

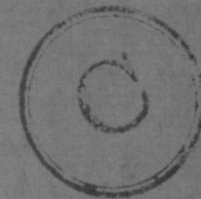
Educational (1902) Department.

ORDINARY MS.

G.O., No. 209

DATED 10. 4. 02

INDEXED.



[Despatch Abstract.]

According to the report of the Rev. Dep.
to the Board of Rev.
the instruction given at
College of Agriculture should
made more efficient.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

no. 67/01.
Go 116-07-2-02
- 116-07-2-02

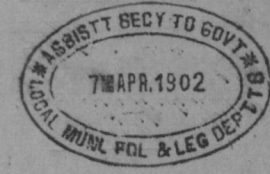
CURRENT NO. 582

Government {1902} of Madras. REVENUE.

Dep.
15/4/2

N. order No. 209 d/10.4.02

Recorded.



PH
5/4/2

Recd. } 1902.
Regd. 8-4-

Enclosures
Spare copies
Rec
9/4/2

Cop. to the S.P.S }
" " S.G.M.

G.O., No. 292, 25th March 1902.

MARCH.

Agricultural Department

Agreeing with the Board of Revenue in considering that the scientific staff of the — should be strengthened; that the instruction given at the Agricultural College should be made more efficient and that the appointment of Government Botanist should be made permanent; and addressing the Government of India on the subject.

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

READ—the following Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), No. 166, dated 5th August 1901:—

Mr. J. N. ATKINSON, I.C.S.

Resolution—No. 166, dated 5th August 1901.

In the concluding paragraph of its proceedings, Mis. No. 5248, dated 6th October 1900, the Board remarked that it proposed to address Government separately on the question of the employment of a full-time Botanist in this Presidency. Mr. Barber was at the same time called upon to submit a memorandum on the subject. This he has done, and copies of two papers on the subject submitted by him are appended to these proceedings.

2. Before proceeding to discuss the question alluded to above, however, the Board desires to draw the attention of Government to the needs of the Agricultural department in the matter of scientific assistance generally. The attention of Government may be given to the fact that most other countries, where the direct interest of the State in agricultural improvement and development is much less than in India, have attached to their Agricultural departments highly qualified specialists in chemistry, botany, entomology and the like, on whom the head of the department can rely for advice, and to whom is confided the duty of carrying out scientific investigations into agricultural subjects. The question so far as India is concerned, was dealt with by Dr. Voelker in his report on Indian agriculture and in the resolutions of the Government of India communicated with G.O., No. 413, Revenue, dated 27th July 1898.

3. As might be expected, the most important subjects for investigation in connection with Indian agriculture are those in which the assistance of the agricultural chemist is required. Of these it is scarcely necessary to speak in detail, seeing that they have been fully dealt with by Dr. Voelker in his report; it may be said, however, that in Southern India, the agricultural problem which is of primary importance is the efficiency of the motive force of the farm—its cattle; whilst methods of tillage and the conservation of manure supplies involve many questions requiring investigation. The Board would, however, point out that experience has shown that a single officer for the whole of India is altogether unable to cope with the demands of the several provinces, and the share which Madras has been able to obtain of Dr. Leather's services is now confined to only a few weeks in the year.

It should also, the Board considers, be recognised that the work of any scientific assistant employed under the Agricultural department should be twofold; viz.:—

- (1) In carrying on agricultural education.
- (2) In making investigations on agricultural problems.

4. To raise the education given at the College of Agriculture to an efficient standard, it is essential that it should be carried out by the most competent men available or procurable, as in the case of law, literature, medicine and engineering. Hitherto the results attained there have not been very satisfactory, and this may, in no small

measure, be attributed to a tendency to be content with a teaching staff that does not come up to the standard mentioned. The teaching of agricultural chemistry by a specialist in that subject has been dependent on the short courses of lectures given by the Agricultural Chemist to the Government of India. Botany is taught in a very elementary manner, but plant diseases or cryptogamic botany is practically left untouched. Economic entomology also receives the very slightest attention. These three subjects are most important to a high standard of agricultural education and none such can be secured unless agricultural chemistry be thoroughly and efficiently taught.

