think that in its activities which are only now beginning, my own share will be brief. As you know, gentlemen, my term of office as your Chairman will soon end. But I shall always remember with pride the part, however humble, that it was given me to play in bringing the Research Council into existence and in guiding its infant footsteps. Even from my retirement, I shall watch with interest and joy its growth as an instrument of effective beneficence, firm in my faith that the competence and the spirit of service of my colleagues, and of their successors and mine, will lead it with unfaltering stride and unswerving gaze to its great destiny.

Several speakers eulogised the Hon'ble the Chairman's address and expressed appreciation at the harmonious manner in which the proceedings were conducted by the Chairman and the Vice-Chairman. Special thanks were expressed for the excellent arrangements made by the Director and staff of the Pusa Research Institute to make their stay at Pusa comfortable. The General Meeting then concluded.

THE MEETING OF THE ALL-INDIA BOARD OF AGRICULTURE, 1929

The meeting of the All-India Board of Agriculture was held at the Imperial Agricultural Research Institute, Pusa, from 9th to 13th December, 1929, with Dewan Bahadur Sir T. Vijayaraghavachariar, Vice-Chairman, Imperial Council of Agricultural Research, in the Chair.

The following is the full list of members and visitors of the Board for 1929.

- | | |
|-------------------------------------|-------------------------|
| 1. Sir T. Vijayaraghavachariar. | 11. Mr. G. B. Hector. |
| 2. Hon'ble Mr. B. V. Jadhav. | 12. " F. J. F. Shaw. |
| 3. Hon'ble Sir Muhammad Fakhruddin. | 13. " D. Milne. |
| 4. Sir Frank Noyce. | 14. " S. Higginbotham. |
| 5. Mr. M. S. A. Hydari. | 15. " J. H. Walton. |
| 6. Dr. W. H. Harrison. | 16. " G. S. Henderson. |
| 7. Mr. B. K. Gokhale. | 17. " P. B. Riley. |
| 8. " G. R. Hilson. | 18. " W. Harris. |
| 9. " P. T. Saunders. | 19. " C. M. Hutchinson. |
| 10. " F. J. Wrath. | 20. " W. Roberts. |
| | 21. " A. K. B. Cazi. |

- | | |
|-------------------------------|----------------------------|
| 22. Mr. P. V. Isaac. | 48. Mr. E. H. Churchill. |
| 23. " A. P. Chiff. | 49. " W. Sayer. |
| 24. " R. C. Woodford. | 50. " S. M. A. Shah. |
| 25. " J. W. Chakravarthy. | 51. " H. H. Pandeya. |
| 26. " C. A. Maclean. | 52. " Harchand Singh. |
| 27. " D. R. Sethi. | 53. " C. S. Ghariwal. |
| 28. " D. P. Johnstone. | 54. " P. G. Malkani. |
| 29. " M. A. Hussain. | 55. " N. N. Bose. |
| 30. " F. J. Gossip. | 56. " Charan Singh. |
| 31. " K. McLean. | 57. " C. V. Sane. |
| 32. " P. J. Kerr. | 58. " Kunjan Pillai. |
| 33. " B. Viswanath. | 59. " W. Robertson Brown. |
| 34. " R. W. Littlewood. | 60. " J. Sen. |
| 35. " G. K. Devadhar. | 61. " F. J. Plymen. |
| 36. Prof. N. N. Gangulee. | 62. " P. H. Carpenter. |
| 37. Prof. Varonoff. | 63. " A. McKerral. |
| 38. Mr. Lal Kothavala. | 64. " C. Mayadas. |
| 39. Col. J. Matson. | 65. " K. Hewlett. |
| 40. Mr. B. A. Collins. | 66. " W. Burns. |
| 41. " F. Ware. | 67. " W. Smith. |
| 42. " A. M. Ulivi. | 68. " L. C. Coleman. |
| 43. " B. P. Vagholkar. | 69. Lt.-Col. G. F. Mellor. |
| 44. " W. McRae. | 70. Brig. A. J. Williams. |
| 45. " P. B. Richards. | 71. Mr. B. C. Burt. |
| 46. " T. Bainbrigge Fletcher. | 72. " Ritchie. |
| 47. " F. D. Odell. | |

The proceedings commenced at 11 a.m. on Monday the 9th December with an address by the President.

Sir T. Vijayaraghavachariar's Address :

'I am very pleased to welcome you from all parts of India to this meeting of the Board of Agriculture and I should like to give special welcome to two distinguished gentlemen, the first being Sir Saiyad Muhammad Fakhruddin who holds the record, unequalled in India, of being Minister for Agriculture in Bihar and Orissa from the commencement of the Reforms; the second is to Sir Frank Noyce whom I have known as a personal friend for 25 years. I knew him first as an Assistant Special Settlement Officer in the Madras Presidency; no other officer in the whole of India has such a working knowledge of commissions and committees. Owing to his intimate knowledge of Committees and Commissions on Agricultural subjects, Sir Frank can now be said to have been admitted into the company of the elect.

It was usual to refer, at each meeting of the Board, to prominent and outstanding features connected with Agriculture that had occurred since the previous meeting. The last meeting of the Board was held four years ago during which time the Board had come of age. There was always trouble when a man passes from boyhood to manhood and I think this could also be said of the Board of Agriculture, but there was no doubt that the future of the Board was assured. The most outstanding feature since the last meeting was the coming of the Royal Commission on Agriculture and its report which was now the official Bible of all the Departments of Agriculture in India. The Royal Commission had recommended the formation of an Imperial Council of

Agricultural Research which was inaugurated last June by His Excellency the Viceroy.

I wish to refer very briefly to the constitution of this Council. It consists of two parts—a Governing Body and an Advisory Body. The Advisory Body consists roughly speaking, of experts and the Governing Body, again roughly speaking of non-experts. The Governing Body gets advice from the Advisory Body and its chief business is to sanction funds for the research schemes put forward by the Advisory Body.

