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Educational (1898) Department.

ORDINARY MS.

G.O., No. 674

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INDEXED.

37-37

[Despatch Abstract.]

Recording Govt. Resn. Dept. Comm.rs & the Board of Revenue, Settlement Dept., the eight Resolutions issued by the Govt. of India on the Proceedings of the Agricultural Conference of 1893 & 1895-6 embodying a policy of agricultural enquiry and improvement.

J 26/10/98

BACK PAPERS.

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

FURTHER PAPERS.

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

Esc 1497 12-3-96 his (abs)
— 693 : 7-11-96 — "
— " 53 : 28-1-96 —
— " 939 : 19-12-95 —
Leg: 135 : 9-12-95 —
Esc 898 : 22-11-95 —
— 854 : 1-11-95 — (abs)
— " 834 : 19-10-95 Sc
— " 691 : 15-8-95 his
— " 499 : 15-6-95 orig
— " 294 : 6-4-95 his (abs)
— " 727 : 28-9-94 —
— " 712 : 25-9-94 — " (abs)

Esc 620 : 21-8-94 his
— " 509 : 14-7-94 —
— " 460 : 22-6-94 Sc
— " 794 : 3-11-93 his
— " 614 : 21-8-93 —
— " 605-6 : 18-8-93 —
— " 452 : 3-7-93 —
— " 624 : 29-8-92 —
— " 388-9 : 18-5-92 — " (abs)
— " 194 : 8-3-92 —
— " 320 : 1-5-91 —

Recd. 2nd Sept. } 1898.
Regd. 3rd " }

Enclosures
Spare copies

Government {1898} of Madras.

REVENUE.

G.O., Nos. 413, 413 A, 27th July 1898.

order nil 6748 26-10-98

JULY.

Recorded.

26/10/98

Note. Please see para 7 of the current & the Sixth Resolution of the Govt of I. referred to therein.
It is understood that the Office & Hon'ble notes on the papers have been printed in the Rev. Dept. If A.G. desires to see them a copy thereof may be asked for. Requisition is submitted.

Agricultural Policy.

Communicating with instructions, to the Board of Revenue (Revenue Settlement, Land Records and Agriculture) the eight resolutions issued by the Government of India on the Proceedings of the Agricultural conferences of 1893 and 1895-96 and embodying a policy of agricultural enquiry and improvement.

Requisition issued Sl. 5.
Wicket
Diaries
Issue papers
3/7/98
Recd. in Rev. Dept.
11/9/98

22/8/98.

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

READ—Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), No. 209, dated 9th March 1897.

ABSTRACT.—Submitting proposals in connection with the question of the establishment of experimental farms in this Presidency.

READ—Resolution of the Government of India, Revenue and Agricultural Department, No. 3—39-1, dated 20th March 1897.

ABSTRACT.—Forwarding resolutions on the Proceedings of the Agricultural Conferences of 1893 and 1895-96, including an historical summary of the work undertaken by the Imperial and Provincial Departments of Agriculture since their reorganization.

READ—Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), No. 229, dated 13th March 1897.

ABSTRACT.—Communicating, with remarks, to Collectors and the Deputy Director of Land Records and Agriculture, Government Order, Revenue Department, passing orders on Board's Proceedings submitting a memorandum of the discussions held with Sir Edward Buck on the subject of the utilization of Land Records and the recommendations made by Dr. Voelcker in his report on the improvement of Indian Agriculture.

READ—also letter from DENZIL IBBETSON, Esq., Secretary to the Government of India, Department of Revenue and Agriculture (Agriculture), to the Secretary to the Government of Madras, Revenue Department, No. 728—39-3, dated 18th May 1897.

ABSTRACT.—Communicating observations on the Proceedings of the Agricultural Conference held at Madras in December 1895 for such consideration as they may be found to require.

ORDER—No. 413, Revenue, dated 27th July 1898.

Miscellaneous.

The second of the papers read above comprises the eight resolutions which the Government of India have issued on the Proceedings of the Agricultural Conferences of 1893 and 1895-96. The resolutions embody a policy of agricultural enquiry and improvement formulated as the result of fifteen years' deliberation, of repeated consultations with Local Governments, and of five central conferences at which representatives from all provinces were present.

His Excellency the Governor in Council resolves to accept the principles and policy laid down in these resolutions in their entirety. They will be communicated to the Board of Revenue and all Heads of Departments concerned. Copies should be sent to all Collectors, Divisional Officers and Tahsildars, who should be instructed to study them carefully. The Government does not consider it necessary to prescribe

the resolutions as one of the subjects in the examinations of junior revenue officers, as they contain much which could not be correctly understood before an officer had acquired some experience in revenue work. The subject is one, however, to which the attention of Assistant Collectors and Probationary Deputy Collectors should be drawn during their training.

2. The first important matter dealt with by the Government of India is the constitution of an efficient land records establishment. In the *second resolution* the principles which should regulate the training, qualification, and duties of each class of Land Records officers are set forth. The various classes of such officers are—

(1) Village officers forming the inspecting agency;

(2) Supervisors—

(*a*) peripatetic,

(*b*) sedentary; and

(3) Head Supervisors.

(1) *The village officer.*—The place assigned to this officer in the Government of India scheme is filled in the ryotwari tracts of this Presidency by the Government karnam. The Supreme Government considers that the educational attainments of these officers should be gradually increased, an educational test being in time introduced, that they should be sufficiently well instructed in survey and mensuration to keep village maps and that they should be adequately paid and have prospects of promotion to the higher grades of the Land Records staff. As regards educational qualifications, candidates for the post of Government karnam in this Presidency have now to be qualified according to (1) the Primary Examination, *i.e.*, in reading, writing and arithmetic according to the fourth standard and in two of nine named optional subjects; (2) The Village Officers' Special Test in (*a*) village accounts, (*b*) the power and duties of village officers. They have also to produce a "good" certificate from a Superintendent of Survey Schools and, after appointment, have to attend annual survey schools. The Government considers that arithmetic up to the sixth standard should be added to the list of optional subjects for the Primary Examination and that future karnam candidates should be required to pass in that subject and in mensuration as their "optional" subjects. This will ensure a more thorough efficiency on the part of karnams in keeping accounts and survey plans. Improvement in the karnam's pay will, the Government hopes, be soon realised. Promotion to the higher grades of the Land Records staff cannot be assured to him though it may be possible to make such promotions at times. In this Presidency, however, lack of prospect of promotion in no way retards the karnam's progress towards efficiency, for the office is almost everywhere regarded as hereditary and looked on with honour, so that karnams look forward to holding their office for life. So far Government karnams have alone been considered. Those in zamindari tracts are far less advanced both in education and status, but the Government hopes that under the control afforded by Madras Act II of 1894, they will be raised gradually to the level of their ryotwari compeers.