The College is at present attached, for administrative purposes, to the Educational department, but the Agricultural department is intimately interested in making the course there thoroughly efficient in both its practical and its scientific aspects; for it is through a thorough system of agricultural education, including the training of teachers for rural schools, that satisfactory progress may be expected. The Board would therefore urge that the course at Saidapet should be put on a thoroughly efficient footing, and this cannot, it considers, be done unless the teaching staff be enlarged and improved. For the teaching of agricultural chemistry, a specialist in that subject should be provided, to complement what may be done by the ordinary staff in the teaching of general chemistry. Mr. Barber, in his note, urges the intimate connection of the subjects of plant diseases and economic entomology with the botanist's work generally, and it is possible that one person may be found who possesses qualifications for teaching these subjects thoroughly. But for teaching the above subjects the services of two professors should be made available, care being taken by the provision of adequate assistance that the work of teaching should not occupy more than half their time, in order that the remainder may be devoted to scientific investigations.

5. In the latter respect, besides numerous questions connected with general agricultural practice, to the proper understanding and solution of which, the assistance of the agricultural chemist is necessary, as pointed out by Dr. Voelker, there are problems connected with the sugar, oil-seed, dye, and other crops of the country, in the feeding and management of the live-stock and in dairying, which can only be dealt with if such assistance is available. The information available regarding Southern Indian soils is very limited; that regarding manures very slight, and regarding the chief crops of the country yet to be obtained. One instance may be mentioned, and that is the difficulty recently experienced in arranging for the analyses of sugarcane juices, and the fact that Mr. Royle's report submitted in Board's Proceedings, No. 103, dated 29th May 1901, can only be regarded as a preliminary investigation of the subject.

In regard to plant diseases, the sugarcane disease of Gódáviri is an instance illustrating the work which lies before the economic botanist; whilst Mr. Barber has, in the very limited time he has been able to devote to the subject, discovered other diseases attacking that crop. Rust and smut attack the Sorghums, and the other cereals of the country suffer from fungoid diseases, which have not yet been studied, whilst the same is true of cotton and other industrial crops. Besides this, the scientific study of the varieties of the farm crops of South India would undoubtedly lead to valuable developments; whilst there are numerous forest problems the study of which cannot fail to be productive of valuable results.

Similarly, in the case of economic entomology, some attention has been given by Mr. Barber since his appointment to the insects affecting the sugarcane and the ground-nut, but there are other insect pests—such as the caterpillars which at times devastate the castor fields; the blight which so seriously damaged the cotton crop of Bellary last year; the borers and other insects which from time to time attack the ordinary field crops of the country,—scientific study of which demands attention, besides the more limited interests of the planters of tea, coffee, etc., in respect of the attacks from which their products also suffer.

6. In the directions indicated in the two preceding paragraphs, there would, the Board considers, be ample useful work for two or three scientific assistants under the Agricultural department, and if anything is done to provide this assistance, it seems

most advisable that the College of Agriculture should be made the head-quarters and centre of scientific work. It is there that the specialists could best utilise their knowledge and the experience they acquire for teaching, and the place is convenient as being easily accessible from head-quarters.

The exact position which Mr. Barber should assume in reference to the College may be left for future determination, when he has progressed further with the survey work he at present has in hand, and when it is decided for how long his services can be retained in Madras. In respect to the assistance of an agricultural chemist, which the Board has shown to be required, in case the Government cannot see its way in the immediate future to employ such an officer for the work sketched out above, it might be feasible to arrange that the present staff of the College should be utilised to some extent to meet the requirements of the Agricultural department. The Board is, however, not certain as to the extent to which the staff could render such assistance, and the consent of the Director of Public Instruction would be necessary to such an arrangement; but it may be pointed out that any work which the College staff might be called upon to do for the Agricultural department would afford opportunities for demonstrational instruction to the students of the College.

The Board recommends these matters to the favourable consideration of Government, with a view to the equipment of the Agricultural department being made more nearly adequate than at present to the great agricultural interests of the Presidency.