It was decided at the recent meeting of the Imperial Council of Agricultural Research that the Board of Agriculture should now be called *The Board of Agriculture and Animal Husbandry*. This settles a long standing grievance, because this Board of Agriculture has always, in the past, discussed many subjects dealing with Animal Husbandry. It has also been decided to have a meeting of the two wings in alternate years. All the work connected with the Board has been transferred from the Government of India to the Imperial Council of Agricultural Research and the Secretary of the Imperial Council will also be the Secretary to the Board and he would be assisted at each meeting by two experts from each wing. The constitution of both the wings has been enlarged and though an attempt was made to get an equal number, it was found that the Board of Agriculture wing would outnumber the Animal Husbandry wing by one member. In future the membership would consist of 101 members for the Board of Agriculture and 100 for the Animal Husbandry wing. The chief reason for the expansion was due to the demand of Local Governments to include non-official members. The membership now includes 20 non-officials elected by the Provinces with five representatives from the Universities. The official representation has not been reduced; I think it was a very good idea to bring the Universities into touch with the work being carried out by this Board. I trust that the composition of the Board will meet with the approval of this meeting.

I wish to mention a few other items of the work of the Imperial Council. In future there would be three kinds of Journals, two scientific—one on Agricultural matters and one on Animal Husbandry—and in addition, a popular Journal in continuation of the present Agricultural Journal of India. The publication work has been transferred to the Council, to the charge of the Vice-Chairman, the two experts and the Secretary assisted by two experts eminent in Agriculture and Animal Husbandry. The two scientific journals will be divided into two parts, the first for original articles and the second for abstracts of work done in the Provinces and selected abstracts of work done in foreign countries. In order to keep the Provincial abstracts up to date it has been decided to have correspondents in the Provinces who will be remunerated for their services.

A Sugar Committee has also been appointed which has met once and submitted an interim report. One of the main recommendations of this Committee is that during the period of agricultural reconstruction and in order to give a filip to the local industry, protection should be given to the industry. The Council has recommended that the Tariff Board should investigate this question. They have also recommended that the present *ad valorem* duty on low grade sugar should be changed to a specific duty. A grant of Rs 6,000 has been sanctioned to Shahjahanpur to carry on the work of testing seedlings.

Rs 8,000 have also been allotted to each of the Punjab, United Provinces and Bihar and Orissa, the three biggest sugar producing provinces, for evolving an approved type of small sugar crushing mill and it has also been decided to give a prize of Rs 20,000 to the person who invents the best mill. No restriction has been placed on the status of the inventor, and Government servants will be permitted to compete. A large grant is also proposed for enlarging the Harcourt Butler Technological Institute in the United Provinces to enable it to carry out more work on Sugar and expand into an all Indian Institution.

Another measure of the Imperial Council of Agricultural Research was the appointment of a Committee on locusts. The Imperial Council has also decided to appoint an officer for one year to go into the question of the marketing of hemp.

The inauguration of the Imperial Council of Agricultural Research has been promising in possible results. The Council has not attempted to interfere in any way with Provincial Departments or the control of these Departments. All the Council wishes to do is to supplement the efforts made in the Provinces. Its grants are as open to the provinces as to Imperial institutions. Both are engaged in a common task and the intention is to supply a co-ordinating link which has been lacking in the past. In the past many of the recommendations of the Board of Agriculture suffered through lack of funds to carry them out even though the Imperial and Local Governments were willing to accept them. The Council has been provided with funds, and if the work expands at the rate now anticipated it will probably be found necessary to augment them. I think we are living in spacious times; the old era of depression will disappear and it is up to all of us to put up promising schemes and get the necessary funds for carrying them out. Personally, I feel that in time to come whatever political changes may come about, our work will be, if anything, more important than before. The sphere of usefulness of agricultural officers will be enlarged and in the hands of Ministers they will get as enthusiastic support as under the old form of Government. To advance the cause of Agriculture and Animal Husbandry is the chief aim of all experts, and, though I cannot claim to be an expert as my qualification is ignorance on both branches of the subject, as a land-holder I know where the shoe pinches. My chief qualification for the post I now hold is that I have come to this Council with an open mind and I trust I shall be adopted by you as one of yourselves.

The Hon'ble Sir Muhammad Fakhruddin and Sir Frank Noyce thanked the Chairman for the kind references made to them.

The Board then appointed committees for reporting on the subjects on the agenda. These committees met and discussed their different subjects on the 10th and the 11th December and submitted their reports to the full Board which again met on the 12th December.

The terms of reference to the different committees on the subjects of the agenda and the decisions of the Board are given below.

SUBJECT I (a). *Review of the progress made in the Development of cattle breeding.*

1. The Board, as a result of the evidence placed before the meeting, supported the view that to effect general improvement in the cattle of India attention should be concentrated on the indigenous breeds.

2. The question of increasing the milk supply in urban areas is one which can be dealt with separately and the best means of obtaining the desired result will depend on local conditions.

3. The interesting experiments in cross breeding now being conducted at the Hosur Cattle Farm and at the Allahabad Agricultural Institute may usefully be carried out to their conclusion.

4. In the opinion of the Board the custom of dedicating bulls as Brahmini bulls without selection militates against the improvement of the cattle of the areas where it prevails; the Board accordingly suggested to local Governments that they adopt such measures as may be found feasible to make this custom contribute to the improvement of the cattle.