(2) (*a*) *Peripatetic or Circle Supervisors.*—The duties assigned to these officers in the Government of India scheme correspond (subject to certain exceptions which will be dealt with below) with those performed by Revenue Inspectors in this Presidency. The Government of India considers that the circle officers should have prospects of promotion to higher administrative posts, that they should be restricted to their proper duties and that they should be well instructed in survey. As far as the Government is aware, there is no obstacle in the way of a Revenue Inspector's promotion to higher offices. Indeed practical experience as a Revenue Inspector is specially valuable for the more highly paid revenue clerks in Collectors' offices and for Deputy Tahsildars and Tahsildars. The Government fears, however, that it is true that much work is now assigned to Revenue Inspectors outside the legitimate scope of their duties. Tahsildars are very apt to delegate to their Revenue Inspectors the conduct of all manner of miscellaneous enquiries that should properly be made by the Tahsildar himself. This matter can only be cured by the unremitting attention of Collectors and Divisional

Officers, and the Government trusts that such attention is and will continue to be exercised. The present Survey Test for Revenue Inspectors is that laid down in G.O., No. 760, Revenue, dated 22nd November 1895. The Revenue Inspector has to obtain a "good" certificate at a survey school conducted by an officer of the Survey Department. The Government is inclined to think that this is insufficient and would prescribe the first three subjects * of Test D of the Salt and Abkári Department as the Survey Test for Revenue Inspectors.

* (i) Surveying with chain and compass; keeping a field-book; and plotting an ordinary survey of fairly level country to a simple scale.
(ii) The theory and practice of levelling, including the use and adjustments of the Dumpy level; also keeping a field-book, and drawing sections to simple scales.
(iii) The mensuration of planes and solids.

As Revenue Inspectors correspond in most respects to the Circle officers described by the Government of India, no staff of Circle officers has to be created in this Presidency except in the Zamindari tracts. As noted above, however, there are certain respects in which additional duties are thrown on the Circle officers; these are: (1) the duties the Circle officer is expected to carry out during a season of famine, and (2) the supervision of the maintenance of the village survey records. As regards the first set of duties, special additional officers could, no doubt, be appointed to assist the ordinary staff in times of famine. The question, however, of the measures to be taken for the proper maintenance of survey records has long been under the consideration of the Government in connection with the re-constitution of the Survey Department. The final decision of the Government on this matter has been separately issued in G.O., No. 414 of this date. The nature of this decision, as far as it relates to the constitution of a Land Records staff, will be stated here for convenience. The Government approves of the proposal of Mr. Castlestuart Stuart (made in his Note, dated 19th August 1896, which forms an enclosure to Board's Proceedings, No. 354, dated 18th September 1896) to appoint a Head Revenue Inspector in each taluk who would be selected for special survey and revenue knowledge and whose duties would be to go round the firkas of his taluk, keeping the Firka Revenue Inspectors and their respective karnams up to their work. At the same time the Government agrees with the Board and the Superintendent of Survey, in their view that there should be a special Deputy Collector, trained in Survey, for the supervision of Land Records in each district. These Head Revenue Inspectors and Deputy Collectors will take the place of the Taluk Supervisors (but they will not be wholly sedentary officers) and Head Supervisors respectively, described by the Government of India. The special Deputy Collector, the Head Revenue Inspectors, the Firka Revenue Inspectors and the village karnams will thus form the district Land Records staff. Their duties will comprise the maintenance of all land records generally, including the upkeep of survey records. Until the standard of survey knowledge among karnams is much raised, the chief portion of the duties of the special Deputy Collector and the Head Revenue Inspectors will lie in the supervision of survey records. The Land Records staff will be a wholly revenue staff under the exclusive control of the Collector and his Divisional Officers. The Special Deputy Collector will be a personal assistant to the Collector, and the Head Revenue Inspectors will be personal assistants to the Tahsildars of their respective taluks.

3. On the lines above indicated, the Board is requested, in consultation with the Superintendent of Survey as regards matters pertaining to the maintenance of survey records, to submit a detailed scheme for giving effect to the policy enunciated by the Government of India. The following matters will require careful attention: (1) the selection, training and rates of pay and powers of the special Deputy Collectors; the Government is inclined to think that selections should at first at all events be made from the ranks of the present survey staff as far as possible: (2) the training and rates of pay and powers of the Head Revenue Inspectors.

The work of the special Deputy Collectors and the Head Revenue Inspectors in each district will, as stated above, be immediately supervised by the Collector and his Divisional Officers. The administration of the Department of Land Records will be with

the Commissioner of Revenue Settlement and Director of the Department of Land Records and Agriculture. Under the new scheme, the Government is inclined to think that the Director will need the assistance of a special inspecting officer and that the post of Deputy Director of Land Records should be revived. The Board is requested to report on this point with special reference to the remarks of the Government of India in paragraph 3 of Mr. Ibbetson's letter read above.

4. The next important matter is that dealt with in the *Third Resolution* of the Government of India—the utilization of land records. In paragraph 3 of Mr. Ibbetson's letter read above, the Government of India expresses the opinion that the system of land records in this Presidency seems now to be established on sound principles so far as they are intended to serve the double purpose of supplying agricultural information and of warning the authorities of agricultural distress. The remarks of the Government of India in their third resolution, and in particular those with reference to the use of the circle or firka book might, however, be studied with advantage. The form of firka book submitted for approval by the Board in Board's Proceedings, No. 229, dated 13th March 1897, should be revised in the light of these remarks so as to provide information on all important agricultural "defects." Firka books are at present inspected by Divisional officers, but the Government doubts whether the inspection is often intelligently made or is fruitful of any good result. The Board should issue careful and detailed instructions on the subject as soon as the form of the book has been finally settled. The inspection of these books would further be one of the duties of the Deputy Director of Land Records, should it be decided to re-appoint such an officer.

5. In the *Fourth Resolution* the Government of India deals with the subject of the scientific and natural enquiries connected with agriculture which must, from their nature, be held under Imperial direction. The active and sympathetic co-operation of all provincial authorities is, however, required in the prosecution of these enquiries and in particular it will be the duty of the Provincial Agricultural departments to co-operate and aid with facts and statistics the expert investigators of the Imperial staff. This important part of the duties of the local Department of Agriculture should be carefully borne in mind.