7. In regard to the question of retaining the Government Botanist permanently on the staff of the department, the Board observes that of the period for which Mr. Barber's services were, as appears from the original papers connected with his appointment, to be devoted to the systematic investigation of the Flora of Southern India, almost half has expired and it appears most improbable that he can in the time remaining at his disposal expect to complete this survey. But in this work the Agricultural department is only remotely interested and it is in reference to questions of economic botany that the department is concerned. In this connection it is only necessary to refer to the sugarcane disease in Górávari, for the full investigation of which Mr. Barber has reported that the time he has been able to devote to it is inadequate. The sugarcane is only one, and not the most important, of the crops of the Presidency, the study of which by a competent botanist cannot fail to produce valuable results, more particularly under the fourth head of what Mr. Barber in his first memorandum describes as the legitimate duties of his appointment. In addition to this, the Board considers it a matter for regret that the services of so competent a botanist should not be available to assist in the course of teaching at the College of Agriculture; though it will not at present enter on a discussion of the best manner in which they could be utilised in that direction.

8. There are, at present, in this Presidency, Botanical gardens at Ootacamund and Burliar in connection with which, though they are not under this department, the advice of the Government Botanist might be fruitful of valuable results; whilst similarly in the gardens of the Agri-Horticultural Society, in those of the College of Agriculture, and on the experimental farms now being started there will be room for much useful work in the directions indicated by Mr. Barber, should his services be permanently retained for the Agricultural department, and if it be recognised that a much greater portion of his time should be devoted to economic botany; for instance, Mr. Barber has himself suggested that much might be done for the sugarcane growers of the Presidency by careful experiment. The Board would therefore recommend that the Government of India may be addressed to make the appointment of Government Botanist permanent in this Presidency, and that it may be definitely laid down that economic subjects shall form an important portion of his work. In this connection it begs to draw the special attention of the Government to Mr. Barber's remarks in his second memorandum (paragraph 5) as to the nature of the duties he should be called upon to perform, and observes that these remarks are in strict accordance with the views of the Government of India as expressed in paragraph 8 of its fourth resolution, dated 20th March 1897, on the proceedings of the Agricultural conferences held at Simla (*vide* G.O., No. 413, dated 27th July 1898), but they suggest that the scope of his duties as defined in paragraph 2 of G.O., No. 102, Revenue, dated 8th February

1899, should be reconsidered. These proposals will involve a modification of the orders conveyed in Government of India letter, dated 16th September 1898, No. 2507-17-11 (printed in G.O., No. 102, Revenue, dated 8th February 1899), but would appear to be in accord with the wishes of the Secretary of State as expressed in the papers read in the G.O., above quoted.

9. If these proposals be accepted the Board considers that Mr. Barber should be definitely recognised as the Botanical officer of the Agricultural department, and that his suggestions regarding the position he should occupy in reference to the various Government gardens and farms in the Presidency may be accepted. It is of opinion that it is unnecessary to issue a separate series of Botanical bulletins containing notes on subjects such as Mr. Barber alludes to in the concluding paragraph of his second memorandum, but that these as well as all notes of economic interest may be incorporated in the bulletins of the Agricultural department.

(True Extract.)

(Signed) R. V. SRINIVASAR,
Secretary.

To the Secretary to Government, Revenue Department.

Copy to the Director of Public Instruction.

" " Government Botanist.

" " Deputy Director of Land Records and Agriculture.

" " Land Revenue (Forests).

APPENDIX.

From C. A. BARBER, Esq., M.A., F.L.S., Government Botanist, to the Secretary to the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated Ootacamund, 5th January 1901, No. 303.

In obedience to Board's Proceedings, in which a memorandum is called for stating my reasons for asserting that there is plenty of room for a permanent Botanical Department in the Madras Presidency, I have the honour to submit the following.

I propose briefly to sketch the work which usually falls within the scope of such a department, and I shall endeavour to speak as impersonally as possible while referring especially to the needs of this Presidency.