SUBJECT I (b). *The possibilities of organising the Dairy industry on a co-operative basis by the Co-operative Departments in India.*

The development of the dairy industry and the improvement of the various breeds of cattle in India are lines of work which are interdependent and complementary; in regard to the former the Board considers that India like Denmark and Holland being a country of small holdings can best develop her dairy industry on co-operative lines as has already been successfully achieved in Bengal and to this end recommends that the organisation of co-operative societies be undertaken through the agency of Government Co-operative Departments working in conjunction with the Agriculture and Veterinary Departments for the utilisation of milk and all its products.

SUBJECT I (c). *The position of grass land in the improvement of cattle and the possibility of improving such grass land.*

1. In view of the importance of grazing areas in connection with the cattle industry, steps should be taken on the lines of those already initiated in the Bombay Presidency to conserve and improve existing grass lands.

2. In respect of forest grazing areas the Board recommends that the Forest, Agricultural and Veterinary Departments of Provinces and States acting in concert should take suitable measures for their control and better utilisation.

SUBJECT II. To review the work done up-to-date on animal nutrition in India and to recommend (a) what steps should be taken to develop and extend this work and (b) ways in which the Provincial Departments can best co-operate with the Physiological Chemist in work on this subject

'The Board commends the work on animal nutrition now being done by the Imperial Physiological Chemist to the notice of officers of the Agriculture and Veterinary Departments in the provinces engaged in the administration of Cattle farms and on animal nutrition problems with a view to their co-operating with him in conducting as many experiments as possible; and, to enable the Physiological Chemist to undertake these out-station experiments, the Board recommends that

the Field Staff of the Nutrition Station be strengthened as necessity arises and be made available for duty in all parts of India.

SUBJECT NO. III. The locust problem in India. To discuss the question of investigating the biology of the insect and to make suggestions for control measures.

'Since the aim of locust control operations should be the complete eradication of the pest from the whole of the affected area within a single generation and since inadequate or delayed expenditure may entirely vitiate the success of the operations, it is essential to locust control that there should be an immediate adequate provision for funds, apparatus and labour.'

An adequate organisation for locust control is essential in each province or State within the area subject to locust visitations. The organisation adopted in the United Provinces for dealing with the 1929 visitation is commended to the notice of all Local Governments and the Government of India. Though details must necessarily differ in the various provinces and States, the anti-locust organisation should include,

- (a) an adequate intelligence branch,
- (b) an executive for each district or other administrative unit, and
- (c) a central controlling authority.

SUBJECT IV. The desirability of discussing the subject of the best means of bringing improved methods of agriculture to the notice of the cultivators, at future meetings of the Board.

It was resolved that a review of the organisation for all methods of agricultural propaganda and other extension work should find a place in the agenda of the Board at its future meetings.

SUBJECT V. A. To review the present position of mechanical cultivation in India; a Discussion on (a) the possibility of introducing tractor cultivation (b) special kinds of cultivation for which it is suited (c) the best kind of machine and (d) the pooling of knowledge obtained in other provinces.

B. Investigations into the best method of determining the draught of bullock drawn implements preferably at one centre for the whole of India.

Resolved that a whole time Expert should be appointed and attached to the Agricultural Expert to the Imperial Council of Agricultural Research who will be available for giving advice to the Provinces on problems connected with mechanical cultivation. This Expert must possess extensive knowledge of current agricultural machinery design, and manufacturing practices and will act as a co-ordinating agency.

Further resolved that he should in addition to his other duties, take up the investigations in connection with the determination of draft of bullock-drawn implements.

SUBJECT No. VI. To recommend measures for the collection and publication of work on soils in India.

That a central Bureau of Soil Science under the Direction of an experienced soil scientist is a matter of urgent importance and should be established as early as possible.

SUBJECT No. VII. To consider the question of accurately measuring the amount of water required for various kinds of crops, especially the more valuable crops, and the period during which waterings should take place to give optimum results, and to suggest methods of investigation.

Resolved that an experimental station or stations to carry out the work enumerated in this Report be established.

SUBJECT No. VIII. To consider recommendation 27 of Chapter XIV of the Report of the Royal Commission on Agriculture, to make recommendations and to suggest suitable problems for economic enquiry.

The Board cordially endorsed, recommendation 27 of Chapter XIV of the report of the Royal Commission on Agriculture and desired to emphasise the need for whole time investigators for economic enquiries as it is impossible for agricultural assistants to carry out these investigations in addition to their ordinary duties.

The following are some of the problems suggested for enquiry.

1. Marketing of crops.
2. The finance of the cultivator.
3. Consolidation of holdings.
4. Size of holdings and the number of uneconomic holdings.
5. The cost of production of crops.
6. The cost of production of cattle and the availability of products consumed by them.
7. Cost of maintenance of cattle.
8. Co-operation between land-lord and tenant.
9. Dairy produce.
10. The economics of a village herd and the number of useful and useless cattle in the village herd.

SUBJECT No. IX. To consider the need for mathematical assistance in the study of Agricultural Genetics and economic problems and how this need should be met.

Resolved that the Board of Agriculture consider the establishment of a Statistical Section in the Imperial Agricultural Research Institute with a Statistician of high training in Statistical methods as applied to agriculture as its head, a question of high importance.

The Board of Agriculture considers that the necessity of providing statistical staff in the various provincial departments of Agriculture which has been emphasised by previous Boards in 1919 and 1924 should once more be impressed upon local Governments. They further consider that the Statistical Sections of provincial agricultural Departments should be organised on a basis such as to permit of the

inclusion of the statistical treatment of experimental data among their regular duties.

In view of the fact that the advice and assistance of such an officer would be of very great value to agricultural research workers throughout India, they further consider that the financing of the scheme, at least in its early stages, could be fittingly undertaken by the Imperial Council of Agricultural Research.

SUBJECT No. X. This was about the selection of the place and date for the next cattle conference and to discuss the advisability of combining this with sectional meetings of officers representing Veterinary, medicine, animal nutrition and animal genetics.