6. The constitution and duties of the Provincial Agricultural departments form the subject of the *Fifth Resolution*. The Government of India desire that in each province a definite scheme should be drawn up under which a strong and efficient staff of agricultural experts will be within a limited period placed at the disposal of the Provincial Department of Agriculture. The duties of the department are to investigate agricultural "defects" brought to notice by an examination of the land records and to devise remedies therefor, to institute inquiries as to the respects in which local practice in agriculture falls short of the highest attainable standard, to conduct experiments on a well-defined working plan with a view to solve the problems to which such enquiries give rise and to collect and arrange facts and statistics bearing on all branches of agriculture and economics. The sanctioned staff of the department in Madras at present consists of a Deputy Director of Agriculture who is a trained European expert, a Sub-Assistant Director, and seven Inspectors. The Government of India observe that in this Presidency the measures already taken or contemplated for the equipment of the Agricultural Department are possibly adequate. The present staff is certainly inadequate and the Government is not aware that any measures for its expansion have been contemplated. For the conduct of local enquiries and local investigations a considerable staff of Inspectors will probably be necessary. These men will have to be thoroughly trained in agriculture, and the Board is requested to report in consultation with the Director of Public Instruction how many trained experts could be obtained from amongst those who have passed through the Agricultural College. The Board is also requested to advise the Government on the strength of the superior staff which will be necessary. As the Government of India remarks, the employment of European experts and a trained staff of assistants involves the establishment of experimental farms. The establishment of an experimental farm in this Presidency was deferred pending the return of the Deputy Director of Agriculture from furlough. The working plan for the farm which it was proposed to start at Bellary should now be remodelled with reference to the general principles laid down by the Government of India, viz., that investigation and

experiment should be confined to some permanent agricultural defect (the Government of India suggests—the waste of liquid manure) and that they should be continued steadily until some definite result is arrived at and that all such results should be recorded and published in a uniform plan. The Government recognises the justice of the Board's contention that more than one European expert will be needed in the department, but before any steps are taken to obtain another expert from Europe the Board's views on the general constitution and size of the Agricultural Department and its revised proposals for the establishment of an experimental farm or farms will be awaited. In paragraph 21 of this (the fifth) resolution the question of training junior Civilians in the general agricultural system of their province by making them pass through a short course at an Agricultural College or farm is commended to the attention of Local Governments. The Government considers that it would be impossible to make such arrangements at the present time. But the subject will be reconsidered when farms have been started and are in full working order.

7. In the *Sixth Resolution* the Government of India deals with the subject of Agricultural education. The broad principles laid down by the Government of India have, in the main, been already accepted by this Government. His Excellency the Governor in Council has great pleasure in communicating to Mr. Nicholson the recognition by the Government of India—in which His Excellency in Council cordially concurs—of the service he has done by being the first to draw prominent attention to the necessity of reform in primary education as a foundation of progress in agricultural improvement. These reforms have yet to be fully carried out. The Board of Revenue is, therefore, requested to report in consultation with the Director of Public Instruction how the principles laid down by the Government of India can be best given effect to. With reference to the conclusions stated in paragraph 39 of the resolution it should be particularly reported—

(1) What, if any, further action is necessary to enable agricultural degrees, diplomas or certificates to be placed on the same footing as corresponding literary or science degrees, &c., in qualifying for admission to Government appointments, particularly those connected with land-revenue administration;

(2) what appointments should be included in the category of those for which the agricultural diploma should be eventually compulsory;

(3) how the practical instruction in agriculture of candidates for certain subordinate appointments at a school class or an experimental farm could best be arranged for;

(4) how a special school course leading up to the agricultural diploma, degree or certificate could be provided;

(5) whether the scheme of a Government farm could be arranged so as to provide for schoolmasters passing through a course of a few months' instruction either before or after appointment.

8. The two remaining resolutions deal with the methods of publishing agricultural information and the form of the annual administration report of the Department of Land Records and Agriculture. The instructions contained in the *Seventh Resolution* should be carefully noted for information and guidance and the Board should arrange to issue such further detailed instructions as may be necessary to adapt them to local conditions. Future annual reports of the Department of Land Records and Agriculture should be in the form, and furnish as far as possible information on the details, indicated in the *Eighth Resolution*.

(True Extract.)

H R Marjoribanks

for Secretary to Government.

To the Board of Revenue (Revenue Settlement, Land Records and Agriculture).
„ the Board of Revenue (Land Revenue).
„ the Director of Public Instruction.
„ the Superintendent of Survey.
„ Educational Department.
„ Public Department.
„ F. A. Nicholson, Esq., I.C.S.

Endorsement No. 413A.

Copy to the Government of India, Revenue and Agricultural Department.

(Signed) N. E. MARJORIBANKS,
Ag. Under Secretary to Government.

Exd. C. Parthasarathy.

120 Copies.

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FILE NO. 39 OF 1897.

SERIAL NO. 1.

1897.

GOVERNMENT OF INDIA.

DEPARTMENT OF REVENUE AND AGRICULTURE.

AGRICULTURE.

RESOLUTIONS
I to VIII.

No. $\frac{3}{39-1}$.

Dated Calcutta, the 20th March 1897.

Resolutions on the Proceedings of the Agricultural Conferences of 1893 and 1895-96, including an historical summary of the work undertaken by the Imperial and provincial departments of agriculture since their organization.

G. I. C. P. O.—No. 1055 R. & A.—18-3-97.—1,500—F. C. C.

Extract from the Proceedings of the Government of India in the Department of Revenue and Agriculture,—(No. $\frac{3}{39-1}$, dated Calcutta, the 20th March 1897.)

READ—

Part I, Famine Commissioners' Report.
Despatch No. 19, dated 14th March 1881, to Secretary of State.
" " 55, dated 16th June 1881, from " "
Government of India Resolution No. 6—340-50-G., dated 8th December 1881.
Despatch No. 151, dated 26th May 1882, to Secretary of State.
" " 197, dated 21st July 1888, to " "
" " 104, dated 13th December 1888, from Secretary of State.
" " 6, dated 1st June 1889, to " "
" " 108, dated 7th November 1889, from " "
Government of India, Resolution No. $\frac{345}{55\text{-}C.\ I.}$, dated 25th March 1890.
" " " " $\frac{24}{21-17}$, dated 22nd June 1893.
" " " " $\frac{2}{13-1}$, dated 31st January 1894.
" " " " $\frac{15}{93-1}$, dated 7th September 1895.
" " " " $\frac{17}{95-1}$, dated 17th September 1895.
" " " " $\frac{19}{98-1}$, dated 20th September 1895.
" " " " $\frac{20}{353-1}$, dated 2nd October 1895.