First in appropriateness, if not in importance, among the duties of a Government Botanist is the work of naming the plants, wild and cultivated, in the country. The exploration of the Madras Presidency has long been a desideratum among Indian and European Botanists. There are many points concerning the range of species which cannot be determined without a more or less thorough examination of the peninsula, and my short experience here has already shown me that there is a good deal to be added to Sir Joseph Hooker's monumental work. It seems that this part of India has been neglected botanically during the past twenty years, and while formerly it was held up as an example of scientific activity, it has now fallen behind the other Presidencies. There is no need to enlarge upon this aspect of the Government Botanist's work because it is receiving abundant attention just now.

In the Madras Presidency a special interest is attached to the naming of forest trees and fodder grasses. This is one of the directions in which the herbarium could be usefully employed. Besides naming the species sent in by the various forest officers, small special collections might be placed in the head-quarters of the different circles for their reference.

Steps are also being taken towards supplying the Presidency College and the Government Museum with general teaching collections.

Secondly, in all Botanical departments one or more gardens are included, which, besides forming a fitting surrounding for buildings in which the collections are stored, contain a large number of living plants of ornamental or economic value which it is sought to add to the native flora. In the present case the botanic garden is placed under the charge of the Collector of the Nilgiri district, although it was under the late Government Botanist. As long as the garden is to be considered as an ornamental piece of ground or as a centre for the dissemination of garden plants, this arrangement is undoubtedly the best. But if it is proposed to conduct experiments in economic products, some superior officer should be appointed who has had a technical University training and who is on the same footing as the Directors of other Botanical departments. There appears to be room for a certain amount of useful work to be done in the

Ootacamund gardens, of an agricultural nature, with especial reference to the local growth of grains, fruits and vegetables, while the Burliar gardens may be used for experiments in the growth of the more tropical products which it is sought to introduce into the Presidency. In either case these experiments should be under efficient control. I would point out to the Board, in this connection, that, in order that the Government Botanist may act as an efficient adviser to Government on economic questions, he must be placed in charge of experimental gardens. It is unreasonable to expect advice suited to the local conditions unless there is a ready and constant means for him to test them by experiment. Thus far there has been no opening in this direction, either in the plains or on the hills, and the disadvantages of this have been keenly felt.

Until within recent years the branches of botany so far mentioned were quite enough to occupy the whole energies of a Government Botanist. But the working out of the various floras and the gradual perfecting of the enormous system of exchanges carried on by Kew with all parts of the world have opened the way for work in fresh directions.

For many years now the various sciences have been pursued with the greatest enthusiasm in the University laboratories, and now they are being rapidly turned to account in the improvement of agriculture. The chief sciences which affect the crops are botany, in its widest sense, and chemistry. As all agriculture is ultimately based upon an intimate acquaintance with the life of the plant, the trained botanist is perhaps in the best position to investigate the conditions most favourable to the development of this branch of practical science. He, especially, is fitted to conduct the long series of experiments necessary for the gradual improvement of the strain or variety cultivated. With the aid of the chemist he can gauge the conditions most likely to increase the yield of the crops, and to him would fall the work of determining the appropriate means whereby to protect the plants from the many insect and fungus pests which threaten them with extinction.

Experiment gardens in the colonies are thus usually placed under the charge of botanists, and, in the case of the larger and more advanced agricultural stations, these hold a prominent position upon the staff.

A quite special subject, which is only now beginning to be understood, is that of plant pathology. The study of this subject opens up a vast field to the trained *cryptogamist*, for in late years there has been a marked increase in pests of a purely fungal nature. To emphasise the largeness of this subject, I may mention that, in the Island of Ceylon, where the fungi have had a certain amount of attention devoted to them, there are known to be more species of these lowly plants than the "flowering plants" forming the magnificent Ceylon "flora."

The minute plants usually classed popularly under the name of "germs," and belonging to the degenerate Schizomycetes or Bacteria, have already been severed from the botanist's work. Their study forms the science of *Bacteriology* and requires a quite special training. At first known only as destructive and dangerous disease producers, their more useful forms are now being recognised, from the nitrifying bacteria of soils and their scavengers which are now utilised in sewage farms to the bacteria which are called in for the various fermentative processes of commerce. Fortunately bacteria cause comparatively few known plant diseases, although the tissues of plants are frequently filled with them.