The selection of a place and date was left to the executive of the Imperial Council of Agricultural Research. It was agreed that sectional meetings of the different officers should be combined.

SUBJECT No. XI. To review the progress made in regard to the protection of crops from the depredations of wild animals since 1925 and to advise whether the recommendations made by the Board of Agriculture in that year require modification in the light of the knowledge and experience now available.

The Board recommended that a specially suitable officer should be deputed with necessary staff to investigate the whole question of the protection of crops from the depredations of wild animals.

SUBJECT No. XII. To review the results of the permanent experimental plots at Pusa and to make proposals for this line of work in future.

The report submitted by the Committee making additions and alterations in the treatments given to plots was accepted by the Board.

The Board concluded its sittings at 1 p.m. on Friday the 13th instant.

Notes

Sionon—a Sugar Substitute

New sugar substitutes have been sought for a long time because saccharin and dulcin are not permanently satisfactory for those who must avoid sugar. As yet, however, only a very few of the many sugar substitutes, have proved valuable. Recently a German manufacturer has placed *d-sorbitol* upon the market under the name of Sionon as a sugar substitute. Sionon has a sweet taste, which according to the reports from the medical clinic of the University of Wurzburg, was distasteful to none of the patients. The tolerance was very good so long as the quantity did not exceed 70 grams and the sugar was not all given at the same time. Sionon could also be used in condiments, although it must not be heated above 60 C. Its general applicability will depend primarily on its price. *Scientific American*.

Petroleum products in Insecticides

The continuous search for cheaper and more effective methods of controlling insect pests has given the chemists a very enticing problem. To one not in intimate contact with Entomological problems, a general spray mixture for all troubles—a cure-all—would be the product to develop. Upon close study of the variables in spraying the many species of destructive insects a product that would increase markedly the efficiency of any specific control would be well worth while. In view of this fact a thorough study of the application of the oxidation products of petroleum to the insecticide field has been conducted by M. I. Inman of the Kay Laboratories Inc. West Nyack, New York, in co-operation with State Entomologists and the Crop Protection Institute. As a result of this work a definite procedure in attacking soft bodied sucking insects such as Aphis and leaf hoppers was developed. Mr. Inman describes the results obtained by the addition of chemically treated oxidation products of Pennsylvania gas oil to a solution of nicotine sulphate, the efficiency of the poison being thereby strikingly increased. For example where these oxidation products have been added at the rate of 1 to 200 to nicotine sulphate spraying solutions a satisfactory kill has been obtained with only one-third to one-fifth of the nicotine commonly employed when soap is used as a spreader. The underlying principle is briefly, the increase of the efficiency or the activation of an insecticide by bringing about certain physical changes in the spray mixture. *Scientific American*.

Silver as purification agent

A new process for the sterilisation of water has been developed in Germany by G. A. Kranse who has already attained success in the field of drying technology. The new procedure is based on the germ-destroying action of minute amounts of very finely divided catalytically active metals. Fine silver proved most effective for this. It was blown upon definite

Jan. 1930]

Notes

37

supports so as to produce the largest possible surface. By means of the uniformly blown out condition the relation between the volume and the surface which best combined the chemical and catalytic effects was obtained. On account of this two-fold action, the process received the name 'Katadyn.' In this finely divided state, traces of silver dissolve in the water more rapidly than does ordinary silver. The requisite vessels for this process consist of filtration devices provided with an active silver surface. It was possible by this process to kill 21 million germs per cubic meter of water in 48 hours, and when only one million bacteria were contained per cubic centimeter of water, the sterilisation was effected in a few hours. Further advantages of the process are that, once it has been set in operation, it requires no more attention and it is independent of temperature. Excess and deficient dosages of silver are impossible and consequently there is no impairment of the smell and taste of the water, which permanently retains its sterility. The process therefore deserves consideration, although it must still be carefully tested for the purification of drinking water on a large scale. The Katadyn process is recommended for the production of mineral water, sterile ice for hospitals, restaurant kitchens, laundries, for the sterilisation of swimming pools etc., in addition to its use in drinking water. *Scientific American*.

Co-operative spraying with Motor apparatus in Germany

In the Grossentain District where the annual yield of fruit is estimated at 609,000 cwt. valued at 6,000,000 marks the treatment of orchard and wayside trees against fungous diseases and insect pests with a motor spraying apparatus has been instituted on co-operative lines. The total cost of the treatment which can be applied to 1,000 wayside trees daily and a somewhat smaller number in the orchard, is approximately pf 6 to 10 per M. *Review of Applied Mycology*.

Organic Acids of Cane Molasses

The acids of cane molasses were found to be formic acid, about 0.1 per cent; acetic acid, 0.2 per cent; aconitic acid, 0.8 per cent; lactic acid, 0.05 per cent, with small quantities of malic and citric acids. The last named of these acids has not heretofore been reported as a constituent of cane molasses. *Facts about Sugar*.

The Sulphuric Acid treatment of Cotton seed

Experiments indicated that the immersion of cotton seed in concentrated Sulphuric Acid for twenty to thirty minutes followed by washing in several changes of water for twenty minutes, can safely be used where the Sulphuric Acid method for delinting and surface sterilisation (e.g., against *Bacterium malvacearum*) is employed. Viability remained unimpaired and even an exposure for as long as six hours to the strong acid had no injurious effect. On the other hand, dilute Sulphuric Acid did not delint the seed and seriously reduced its germinating power. *Review of Applied Mycology*.

'How others see us'

Under the Caption *How the Madras Department Educates the Farmer*, the *Agricultural Gazette* of New South Wales (November, 1929) writes as follows :

'The Madras Department of Agriculture claims that they have discovered something better than a "better farming train" as a medium of conveying their teachings to the farmer. They have put on the road a travelling motor exhibition. This is considered an improvement on the exhibition train idea in that it is possible for the motor van to visit a lot of centres through which no railway line passes. Moreover, it is only at important towns and centres (in India) that facilities exist for halting a long train in a siding without dislocating traffic.'