READ ALSO—

Dr. Voelcker's Report on Indian Agriculture, 1893.
Calcutta Survey Conference Proceedings of 1882.
Calcutta Statistical Conference Proceedings of 1883.
Delhi Agricultural " " " 1888.
Simla Agricultural " " " 1890.
" " " " " 1893.

Letters from the Chief Commissioner, Burma, Nos. $\frac{123}{S-3}$, dated 6th December 1895, $\frac{784}{11\text{-}A-1}$, dated 27th March 1896, and $\frac{86}{8\text{-}A-3}$, dated 3rd July 1896.

Letter from the Secretary for Berar to the Resident, Hyderabad, No. 124, dated 13th May 1896.

Letters from the Chief Commissioner, Assam, Nos. $\frac{62\text{-}A.}{2016\text{-}R.}$ and $\frac{276\text{-}A.}{2019\text{-}R.}$, dated 30th May 1896, and No. $\frac{185\text{-}A.}{2099\text{-}R.}$, dated 4th June 1896.

Letters from the Government of Bombay, Nos. 4587, dated 10th June 1896, and 1337, dated 15th July 1896.

Letter from the Government of the North-Western Provinces and Oudh, No. 2012, dated 10th June 1896.

Letter from the Government of the Punjab, No. 193-S., dated 17th June 1896.
" " " " Bengal, No. 630-T.-R., dated 24th June 1896.
" " Chief Commissioner, Central Provinces, No. 2416, dated 7th July 1896.

Letters from the Government of Madras, Nos. 488 and 491, dated 24th September 1896.

Resolutions on the proceedings of the agricultural conferences of 1893 and of 1895-96.

FIRST RESOLUTION.

Prefatory.

In October 1893 a conference was held at Simla attended by delegates from all Provinces for the purpose of discussing the scheme of agricultural enquiry and improvement, for the promotion of which departments of land records and agriculture had been constituted under orders issued by the Secretary of State in 1881. The report of the Conference of 1893 was circulated to all local governments and administrations for preliminary consideration, with Resolution No. 2, dated 31st January 1894.

In a subsequent Resolution No. 15, dated 7th September 1895, each provincial government was invited to arrange for a local conference which should discuss the question how far the proposals and recommendations embodied in the report of 1893 could be adapted to the circumstances of the province addressed. The proceedings of all conferences, together with the views of all local governments and administrations thereon, are now before the Government of India who, as intimated in 1894, will deal with the subjects concerned in a series of separate Resolutions.

The present or *first* Resolution will be confined to an historical summary of the circumstances which have led up to the present position, and to a brief statement of the subjects which will be dealt with in the Resolutions to which it is a preface.

2. The policy of creating special departments to investigate the conditions of agriculture in India with a view to agricultural improvement was first brought forward in 1866 by the Commission appointed to deal with the Orissa famine, and the subject was brought under very full consideration by Lord Mayo's Government in 1870. The result of the deliberations then held was an important scheme for the constitution of both imperial and provincial departments of agriculture. It was represented to Her Majesty's Secretary of State that while a central department was necessary for co-ordinating the programme of enquiry and the results of investigation, yet that the 'real work of studying and improving agriculture must rest with provincial departments'. It was proposed therefore that a department should be created in every province under the control of an official director. In accordance however with the Secretary of State's instructions the step first taken was the formation in 1871 of a new branch of the imperial secretariat which was to deal with the development of the general scheme. This measure was followed in 1875 by the establishment of a provincial department of agriculture in the North-Western Provinces by Sir John Strachey who had as a member of Lord Mayo's Government taken a leading part in the original programme. Further development was checked by the financial difficulties which were due to the famine and scarcity prevailing in 1876, 1877 and 1878, and which not only prevented new action in the provinces but led to the temporary suppression of the imperial department in 1879. It is interesting however to note that the very famine which thus arrested progress brought about the resuscitation of Lord Mayo's scheme on a wider and firmer basis by attracting renewed attention to the importance of improving Indian agriculture. The original scheme had been initiated by the Commission which dealt with the Orissa famine. The revised scheme was put forward ten years later by the 'Famine Commission' which investigated the causes and phenomena of famine in all parts of India. The fact that the creation of agricultural departments has thus been twice due to the deliberate and unprejudiced conclusions formed by special Commissions appointed to advise the Government on the action which should be taken to cope with famine and scarcity, brings into prominent importance at the present time, when the empire is again suffering

from a widespread failure of the harvests, all questions relating to the development of the scheme for agricultural improvement.

3. The Famine Commission was sent out in 1878 to this country at the instance of Parliament with a mission to enquire "how far it is possible for Government, by its action, to diminish the severity of famines or to place the people in a better condition for enduring them." The Commissioners, after a prolonged tour through India, submitted their report in 1880. They gave prominent consideration to the desirability of extending railways and communications; of enlarging the canal system; and of otherwise expanding the large protective works of the country. They also suggested the measures which should be taken on the actual occurrence of scarcity or famine. But the greater part of their report was occupied with recommendations for the reform of land administration and for the promotion of agricultural improvement. They considered that agricultural prosperity in ordinary times was the best shield against the difficulties and trials of a season of drought, and insisted on the necessity of taking every measure which might, on the one hand, prevent or minimize agricultural loss and distress, or, on the other hand, tend to increase and improve the produce of agricultural land. They advised that for dealing with these matters imperial and provincial departments of agriculture should be established.

4. In pursuance of the Famine Commissioners' advice an imperial department was created in 1881, which at once, under the instructions of Her Majesty's Secretary of State, took measures to arrange with the local Governments for the organization of provincial departments. In an opening Resolution of 1881, the duties of the new departments were summed up by the Government of India, following the Secretary of State, as agricultural enquiry, agricultural improvement, and famine relief. The third of these duties, which is concerned with the conduct of operations in the actual event of scarcity, has been dealt with in the famine codes drawn up in 1882 and revised in recent years, and forms no part of the discussions now under review. Present considerations are confined to the measures which should be taken to secure an effective scheme of agricultural enquiry, *i.e.*, the collection of agricultural information, facts and statistics, and to open the way to improvements in agricultural methods and practices.