There are, on the other hand, many insects and other lower animals which attack plants. This has been sometimes considered of late to be the work of the *entomologist*. But this is only partly so. In a well-equipped station of course an entomologist is always to be found on the staff. But it is the botanist's business to investigate the causes which have made the plant liable to the insect's attacks. This the entomologist cannot do without at the same time possessing a very special knowledge of plant-life. His work is to trace the life-history of the pest so as to discover the exact time in which effectively to apply destructive mixtures, to name the species in the museum and to indicate the recorded habits of it and its allies. The botanist aims at rendering the plants proof against its attacks.

And even in the study of insect pests, the entomologist has to invoke the botanist's aid, for there are daily being discovered many fungi which attack and mummify insects, and this is regarded in many quarters as the readiest means of checking their onslaughts (witness the locust fungus, the coffee scale fungi which are being worked out in Ceylon, the cock-chaffer fungus which forms an article of commerce on the continent, and the fungus which attacks and ensnares the moth-borer grub in its tunnels in the West Indian canes).

The *Chemist* like the *bacteriologist* stands quite apart. His special knowledge and the expensive equipment necessary for his laboratory, together with the many subjects other than agricultural which he examines, place him in the position of a consultant. In the West Indian botanic stations the chemist and botanist work hand in hand for the preparation of the manurial experimental plots.

The following then are the legitimate subjects which fall to the Government Botanist:—

(1) The botanical survey of the country of which he has charge. The establishment of a herbarium for the storing of his collections, and the description of the new species found.

(2) The direction of the various gardens under the immediate charge of the trained gardeners sent out from Kew. These are of value for their own beauty, for the introduction of new ornamental and economic plants, and for the conduct of such experimental cultivation as may be considered to be of use for the surrounding country.

(3) The charge of experimental agricultural stations. I think I am right in saying that, in the earlier years, these were usually placed under a botanist. Such is still the case in many of the colonies, but where the station has so increased in size as to include a number of scientific men upon its staff, the control is probably placed in the hands of the senior man, the most able scientist or the best administrator, whether he be a botanist, chemist, physicist or agriculturist. In Madras these stations will naturally fall to the Deputy Director of Agriculture, but if such an officer did not exist they would appropriately come under the direction of the Government Botanist.

(4) Closely connected with the agricultural stations is the study of the plants grown, their varieties, yields and diseases. This work requires a well-equipped laboratory. It is obvious that for the investigation of these points the control of the experiments should be largely in the Government Botanist's hands.

I have placed before the Board my views regarding the legitimate field of operation of the Government Botanist. In doing so I have tried to make the note as general as possible, but it has been necessary to consider both my own qualifications and the Presidency's needs in its preparation. The well-equipped student of plant-life has a very wide field of usefulness before him now-a-days. There is in fact no science at the present of wider practical application, and this is especially so in this agricultural presidency. There is no reason why, at a trifling cost, the Government may not turn to its account the accumulated benefits derived every day from the world's study of its plant-life.

It may be thought, here in India, that I have been an interested advocate of the botanist's usefulness. I will add one or two examples which might be almost indefinitely increased. There were established a few years ago three sugarcane experiment stations in Java, all, I believe, under the control of a botanical director, assisted either by a chemist, an entomologist, or both together.

The Board will know something of the work of the eminent Dutch Botanist, Dr. Treub, at the head of the Java Botanical department at Buitenzorg. With his great staff of over 40 trained assistants, everything connected with plant-life is examined, and his laboratories turn out a mass of work from the most advanced histology of European Universities to the manuring of crops and the estimation of alkaloids. Java has had a long, up-hill struggle, but has now reached a unique position in tropical agriculture.

The Ceylon department is headed by a young botanist under whom have been recently placed an entomologist, a cryptogamist and an agricultural chemist. He has control over several botanical gardens and lately a crop experimental station has been added.

It may be contended that planters themselves pay part of the salaries of these officers. But this is only so to a very small extent, and does not influence the fact that the man who naturally focuses all these different branches of science is a botanist.

The U.S.A. experiment stations are now too large not to have a great number of experts attached to each, but I think I am not mistaken in saying that the post of Director is still frequently filled by a botanist.