Effect of Cutting away the Leaves of Sugar Beet

In certain beet growing regions the farmers make a practice of depriving the beets of a part of their leaves during the latter part of the season, in the belief that the yield of the crop will be improved. In order to settle the question of the merits of this practice a three-year series of co-operative field experiments was instituted. A total of 102 approved experiments made in different parts of the country were considered in drawing up the final report. The conclusion is that both the yield of beets and the yield of sugar is reduced, the loss being greater if the deleafing is done in August than in September; the practice is therefore disadvantageous to the farmers, and also to the factories on account of the lowered quality of the beets. *Facts about Sugar.*

Coarse Brown Bread

Into one point of water (Fahr. 120) stir one oz. of salt and $1\frac{1}{2}$ ozs. of yeast, and add 2 lbs. of very coarse wheatmeal. Knead the whole well and let it stand for about half an hour in a moderately warm place (Fahr. 80-90). Then cut the dough into pieces of the size required (about $\frac{1}{2}$ lb.), and let them stand in the same place for another 15-20 minutes, after which bake for about 45 minutes. The Coarse meal used in making the above consists of 1 part of wheatmeal, which is only *Crushed*, and 2 parts of finely ground wholemeal, but the proportions can be altered to suit the case. If you find it too coarse and too laxative, use less of the crushed meal. *The journal of the Jamaican Agricultural Society.*

Catalase activity and sex in plants

The catalase activities of various tissues from 12 species of plants having bisporangiate, mono-sporangiate or dioecious types of inflorescences were compared with the sexual expression. In all species examined it was found that tissues related to the staminate or male structures, either purely vegetative or floral, showed a distinctly greater catalase activity than tissues related to the carpellate or female structures of the same species. It was also found that in general, floral structures showed a greater difference than vegetative parts. *Chemical Abstracts.*

Sugar Helps Tennis Winner

Gustavo Vollmer, Jr., Cuba's new tennis singles title holder and a member of the Cuban team that played in the final American zone Davis cup matches at Detroit this summer, is one of the growing band of athletes who find in sugar their best source of quickly available energy at crucial moments, according to a recent interview. Mr. Vollmer, who represents the Ferroviario Club of Havana, recently won the Cuban singles championship in a hotly fought contest with Ricardo Morales, in which the sets went 2-6, 6-2, 6-0, 2-6, 6-4. He is quoted as saying that during the match he munched lumps of sugar to sustain his stamina, having found that this always provided him with the reserve energy required in the crucial moments of a close contest. In the Davis cup round at Havana last spring Mr. Vollmer defeated Ricardo Tapia, the Mexican champion, in straight sets. *Facts about Sugar.*

Reviews**Madras Agricultural Department Bulletins**

No. 97. *Results of Demonstrations of Agricultural Improvements in the Madras Circle carried out in 1924-27.* Compiled by Rao Bahadur D. Ananda Rao, B.Sc. (Edin.), Deputy Director of Agriculture, IV Circle. Government Press, Madras. Price 8 annas. This bulletin gives in a comprehensive way the demonstrations of agricultural improvements carried out in three demonstration farms arranged in Chendathur, Mudiyanur and Madukari villages in the North Arcot, South Arcot and Chingleput Districts respectively. The demonstration farms were arranged on fairly representative lands owned by well-to-do ryots under the supervision of the Department, the expenses in the main being borne by the owner. In the introductory pages an account of the several demonstrations carried out, such as use of iron ploughs, raising of green manure crops, reduction of seed rate and economic planting, application of artificials in conjunction with organic manures, drilling, use of labour saving interculture implements, etc., and the rationale thereof are given. Each farm is dealt with separately, full details in regard to selection of land, soil, irrigation facilities, etc. being given preceding descriptions of the demonstrations carried out in the various crops and cultivation methods prevalent in the locality. A series of tabular statements given for each farm show very clearly the reduction in the cost of cultivation and greater profits obtained by the improved methods adopted by the Department in every kind of demonstration. The bulletin is full of interesting information and contains valuable data both for the ordinary agriculturist and the scientist regarding crop production.

No. 98. *Pepper cultivation on the West Coast.* M. Govinda Kidavu, Deputy Director of Agriculture, VII Circle and P. A. Venkateswaran, Agricultural Demonstrator, VII Circle—Government Press. Price, 2 annas. This bulletin is similar to No. 96 on Grape vine cultivation and attempts to give in the same way a complete account of the history, climate, soil, methods of planting, after cultivation and manuring of the pepper crop. A short note

on the preparation and application of leaf mould and also the economic aspect of pepper cultivation are included. The bulletin concludes with a brief account of the pests and diseases that appear on the pepper crop and the methods of controlling the same.

No. 99. Results of Experiments at Samalkota on Intermediate Season cropping. Government Press. Price, 2 annas. This bulletin publishes the results of a series of experiments conducted at the Agricultural Research Station at Samalkota between the years 1910 and 1927 to find a means of utilising the water in the canals during the interval between the first and second paddy crops in the Godavari Delta by growing an intermediate season crop of paddy. The experiments consisted in the trial of a large number of local and imported varieties to fit in the interval, planting in different periods and contrasting it with broadcasting and also trials to accelerate the growth by the application of suitable fertilisers. The experiments have so far been not very favourable to fix up a definite variety of paddy as most suitable from all points of view.



I grow my own!