5. No pains were spared by the imperial and provincial Governments to subject the recommendations of the Famine Commissioners to the most intelligent criticism that could be brought to bear upon them. Every scheme or measure of importance that was from time to time proposed or suggested was placed before a conference at which every province concerned was represented by selected officials and experts connected with the administration of land or with the conduct of the agricultural departments. Thus in, 1882, a *first* conference was convened at Calcutta at which the principles were determined on which future cadastral surveys which are the basis of agricultural statistics should be conducted. A *second* general conference, held at Calcutta in 1883, prepared a scheme for the registration of inland trade statistics, and for the compilation and publication of agricultural and trade returns. A *third* at Delhi in 1888 dealt with the important subject of agricultural education.

6. In 1889, correspondence with Her Majesty's Secretary of State led to an important event in the history of the agricultural programme, *viz.*, the deputation to India of a second Commission from home in the person of Dr. Voelcker, consulting chemist to the Royal Agricultural Society, whose mission was 'to advise on the best course to be adopted in order to apply the teachings of agricultural chemistry, and in order to effect improvements in Indian agriculture.' Every branch of agricultural enquiry and reform was thus to be open to his examination. Dr. Voelcker, following the example of the Famine Commissioners, made a tour through India and gained a general knowledge of the directions in which agricultural enquiry and improvement might be developed. His report may be viewed as an amplification in detail of the recommendations of the Famine Commissioners, with which in all important matters his views were in general accord.

In every province he had the opportunity of consulting the local authorities, and before writing his report had the advantage of meeting at Simla, a *fourth* general conference of delegates and experts from all provinces who

went over with him the whole ground of the Famine Commissioners' recommendations so far as they applied to agricultural enquiry and improvement. His report when received two years later was submitted at Simla in 1893 to the consideration of a *fifth* general conference, whose recommendations have now been separately discussed by a committee of selected officers at the headquarters of each province.

7. The Governor General in Council is not disposed to regret the time which has been occupied by continuous deliberation. The scheme of 1880 was so vast in its design, so important in its objects, so wide in its scope, as to demand that the utmost care and caution should be bestowed on its full development. Material progress has indeed been made. The earlier years of the past decade were occupied in laying the foundations of agricultural enquiry by the organization of land-record establishments, in inaugurating investigation in many important directions, and in developing plans of agricultural experiment. Each successive conference led to further advance and to new measures. But the general principles and policy by which the whole scheme of agricultural enquiry and improvement were to be governed had not been finally or precisely formulated. The very complete examination of the issues left for decision, which has now been made by provincial authorities and local governments, places the Government of India for the first time in a position to amplify, with further approach to precision, the instructions of the Resolution of 1881, in which the duties of imperial and agricultural departments were necessarily sketched only in broad and rough outline. It must be understood, however, that progress has only advanced to one more stage. Every step that is taken in future years will lead to further knowledge of facts and conditions, and will open up new issues. The time may soon come when the combined advice and counsel of provincial authorities, and of the experts by whom they are aided, will again be required for placing provincial and imperial governments in a position to decide what further measures are necessary to secure safe progress.

8. The despatch in which the duties of agricultural departments were formulated by the Secretary of State indicated the desirability of postponing any general consideration of the possibilities of agricultural improvement until a proper system of agricultural enquiry had been set on foot. The Government of India adopted this view. They pointed out, however, that an investigating agency must be established before enquiry could begin. The Resolution of 1881 indicated that the first measure must be the organization of machinery for the continuous collection of facts and statistics concerning the agriculture of the country. Ten years previously Lord Mayo had insisted that the "splendid local machinery of which we are in possession in our local establishments closely connected with the operations of agriculture, should be utilized in the collection and production of those agricultural statistics which are so essential to the development of agricultural progress." The same opinion was held by the Famine Commissioners, and was accepted by both the Secretary of State and the Government of India.

The measures taken to introduce or improve land-record establishments, will form the subject of the *second* Resolution; the system adopted to utilise their services and the agricultural statistics supplied by them will be dealt with in the *third* Resolution.

9. But the scheme of agricultural enquiry, as set forth by the Famine Commissioners and by the Secretary of State in 1880 and 1881, involved the investigation of wider fields than that occupied by the facts and statistics of the land-records. These latter, it is true, supply continuous information regarding crops, irrigation, the occupancy and cultivation of land, and other circumstances connected with agriculture, without which no sound conclusions can be formed as to the general condition and needs of each agricultural tract. But, as pointed out by the Famine Commissioners, and later on by Dr. Voelcker, investigation had to be extended to all matters which affect agricultural prosperity. The character of soils and the manures suited to them; the diseases of cattle; the diseases of plants—their causes, and the means by which they can be prevented, minimized or cured; the extension of irrigation; the effect and value of canal water; the improvement of fuel and fodder supplies; the reclamation of waste lands; meteorological phenomena; economic products; improvement of old, and introduction of new, staples and agricultural implements; possible reforms in the

methods and practices of cultivation: all such subjects as these were to form part of the programme of enquiry.

10. It was evident that in exploring the fields of investigation thus briefly sketched, the agricultural departments, imperial and provincial, must, as the Famine Commissioners had indicated, be assisted by competent experts. Some of the ground indeed had already been occupied by scientific investigators: thus for many years geological officers had been engaged in ascertaining the rocks and strata of each province; systematic botanists had explored and arranged the flora of forests and fields; a meteorological department had laid the foundation of a knowledge of the weather and climates of India; while in some provinces, and notably in Madras, measures had been taken to investigate and improve agricultural conditions. But it was obvious that much more was necessary for the completion of the programme of enquiry, and it was equally clear that the responsibility of directing its gradual expansion must be, for some time to come, divided between the imperial and provincial authorities. In other words, that there must be an imperial as well as a provincial scheme of scientific enquiry. In many directions the work of investigation was national rather than local in character. It demanded the services of first class experts, such as each province could not afford and did not indeed separately require. The existing departments of geology and meteorology were cases in point. Scientific research in such fields could not be restricted to geographical or administrative limits, and would, if confined within narrower limits than those of the empire, involve waste of power and unnecessary expenditure. Influenced by these views, the Government of India accepted the responsibility of widening, under imperial direction, the scheme of national investigation, hitherto covering only a limited portion of the ground which had to be occupied. Thus, economic products, cattle diseases, agricultural entomology, were some of the subjects which were between 1880 and 1890 brought for the first time under systematic enquiry by experts attached to the imperial department.

The general character of the national scheme of scientific enquiry, under imperial direction, the extent to which it has been widened, the directions in which further amplification is necessary or desirable, and the association with it of provincial co-operation, form the subject of the *fourth* Resolution of this series.