To quote from my own experience, which after all is most familiar to me, my work in the West Indies emphasised the practical side of a botanist's duties. I was in charge of four experimental botanical stations, three of which were worked by curators trained at Kew, one sugar station under an experienced manager, where experiments on manuring and varieties were commenced, and several Government fibre plantations, one of which, devoted to Mauritius hemp and sisal, extended to about 1,000 acres. The whole administration and financing of these was in my hands. Besides this, a great part of my time was taken up with the examination of the conditions and diseases of such products as coffee, cocoa and sugarcane, and to the publication of bulletins on all botanical subjects.

These may serve as examples of the way in which a botanist may be employed in a tropical country. I would ask the Board if there is not room for this kind of activity in the Madras Presidency. There are of course the local conditions to be considered. What is eminently adapted to a country like Ceylon would not be suited to our country, but the conditions of Madras cannot be such as to place it beyond the pale of the other agricultural communities of the world.

SUPPLEMENTAL memorandum on the work of the Government Botanist, Madras.

In my memorandum drawn up in January of the present year I dwelt upon the work which might naturally be expected from a Government Botanist. This officer in Madras has at present no official connection with any of the Government gardens or experimental stations

of the Presidency. This is an unfortunate anomaly, and, until steps are taken to rectify it, the Government Botanist will not be able efficiently to perform his duties as general referee on questions dealing with economic botany.

It is, on the other hand, of the greatest importance that an officer specially selected for scientific work should, as far as possible, be freed from all administrative work. The present memorandum deals with the question from this point of view. An attempt is made, without interfering with existing administrative arrangements, to bring the Government Botanist into touch with all the centres of botanical and agricultural activity. It may be found in the future advisable to bring him into closer connection with the forestry and other departments, but, although a great deal of his time is being devoted to forest matters, there does not appear to be any need for immediate action in this direction.

2. After careful discussion I am now in a position to make suggestions of a more definite nature than in my former memorandum which, it will be remembered, dealt with the question of the need of this Presidency of a permanent Government Botanist.

My proposals are in brief that the Government Botanist be definitely attached as consultant both to the Agricultural department and the Government parks and plantations. I have added two other suggestions which occur to me. It is very desirable that all misconception should be removed as to the scope of the Government Botanist's work, and I would move the Board to request a definite pronouncement on the subject from Government. Lastly, I propose the foundation of a definite organ attached to the department in which the more useful results may be published instead of being locked up as they frequently are under the present conditions.

3. The direction of the newly-founded experimental stations is very properly vested in the Deputy Director of Agriculture. There will, however, inevitably arise many questions of a more or less purely botanical nature in connection with these. For the sake of brevity I do not enlarge on this subject, but the Deputy Director of Agriculture himself would have no difficulty in pointing out some of the directions in which he would be glad to have the Government Botanist's assistance.

I propose therefore that the Government Botanist be understood to be the official consulting botanist to the Agricultural Department. This will give him power, without disturbing existing arrangements, to inspect the stations at any time. It will also empower the Deputy Director to refer questions without the preparation of Board's Proceedings. It will also place the Government Botanist in direct communication with all officers of the department.

The arrangement here advocated will, it is believed, do away with all possibility of friction and will render the services of the Government Botanist available to all officers interested in agriculture. The alternative places him in the position of a critic of the department without giving him any opportunity of following out the experiments and thus forming correct ideas.

4. The lack of connection between the Government Botanist and the Government gardens is a much more anomalous state of affairs. It has undoubtedly arisen from the long period during which no successor was appointed to the late Mr. Lawson and also, secondarily, to the mistaken idea that the Madras Presidency only required the services of a Government Botanist for five years. Under such circumstances it was obvious that the temporary officer had better not be connected at all with the gardens, and they were accordingly placed under the Collector of the Nilgiris. This arrangement, however, cuts the Government Botanist off from the economic work which can be done, and as a matter of fact is being done, in the gardens. Mr. Proudlock, the Curator, has shown himself keenly interested in this class of work and some of his results are good. Although it is laid down in the recently-prepared code of the Government parks and gardens on the Nilgiris that economic botany forms no part of the curator's duties, it is evident from his last report that this class of work forms no small part of his activity. It would be a great pity for Mr. Proudlock's work in economic botany to cease, although it needs direction. It is also obviously impossible for a man of his position and education to keep himself *au fait* with recent work on scientific economics, and at the same time to attend to the administrative drudgery connected with the management of a large garden attached to a Government Residence.