FRESH VEGETABLE and FLOWER SEEDS ALWAYS IN STOCK

Ask for free catalogue with illustrations

PESTONJI P. POCHA & SONS, Post Box 55, Poona

College News and Notes

Interclass-Tournaments. The annual tournaments in connection with the Victory and Parnell Cups commenced early in November. There was very keen competition, each class putting in two teams. For the Victory Cup there was a series of well contested matches in cricket, Hockey and Foot-ball commencing from 9th November. In cricket the final match was between A teams of Class I and Class III, the latter being declared winners, after a day's game. In Hockey Class I A and Class II B met in the finals, when the game was practically one sided, as Class I A was too strong for their seniors. The former therefore won by seven goals to nil. Four matches were played in Foot-ball and the final game between Class I A and Class III A has had to be postponed to the next term. It is interesting to note that Class I A team has come to the finals in all the three games.

In connection with the Inter-Class Hockey tournament for the Parnell Cup, five matches were played among the three classes under the League System and Class III put up a hard fight in all the matches they played and won the cup by securing five points as against 4 and 1 by Classes II and I respectively.

Tennis Doubles Tournament. The students were able to conduct a very successful tennis doubles contest mainly due to the generous contributions from officer members of the Club. Though the entries were not up to the expectations, several well contested games were witnessed during the tournament. The semi-finals were played between the 1928 champions N. S. Vaidyanathan and N. G. Narayanan and T. Govinda Menon and H. Mudanna Chetti. The former pair easily won the match in two straight sets. The final match was played on the 7th December the contesting parties being C. N. Subramanyan and his partner K. Hanumantha Rao and N. G. Vaidyanathan and N. R. Narayanan. Though the weather was rather inclement, the matches proved to be interesting with flashes of good tennis exhibited by the players. C. N. Subramanyan and his partner proved themselves superior to their rivals and annexed the trophy winning three sets in succession. The scores were 6-4; 6-3 and 6-4. There were a large number of spectators present including the Principal and Mr. Broadfoot who watched the game with keen interest. Mrs. Charley kindly gave away the prizes to the winners.

The Board of Agriculture. Rao Bahadur B. Viswanath, Government Agricultural Chemist attended the meetings of the Board of Agriculture held in Pusa between 9th and 13th December and returned to Coimbatore on the 18th. Other members of the Madras Agricultural Department who attended the Board meeting were Mr. G. R. Hilson, Director of Agriculture and Mr. R. W. Littlewood, Deputy Director of Agriculture, Live Stock.

University Elections. Mr. P. H. Rama Reddi as principal of the Agricultural College becomes an *ex-officio* member of the Academic Council. The two remaining seats on the Council were filled up by Mr. T. V. Rajagopalacharya the Vice-Principal and Dr. T. V. Ramakrishna Ayyar, Lecturer in Entomology who were returned to the Council by the Teaching staff of the Agricultural College.

Dr. T. V. Ramakrishna Ayyar, Mr. S. R. Venkatakrishna Mudaliar, and Rao Bahadur M. R. Ramaswami Sivan (retired Principal) have notified their intention of standing for a place in the Senate of the Madras University from the Constituency of Registered Graduates and Mr. T. V. Rajagopalacharya through the Academic Council.

The Indian Chemical Society. Rao Bahadur B. Viswanath, and Messrs. T. Lakshman Rao, T. S. Rama Subramaniam and S. Kasinath left for Trivandrum on December 21, to attend the Sessions of the Indian Chemical Society to be held in the Maharaja's College of Science, Trivandrum on the 23rd and 24th December.

The Indian Science Congress. Government have permitted the following officers of the Agricultural College and Research Institute to attend the Sessions of the Indian Science Congress to be held in Allahabad in January 1930. Rao Sahib Y. Ramachandra Rao, Government Entomologist, Mr. G. N. Rangaswami Iyengar, Millets Specialist, Rao Bahadur B. Viswanath, Government Agricultural Chemist and Mr. V. Narayanaswami Iyer, Systematic Botanist.

Weather Notes

DECEMBER 1929

Rainfall Data

Station	Actual Rainfall	Departure from normal
Gopalpore	0.1	-0.6
Vizagapatam	3.4	+2.7
Cocanada	3.2	+2.4
Masulipatam	0.3	-0.6
Kurnul	0.1	-0.2
Bellary	0.3	-0.1
Anantapur	...	-0.1
Cuddapah	0.7	-0.2
Nellore	1.4	+1.5
Madras	6.0	+0.5
Cuddalore	8.1	+1.3
Vellore	1.9	-0.6
Salem	0.6	-0.3
Coimbatore Town	1.3	+0.5
Coimbatore Res. Institute	1.2	...
Trichinopoly	3.9	+1.4
Negapatam	11.6	+0.9
Madura	3.6	+2.0
Pamban	14.4	+7.6
Palamkotah	4.9	+1.3
Trivandrum	3.3	+1.1
Cochin	2.2	+0.6
Calicut	0.7	+0.6
Mangalore	...	-0.5
Mercara	0.1	-0.4
Bangalore	0.5	-0.7
Kodaikanal	6.9	+2.8
Coonoor	9.3	...

Pressure

Pressure distribution was of the normal type for the greater part of the month. A depression crossed the coast on the 1st near Negapatam and passed out into the Arabian Sea. Thereafter weather was fine with the area of low pressure further out East than usual.

Winds

Winds were normal in direction and though from the sea did not occasion much rain.

Rainfall

Rainfall was confined to the South Madras Coast for the first nine days of the month and was moderate, no fall above 3", being recorded. An unusual feature being that a land disturbance lying over the Central Provinces gave moderate rain on the North Madras Coast from the 22nd to the 25th. Total rainfall was in excess in the South and in defect elsewhere.

Temperature

Temperatures were high during the first half of the month over the greater part of the Presidency and falling sharply after Christmas were much below normal especially in the Northern districts. Gopalpore reached 52° and Kurnool 50° on the 30th.