11. To provincial departments, under the control and direction of local governments, is left the largest share in the programme of scientific enquiry. It embraces all such investigations by experts as may properly and usefully be confined within geographical and administrative limits and includes therefore almost all enquiries and efforts directly aimed at the increase of agricultural produce. Such are, for instance, investigations having for their object the improvement of old, and the introduction of new, staples; the effect and value of canal water; reform in agricultural methods and practices, and the like. Enquiries of this kind are dependent on local conditions of soil, climate, custom, etc., and have often indeed to be carried out at various centres within each province. Government farms, estates under the management of Courts of Wards, estates belonging to Government, farms of landholders willing to co-operate with the provincial departments; these are the experimental fields in which the local experts are mainly required to work.

The general character of the scheme of scientific enquiry under provincial direction will be dealt with in the *fifth* Resolution.

12. The recommendations of Dr. Voelcker, of the two conferences of 1890 and 1893, as well as of those recently held, have confirmed the view that investigation must precede improvement. But, as investigation proceeds in the numerous fields in which it has been or will be inaugurated, palpable and conclusive improvements are, as experience has shown, continually brought to light; remedies for existing evils are discovered and useful modifications of agricultural practices are ascertained. Every effort should now be made to take such measures as will permit the country to derive the fullest advantage from these results. The most important matter is the proper education of the agriculturist. For the Government of India still hold to the opinion expressed in the opening Resolution of 1881, and again in the Resolutions convening the conferences of 1890, 1893, and 1895-96, that no important reforms can be safely or widely introduced into the agricultural system without the general co-operation of the farming classes, whose intelligent and

willing aid cannot be expected 'until their education has been so directed as to enable them to appreciate and, where expedient, to adopt the results obtained by the systematic and continuous enquiries of experts.' This view has been strongly confirmed by the various conferences which have recently discussed the question, and has been supported by all local governments and administrations concerned.

The subject of educational reform, so far as it concerns agricultural interests, will be dealt with in the *sixth* Resolution of the series.

13. In the despatch of 1881, in which the views of the Secretary of State on the duties of the new departments of Agriculture were communicated, attention was drawn to the obligation which the Famine Commissioners had desired to be placed on them 'to render available agricultural and economic facts and statistics for every part of India in order that Government and its officers may always be in possession of an adequate knowledge of the actual condition of the country, its population and resources.' A wide interpretation must be given to this injunction. It must be held to mean that the results of investigation in every branch of enquiry, which is taken under the control of the imperial and provincial departments, must be intelligently collated and published on such plan as will bring the information gathered in an accessible form to the early knowledge of those whom it may concern. Much has been done in this direction, but the development of the scheme of publication still stands in great need of the further attention and co-operation of provincial departments. The measures which have been taken or may be required for giving effect to the injunctions of the 1881 despatch and for establishing a sound system of publishing information bearing on the condition, population and resources of the country will form the subject of the *seventh* Resolution.

14. The agricultural conference of 1893 recommended in the course of their proceedings that the form of the annual reports of Agricultural Departments should be so revised as to bring them into greater conformity with the scheme of their work. The subject was not formally discussed at the recent conferences, in view of the fact that no general scheme could be elaborated until the whole series of conference proceedings had been brought under the review of the provincial and imperial Governments. But the Government of India is now prepared to formulate the general principles on which departmental reports should be framed, and these will be suggested in the *eighth* and final Resolution of the series.

15. The Resolutions which have thus been announced are the outcome of the experience and developments of the fifteen years which have passed since the Famine Commissioners' report was, under the orders of Her Majesty's Secretary of State, first made the foundation of an agricultural programme. They purposely avoid instructions on matters of detail, but aim at a clear and full definition of the large and broad principles on which the scheme of agricultural enquiry and improvement should proceed. They are thus primarily designed for the guidance of officers in charge of agricultural departments upon whom the duty of giving effect to them should be strictly imposed. In view, however, of the importance which the Government of India attaches to the possession by all officials of a general knowledge of the policy which has been gradually developed from the Famine Commissioners' recommendations, the Resolutions should, when opportunity occurs, be studied by all land revenue officials, and the Government of India suggest that they might with advantage be made one of the subjects to be read for the official examinations which junior revenue officers are required to pass.

SECOND RESOLUTION.

Land Record Establishments.

The foundation of all land administration is the field. More specially must agricultural inquiry and reform, which are now recognized as an integral part of land administration, be based upon the facts and figures recorded in connection with each individual field of an Indian village. To quote the words presented to Her Majesty's Secretary of State twenty years ago—

"India is an agricultural country composed of a multiplicity of minute holdings, and almost every subject which we take in hand in connection with the administration of the country must be referred to the units of which it is formed. A measure which makes a very slight alteration in the condition of each unit may have a very important effect on the whole country, since what may be termed the atomic changes are combined by enormous multiples. It may seem a little thing to ensure the correct record of facts connected with a single field, but when we consider that the country is nothing but a congeries of single fields, the subject assumes an importance which is apt to be lost sight of in discussing the manipulation of a village register."

The first requisite in any programme for agricultural inquiry and improvement is therefore the efficiency of the land record establishments.

2. To each village or group of villages in this country there had always been attached a village accountant. His hereditary duties are to provide annually for each field a correct record of area, occupancy, rent, crops and of other facts and statistics called for by his official superiors. In some parts of India a hereditary claim to the office has been scrupulously maintained. In others the hereditary right has been greatly weakened or entirely abandoned. But whatever may be the position of the hereditary claim, the hereditary duties of the office have still to be performed, and since the conduct of land administration and agricultural reform depend largely on the records of the village officer it becomes a primary duty of the authorities to take such measures as may be necessary to secure his efficiency.

3. As soon as the subject came under the special consideration of the Government of India, it was found that in many provinces the hereditary claim to the office had been allowed to override more or less the claim of the State to the efficiency of the holder of it; that the village officer was often incompetent, and not seldom so incompetent as to require an assistant for the performance of his work; that the land records had become incomplete and untrustworthy; that in some districts attempts to maintain anything like a correct record had ceased; that in others the office itself had been allowed to die out.