The curator's work on fibres, oils, beet-root, &c., is in the legitimate province of the Government Botanist. I would, therefore, suggest that Government be addressed as to the desirability of bringing that officer into connection with this part of the curator's work. All the administration should, as heretofore, be in the hands of the curator under the Collector of the Nilgiris, but all work of an economic nature should be thoroughly discussed, before being carried out, with the Government Botanist.

The latter officer might be attached to the Government gardens in much the same way as to the Agricultural department. His supervision in the former case would naturally be of a closer nature owing to the different status of the curator to the Deputy Director of Agriculture. The manner in which this arrangement would work out will depend very largely of course upon the personal relations of the officers concerned. I do not, however, apprehend any difficulty in this respect, as the actual prosecution of the experiments would still remain in the curator's hands, and it would be advisable at any rate at first to interfere as little as possible with what is being done.

The alternative to this proposed alteration will be that the curator will either have to discontinue economic work or to have European assistance as pointed out in his latest report. His position will then be altered in the scale drawn up by Kew and, instead of being simply a curator, he will be entitled to the name Superintendent. He will deserve larger pay and will become the Government referee with regard to all those portions of economic botany to which he is able from his position to devote himself.

In case, however, the rearrangement here suggested be made, the economic collections now being formed by the curator would pass to the Government Botanist's office, the libraries, as far as they consist of purely systematic or scientific books, would be accommodated in one library, those on gardening remaining with the curator, and probably a considerable saving might be effected in the cost of the buildings which it is proposed to erect for the latter officer.

5. As regards the scope of the work of the Government Botanist in this Presidency, I wish especially to emphasise the fact already alluded to in various communications that the idea that the botanical survey is of a purely systematic nature is founded on a series of misunderstandings. I have carefully discussed the subject with the officers in this Presidency, with the Director of the Botanical Survey and with the Director of the Royal Gardens, Kew, who was directly instrumental in bringing me to Madras. In all cases the need for greater attention to the economic side was insisted on. The feeling in this Presidency, I need hardly say, is strongly in favour of a great extension in this direction. The Director of the Survey insists that the investigation of crops is part of the survey and an important part of it too, while the Director of the Royal Gardens, Kew, asserts that he selected me for economic work and that the purely systematic portion of my work should be subservient to that of the study of the crops.

With these views expressed by the advisers to the Government of India and with these wishes entertained by the local Government, it will surely not be difficult for the matter to be once for all placed in a clear light and the various aspects of the Government Botanist's duties be given due prominence.

On the other hand such a pronouncement is needed to make things clear and in order. It is only too evident, from a perusal of the papers dealing with the present appointment that two entirely different ideas as to the duties of the Government Botanist have existed side by side from the first, and it is with the hope that all misunderstanding may be done away with that I have addressed the Board on this subject.

6. This is perhaps a suitable opportunity for bringing forward another subject discussed with the Director of the Botanical Survey during my recent visit to Calcutta.

It has all along been felt in various directions that it would be of advantage if there were some means by which the results obtained by the Government Botanist and his staff might be made more readily available to the Government and the public. A great deal of interesting matter has been accumulated during the last few years and there is no means of making this public except in answer to questions sent to me through the Board of Revenue, and the information thus obtained is frequently not in the best form for publication. Some of the reports sent in by the Government Botanist have been and are being published as Bulletins of the Agricultural Department, while others are locked up in Board's Proceedings.

I would accordingly request permission to issue a bulletin connected with botanical work and containing matter of general interest which is regarded as unsuitable on the one hand for inclusion in the series of Madras Agricultural Bulletins and on the other in the records of the survey. It might also be of use to include summaries of former work connected with the Madras Presidency and published in Agricultural Ledgers, Indian Museum Notes and other publications not easily available to or understood by the public.

There is certainly a great want for such an organ as that now described and it should not be a matter of difficulty, after consultation with the Director of the Survey, who, I believe, approves of the general idea, and the Deputy Director of Agriculture, to decide what items might be included in each number.