Weather report for the Research Institute Observatory

Absolute Maximum in Shade	91° 0
Do Minimum in Shade	59° 0
Mean Minimum in Shade	65° 5
Do Maximum in Shade	85° 4
Mean Daily Wind Velocity	3 · 3 Miles per Hour
Do 8 A.M. velocity	3 · 0
Total Rainfall	1 · 24 inches
Heaviest fall in 24 hours	0 · 40 "
Number of rainy days	5
Total Hours of Bright Sunshine	247 · 4
Mean daily hours of sunshine	7 · 9

Summary

The barometer was lowest on the 1st during the passage of the Bay Depression inland and rising sharply reached the maximum on the 3rd. Thereafter it was high and steady with the fine weather.

Winds were steady and with the usual Northerly component but velocity was low and calms were reported on five mornings.

Day temperatures ruled high in the first half of the month an absolute maximum of 91° being recorded on the 2nd. Minima were also high till about the 13th when night temperatures fell and reached the lowest level on the 15th and 17th when 59° was recorded.

Other climatic elements were normal.

P. V. R.
B. S. N.

**Departmental Notifications****Appointments, transfers, leave, etc.**

First Circle: Mr. R. Vasudeva Rao, Farm Manager, Anakapatti, leave on average pay for seven days from the 23rd to the 30th November with permission to avail the holiday on 1st December; again leave on average pay for fifteen days from the 7th December with permission to affix the Christmas and New Year holidays.

Third Circle: Mr. C. Subba Rao Nayudu, Assistant Agricultural Demonstrator, Igadda—extension of leave on average pay for three months from 22nd November, 1929; M. Vaidyanathan, Farm Manager, Hagari, leave on average pay for twenty-five days on 27th November, 1929.

Fifth Circle: Mr. K. Srinivasacharya, Agricultural Demonstrator, extension of leave on average pay for five days from 11th December, 1929.

Live-Stock Section: Mr. M. P. Kunhikkutty, Live-stock Demonstrator, Coimbatore, leave on average pay for two months from 3rd January, 1930, with permission to avail Christmas and New Year holidays. Mr. K. Thomas Benjamin, Dairy Manager, Hosur Cattle Research Station, leave on average pay for seventeen days from 5th December, 1929, with permission to avail Christmas and New Year holidays.

Government Mycologist's Section: Mr. K. Achuthan Nambiar, Sub-Assistant, leave on average pay for one month from 3rd January, 1930, with permission to prefix Christmas and New Year holidays.

Paddy Specialist's Section: Mr. S. Muthusami Aiyar, Farm Manager, Agricultural Research Station, Aduturai, leave on average pay for six days from the 16th December, with permission to prefix Sunday the 15th and suffix Sunday the 22nd and Christmas and New Year holidays; Mr. C. Rajasekhara Mudaliyar, Aduturai, leave on average pay from 16th December, with permission to prefix Sunday the 15th and affix 22nd Sunday and Christmas and New Year holidays.

Government Agricultural Chemist's Section: Mr. T. S. Ramasubramanian Aiyar, leave on average pay for five days from 17th December, with permission to avail himself of the Christmas and New Year holidays.

Cotton Specialist's Section: Mr. D. Devasirwadam, Sub-Assistant, Madras Herbaceum Scheme, extension of leave for seven days from 2nd December, 1929.

Government Systematic Botanist's Section: Mr. J. David, Sub-Assistant, leave on average pay for thirteen days from 9th December.

The Cardamom Planter

A TAMIL MONTHLY

Organ of the Travancore Cardamom Planters' Association

Editor and Publisher: R. NARAYANASWAMI NAIDU

Uthamapalayam, MADURA DISTRICT

Annual Subscription: Inland Rs 2

(5)

The 'Agriculturist'

A TAMIL MONTHLY DEVOTED TO

Agriculture and Allied Subjects

Editor: RAO BAHADUR J. CHELVARANGA RAJU

Printer & Publisher: J. R. RANGA RAJU, Saidapet, Madras

Annual Subscription, Rupee One, post free

The Journal of the

Mysore Agricultural & Experimental Union

BANGALORE

Published Quarterly by an Expert Board of Editors

Chief Editor: DR. B. NARASIMHA IYENGAR, B.A., PH.D.

Subscription, Rs 3 per annum

The 'Kamma Balan'

A Tamil Monthly Devoted to rural Problems

Editor and Publisher:

R. VENKATASAMI NAIDU

TIRUTANGAL (Ramnad District)

Annual Subscription, Re 1

SURVEY OF INDIA MAPS FOR ALL PURPOSES

Maps are available from recent surveys, fully coloured, showing the Nilgiri and other Hill Retreats, latest style sheets on scale 1" and 1/2" to the mile, covering most of the following Indian States and Districts:

HYDERABAD, MYSORE, TRAVANCORE, COCHIN, SANDUR, also most of the Presidencies of MADRAS and BOMBAY.

The first large scale maps of COIMBATORE, BELLARY, ANANTAPUR, GODAVERI have been published.

Also smaller scale maps:—4 miles to the inch and 16 miles to the inch. Unmounted or in book-form or for the wall.