It had been proved on the other hand by results already obtained in more than one province that the village registers could be made to yield that punctual information of the circumstances of every agricultural tract which the Famine Commissioners had urged to be necessary for timely provision against scarcity; that the accountants could be trained to correct their maps from year to year in accordance with facts upon the ground; that their records, when carefully maintained, tended to facilitate the work of civil and land revenue courts, to cheapen litigation, and to provide every person concerned with an easy means of ascertaining or establishing his rights and interests in land. It had been foreseen too that many direct economies should be effected by improving the village staff; that in some of the temporarily assessed provinces a correct record would mean a material reduction in the cost of periodic settlements; that, by a proper use of the village agency, expenditure on field surveys alone might be reduced from something like ₹200 to ₹50 a square mile; and that a series of annual statistics extending over a long period would afford a safer and broader basis for land assessment than the facts and figures hastily collected in a single year at great cost by huge temporary establishments.

4. When therefore, in pursuance of the Famine Commissioners' recommendations new departments were, under the orders of Her Majesty's Secretary of State, created in each province for the purpose of dealing with agricultural facts and statistics, as a foundation for agricultural improvement, the Government of India desired that they should be made specially responsible to the local governments

and administrations for the restoration and improvement of the land record, and for the competence and efficiency of the officials by whom it was to be maintained. This indeed was to be their first duty. The Famine Commission held the belief, to which expression had been given by Lord Mayo's Government ten years earlier, that agricultural science applied to Indian soils could materially increase the produce of the land and would thus go far to minimize the sufferings of the people in a season of scarcity; and it was in this view that they demanded the employment of agricultural experts and the creation of agricultural departments. But it was foreseen by the Government of India that attempts at agricultural development would require many years of continuous and patient investigation by experts before they could be expected to yield important or safe results; that in many cases they must be based on facts and figures which could only be derived from a long series of correct maps and records, and that everywhere the introduction of improvements into the agricultural system would require the instructed intelligence and co-operation of a class whose education had hardly yet begun. In the opening resolution, therefore, of 1881, which prescribed the duties of the new departments, it was laid down that attempts at agricultural improvement must be for a time subordinated to agricultural enquiry. This meant that the provision and the maintenance of correct maps and records, upon which enquiry was to be based, must be the first stage in schemes of agricultural reform.

5. Another important consideration justified this course. It was anticipated that after the excitement caused by the 1878 famine had subsided, the time might come, when, under circumstances of financial pressure, costly departments whose efforts should be confined to scientific experiments of an apparently unremunerative character would be subjected to hostile criticism. It seemed desirable therefore to make every effort to turn the first attention of the new departments to remunerative work. It had already been argued that the improvement of the land record and of the machinery by which it was maintained could at least cheapen the expensive operations of surveys and settlements, would minimize the work of law courts, and would facilitate the current business of district administration. Here then was a direction in which the outlay might be recouped at the same time that a sound foundation could be laid for agricultural reform.

The policy was justified by subsequent events. The Finance Committee of 1886, which included among its members the writer of the Famine Report of 1880, and was therefore fully cognizant of the important advantages of agricultural investigation and experiment, came to the definite conclusion that expenditure on agricultural departments could not, under existing circumstances, be justified unless it could be shown that they were or would be directly remunerative. The departments were subjected accordingly to this financial test. In almost every case it was found that independently of the indirect advantages derived from an improved land record, a direct financial saving was or would be effected aggregating a total of from 200 or 300 lakhs of rupees; that the economy was mainly due to the training, utilization, and proper supervision of the village officer; that where excess expenditure had occurred, it was in some degree due to the partial exclusion of the village officer from the scheme, and to the substitution for him of more expensive agency. The question then arose whether in those provinces where outlay exceeded income the departments could be retained.

6. The Government of India, in dealing with the results of the financial enquiry, accepted the fact that the indirect advantages of a land record were so great as to afford, even in the one or two cases in which outlay was found to exceed income, a strong plea for the maintenance of the provincial departments. They recognized that the extent to which the services of the village officer were financially useful must vary with the conditions of each province; that in the permanently-settled districts of Madras and Bengal, for instance, his charts and records would not be required for purposes of assessment to the same extent as elsewhere; that while on the one hand in the eastern provinces a new map was called for every year by the fluctuations of the cultivated area, due to accidents of floods or to the practice of shifting tillage, on the other hand in the great ryotwari tracts of the southern and western presidencies what was justly termed 'a magnificent piece of machinery', dependent for its solidarity on pillars marking the boundary of every field, had been constructed, which would, if maintained, go far to minimize the employment of the village officer on annual or periodical revisions of survey.

Influenced by such considerations as these, as well as by the fact that in almost every province the utilization of village establishments had been found remunerative, the Governor General in Council did not impose any further condition on the maintenance of departments of land records and agriculture than to require, with the concurrence of Her Majesty's Secretary of State, that the maximum use shall be made of the village officer under all circumstances in which his employment can lead to further economy. In this view the claim of the State to his efficiency must be held to be paramount over all other claims.

7. In dealing with the question the following circumstances must be borne in mind. The class to whom, by custom or by right of descent, the office belongs is intelligent and quick to learn; the status of the hereditary appointment, however poorly paid, is, where the right is strictly maintained, so far an object of ambition to the members of the family to which it is attached, as to justify a condition that they should, after a sufficient term of grace, qualify themselves for it; that cheap educational institutions, provided at public expense, are available to all who are likely to be candidates for the office; that, according to the evidence adduced at the recent conferences, supplementary schools can, at no great cost, be established for training them in those special branches of their duties which lie outside the ordinary educational curriculum. It may therefore safely be laid down that after a given date no village officer should be admitted to an appointment, who cannot satisfy the educational test required.

The test imposed must, in the opinion of the Government of India, include a sufficient knowledge of survey and mensuration to enable a village officer to maintain correctly a map of the circle under his charge. Even in districts where surveys will require least revision, the village officer must be competent to enter new fields and sub-divisions of fields upon his map. But whether or not he is likely to be called upon to execute an actual field survey, he should in any case be made to acquire that intelligent comprehension of a map, and of the relation between a map and the records based upon it, which can only be gained by practice in map construction on the field.

The Government of India would have some hesitation in enforcing this obligation if it entailed any real difficulty. But the evidence adduced at the recent conferences and the quick results obtained even in provinces and native states where the education of village officers had for many years been neglected have proved that any school lad of the class from which village accountants are drawn can, as a rule, be taught in a few weeks all that is necessary for the field survey, under proper supervision, of any part of a village.