MADRAS,
30th July 1901. (Signed) C. A. BARBER.

ORDER—No. 292, Revenue, dated 25th March 1902.

Miscellaneous.

The Government agree with the Board that the scientific staff of the Agricultural department should be strengthened and that the instruction given at the Agricultural College should be made more efficient; and, subject to the following remarks, concur generally with the Board in its suggestions to this end.

2. The Board rightly considers that the chief want is an agricultural chemist, whose services are required both for investigation and teaching. The Government of India will be addressed on the subject of the appointment of such an officer for the provincial Agricultural department, on a salary of Rs. 500—50—700 with free

quarters. As regards the present staff at the college, His Excellency the Governor in Council is not satisfied that their services could not be more advantageously and fully employed than at present both in teaching at the college as well as in assisting the Director of Agriculture in the practical investigation of questions connected with general agricultural practice. This matter will be further considered in connection with the report of the committee appointed to advise on the course of instruction at the college.

3. With regard to teaching at the college cryptogamic botany and economic entomology, the Government, while recognising that instruction on these subjects is necessary to a complete agricultural training, consider that the time has not yet come when the students may be expected to profit by scientific lectures on these subjects. The study of cryptogamic plants is a difficult branch of botany and requires the expert use of a good microscope. Entomology is similarly a specialized branch of zoology. The Government fear that these subjects, as purely scientific studies, are beyond the range of the Agricultural College. At the same time the lectures on general agriculture might usefully include such instruction on the nature and habits of pest diseases as would enable the student, if not to investigate them scientifically, at any rate to identify the more common of them and treat them on accepted methods. On the investigating side of the department, for inquiries concerning pests and other questions dependent on a knowledge of cryptogamy and entomology, scientific experts are undoubtedly required: but the Government see no immediate prospect of finding funds for their employment.

4. Turning now to the question of the scope of the duties of the Government Botanist, it is observed that, though he was employed primarily to continue the systematic botanical survey of the Presidency, he was also constituted the adviser of the Government in regard to all questions and inquiries in economic botany that might be referred to him (G.O., No. 102, dated 8th February 1899). The experience of the last three years amply proves that the economic branch of Mr. Barber's work is by far the most important and urgent, and that it will afford constant occupation to a special officer. The Government therefore accepting a suggestion already made by the Government of India consider that the appointment of Government Botanist should be made permanent and the duties of the Botanist defined as being mainly those of an economic expert on the staff of the Agricultural department. The prosecution of the botanical survey should, however, continue to receive attention, but the Botanist's programme in this respect may be less hurried than that at present framed.

5. This change in the character of Mr. Barber's work will necessitate the removal of his head-quarters from Ootacamund to Madras, where alone he can be in touch with the Director and other officers of the department. The present allowance of Rs. 125 per mensem for house-rent will be continued, and the Board is requested to submit at a very early date proposals for the location of Mr. Barber's office. The herbarium will be restored to its place in the museum where, it is understood, arrangements can be made at once for its reception and for the accommodation of the herbarium keeper. No change in the present management of the Government gardens and parks on the Nilgiris is called for, and the Government agree with the Board that it is unnecessary to issue a separate series of botanical bulletins.

6. The following letter will be despatched to the Government of India.

(True Extract.)

M. M. S. Subbaiah

for Secretary to Government.

To the Board of Revenue (Revenue Settlement,
Land Records and Agriculture).

„ the Financial Department.
„ the Accountant-General.
„ Educational Department. ✓

Exd. C. Parthasarathy.

50 Copies.

When given for copying _____
When copied _____
When examined _____
When signed _____

190

READ AGAIN G.O., No.
190

DATED

CURRENT No.

ENCLOSURES TO C. No.

ORDER OF GOVERNMENT

A A A A A A A

LETTER OF GOVERNMENT.

STATEMENT WITH DITTO.

PAPERS NOT FILLED UP, BEING MEANT FOR DESPATCH
IN ORIGINAL.

N.B.—

A = Copy in full.
B = Not to be copied.
P = Copy abstract only.
Q = Copy heading only.