MAPS AND PLANS REPRODUCED

ALL KINDS OF MAP MOUNTING DONE

Map Catalogue Rs 1-8-0 including postage

SPECIAL MAPS

Bangalore and Surrounding Country.	1"=1m. ...	Rs 2 0
Bangalore Guide Map.	3"=1m. ...	" 3 8
Seringapatam Guide Map.	3"=1m. ...	" 2 0
Ajanta, Ellora Cave Guide Maps		" 1 0 each
Guide Map to Hampi Ruins ...		" 1 0
Guide Map to Pachmarhi.	1"=1m. ...	" 2 0
Hyderabad and Secunderabad.	3"=1m. ...	" 4 0 each
Railway Map of India ...		" 1 10
Road Map of India.	1"=50m. ...	" 1 4

READY SHORTLY

Road Map of Mysore State.	1"=8m. ...	" 3 0
Mounted in folding book form		" 5 0

SURVEYS OF ESTATES UNDERTAKEN

Apply to or call on—

The Director, Southern Circle

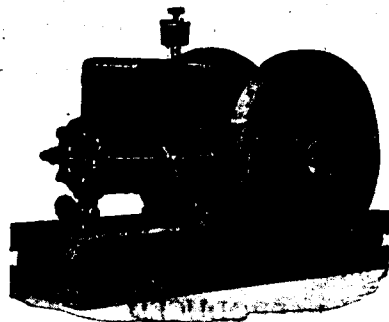
SURVEY OF INDIA, BANGALORE

LAVELLE ROAD (Close to B. U. S. Club)

THE "LAUSON" A BETTER ENGINE

for every use

Will Save You Time, Money and Labour



EMPLOY IN ALL
YOUR AGRICULTURAL
ENTERPRISES
AND HAVE MORE
PROFITS

1 1/2 H. P. Engine—Price, Rs 200 only

REMEMBER THE FOLLOWING DISTINCTIVE
LAUSON FEATURES

Low fuel consumption.

Disc Flywheels—For cleanliness and Safety.

Inlaid and Removable Bearings.

Case Hardened Wearing Parts.

Pistons and Cylinders Ground to fit.

Smooth Running—Proper relation of bore and stroker to flywheels gives LAUSON Engines perfect balance.

Simple Design—All complicated working parts are eliminated.

Accurate Construction—All parts are carefully fitted and engines are thoroughly tested.

High Tension Magneto—A magneto with only one moving part. Easy starting in cold weather.

Let us quote you for your requirements

EASTERN ELECTRIC & ENGINEERING Co.

175, HORNBY ROAD, FORT

Post Box No. 459, BOMBAY

Telegrams: "EASLEKTRIK" Bombay.

Telephone 24963.

OFFICE-BEARERS FOR 1929—30

The Council (25 Members)

President

President (Ex-officio) Principal—P. H. Rama Reddi

Vice-Presidents (4)

Resident: V. Muthuswami Ayyar.
Mofussil: Rao Bahadur J. Chelvaranga Raju, Saidapet.
" Rao Bahadur M. R. Ramaswami Sivan, Coimbatore.
" A. V. Tirumurughanatham Pillai, Erode.

Members (20)

Resident: M. C. Cherian, *Secretary*.
" D. Srinivasa Rao, *Treasurer*.
" Rao Bahadur B. Viswa Nath, *Editor*.
" S. V. Duraiswami Ayyar, *Manager*.
" Rao Sahib Y. Ramachandra Rao, *Member*.
" H. Shiva Rao
" U. Vittal Rao
" C. M. Ranga Reddi
" M. Rajagopala Ayyar
" K. M. Thomas
Mofussil: K. T. Alwa (Bellary).
" G. Jogi Raju (Vizagapatam).
" B. Ramayya (Madura).
" Dr. Badami K. Venkata Rao (Bangalore).
" R. Swami Rao (Vellore).
" K. T. Bhandary (Hospet).
" A. Vittal Punja (Mangalore).
" M. U. Vellodi (Salem).
" T. R. Venkaswami Rao (Tiruvalur).
" K. M. Venkatachalam Pillai (Namakal).

Working Committee (14 Members)

Resident Vice-President and the ten resident members with the following student members form the Working Committee.

Student-Members (3)

Kunhirama Kidavu—Class I
Thangavelu, T. K. " II
Renga Rao, G. " III

Editorial Board

Rao Bahadur B. Viswa Nath.
M. C. Cherian.
S. V. Duraiswami Ayyar.
Rao Sahib Y. Ramachandra Rao.
K. M. Thomas.
C. S. Krishnaswami Ayyar.
vacant (Student).

The Madras Agricultural Journal

ORGAN OF THE M. A. S. UNION

A Monthly Journal in English devoted to the study and development of Agricultural Science. Contains articles of scientific as well as of general interest written in popular language. Reviews of agricultural publications and extracts from various Journals—both Indian and Foreign—a special feature. Commands a wide circulation and an excellent medium, therefore for advertisements.

Rates of Subscription

Journal supplied *free* to Members, New Associates and Patrons of the Union.

Annual Subscription rates for others :	Rs	A	P
India and Ceylon.	4	0	0
Foreign	...	4	8 0
Single number ...	...	0	6 0

Rates of Advertisement

	For single insertions	For the whole year (12 insertions)
	Rs A P	Rs A P
For full page ...	5 0 0	...
For half page ...	3 0 0	...
For quarter page ...	2 0 0	...

Preparation of blocks, unless supplied by advertisers, charged extra.

N. B.—All advertisements are subject to the approval of the M. A. S. U. Working Committee before insertion. The charges are strictly payable in advance.

Contributions to Journal

Contributions on subjects of agricultural interest or pertaining to rural economy and co-operation will be accepted for publication, subject to approval of the Editorial Board. Correspondence and queries on agricultural subjects invited. Manuscripts should be sent clearly written or typed on one side of paper only. Twenty-five copies of 'separates' of contributions will be printed to authors, and in case extra copies are wanted, they will be supplied at special cost, if intimation is given at the time of sending the manuscript. Contributions should be sent to the Editor, Madras Agricultural Journal, Coimbatore P.O., Coimbatore.

Lawley.

The Editor does not hold himself responsible for the opinions expressed by the contributors.

Communications should be addressed to :

Business communications to :
THE MANAGER, M. A. S. UNION, AGRICULTURAL COLLEGE,
COIMBATORE, LAWLEY ROAD P. O.

Printed at the C. L. S. Press, Park Town, Madras