8. The proceedings of the conferences indicate that the efficiency of village officers has reached its highest level in the Punjab, and explain why this should be the case. In that province the organization of village establishments had been taken in hand before the creation of the new departments of land records; the hereditary claim, though not disregarded, was made strictly subservient to efficiency; close supervision was exercised over the village officials; the salary of the office was gradually raised; and considerable encouragement was given to those who held it by ensuring the promotion of the best men to supervisorships and other higher appointments. The rules lay down that at least two-thirds of the supervisors should be taken from the ranks of the village officers.

The Government of India are not prepared to advocate that the Punjab rules should be taken as a precise model for other provinces, but they commend the principles underlying them as sound. They think that the time should come when in every province a fair educational test including competence to survey, should be strictly imposed; adequate pay for the office should be provided; and excellence of work encouraged by reasonable promotion to higher appointments. They consider, however, that on the one hand care should be taken, in those parts of India in which the educational standard of the agricultural population has not reached a high level, that the status of the village officer is not so unduly raised as to give him too masterful a position in the village or group of villages under his charge, and that on the other, the admission of village officers into the ranks of their supervisors should not be made so free as to endanger the high standard of excellence which the controlling staff is, for reasons hereinafter given, expected to attain.

9. The history of the supervisor is very similar to that of the village officer. As in each village there was, under native rule, an accountant, so to each of the

administrative circles, containing perhaps one or two hundred villages, into which a district was divided, there was attached an official whose main duty it was to collate the returns received from village accountants, and to obtain such information of the agricultural and financial condition of the circle as might be required for purposes of assessment and of land revenue administration. On investigation the original functions of the office were found to have been often forgotten; sometimes the office had disappeared; almost everywhere the hereditary claim to it had overridden all other considerations; not infrequently the incumbent was so illiterate or incapable as to be unable to perform without assistance any official duties at all; and as a general rule the duties assigned to him were quite outside the traditional functions of his office.

10. When the reform of the land record system was taken in hand, the first step in almost every province was to restore the hereditary duties and functions of the circle officer. In some parts of India, where the hereditary responsibilities had been forgotten, the hereditary right to the office had been nevertheless even more strongly maintained than that of the village officer, and much care had to be taken to prevent it from being unduly interfered with by the initiation of too trenchant reforms. In such cases older men were allowed to appoint substitutes or educated relatives; time was given to the younger to learn how to perform efficiently the real duties of their office; only those of the latter who were hopelessly incapable were ejected. At the same time it was found that a material expansion of the staff had become necessary. The extension of cultivated area, the growth of population, the demand for more elaborate statistics, all these and similar causes had doubled the work which had to be done. The number of circle officers that had sufficed for the needs of the earlier years of the century was wholly inadequate now. In almost every province therefore the staff was largely increased by the incorporation in it of the best of the men who had been for some years engaged in supervising the subordinate establishments of survey and settlement parties in the field. These recruits brought into the ranks of the effete service the very experience which was wanting. They were active men, accustomed to direct and control, and experts in the construction of field maps and field records. Their example proved of great value to the hereditary staff.

The duties partly peripatetic and partly sedentary, of the office, had, so far as they had been performed, been hitherto amalgamated. They were now divided. The circles were increased in number, and the areas correspondingly contracted. To each circle was attached a "peripatetic" officer for inspecting and controlling the work of 40 or 50 village officers. At the head-quarters of each of the administrative sub-divisions of a district, perhaps from 5 to 10 in number, and each comprising 2 or 3 peripatetic circles, was located the "sedentary" official. The younger and more active of the staff were placed in charge of the smaller peripatetic circles. The older men were assigned to the sedentary office. The main duties of the peripatetic circle officers were to instruct the village officers; to examine their work; to note and report defects; to relieve as far as possible the higher officials from the necessity of personally inspecting the village officers maps and records; to provide for his circle quick and early information of any kind that might be urgently called for in connection with the land or the people upon it, as well as periodical reports on the agricultural condition of the area under his charge; and finally, to fulfil the various executive duties which a season of scarcity of famine might entail. The main duties of the "sedentary" officials were to examine the various returns sent in from the villages and to compile them in abstract forms for his group of circles. At the head-quarters of the district a head supervisor was established who was to make a similar compilation for the whole district and to superintend generally the work of the whole staff. The functions of the higher officials and covenanted officers were, as pointed out in an imperial resolution of 1883, no longer to include the detailed inspection of the village officers' maps and records, but were to be confined to such an examination of the supervisor's work as would prove whether or not their duties of inspection and control was being properly performed, and to the adoption of such measures, punitive or otherwise, as might tend to improve their efficiency.

Such was the general character of the scheme of inspection and supervision which, with due regard to the varying conditions of each province, has been

established in every part of India, except in those permanently-settled districts of Madras and Bengal in which the village officer has either disappeared or has not been brought under official control. The proceedings of the recent conferences have now afforded to the Government of India the opportunity of ascertaining in what directions the improvement of the supervising machinery may in some provinces still be possible.

11. One important matter is the confinement of the supervising officers to their proper functions. They should not, on the one hand, be allowed to perform the duties of the village officers, or on the other those which properly belong to other officials on the district staff. In some cases an excessive regard for the hereditary claims of the village officers, or a distrust of their capacity to learn, has led to the transfer of a portion of the village duties to the supervising staff. The extravagant tendency of this procedure was pointed out by the Finance Commission. In other cases the important duty of inspection has been interfered with by the practice of using the supervisors for enquiries and reports on matters unconnected with the village records. This may, as in the Punjab, be checked by forbidding any order for reports and enquiries, other than for those prescribed by the rules, to be issued by sub-divisional or district officers. On either hand a transgression of the limits within which the duties of the office should be confined must be carefully prevented.

12. The next point to which attention may be drawn is the proper instruction of the supervising staff in survey. In the imperial resolution of 1882* in which the general principles on which the cadastral surveys of the country should be conducted and maintained were discussed, the advantage and economy of utilizing the corrections made by the land-record staff in field maps for the periodical revision of topographical charts was pointed out. But unless confidence in the accuracy of village field maps can be assured by professional supervision and unless the maps themselves are professionally connected with the survey stations laid down throughout India by the trigonometrical and topographcal departments, there may always be a danger that the details supplied by the provincial establishments will not be accepted by the professional officers responsible for topographical cartography, and that the details already mapped by the land-record staff may have to be mapped over again at great and unnecessary cost by the professional staff. Hitherto the survey operations which have been conducted in almost every province have not only supplied a large percentage of recruits, professionally trained in survey, for the circle staff, but have afforded a field for the instruction of the previously existing circle officers. This will not be the case in future. Henceforward a practical knowledge of, and experience in, approved professional methods will, if precautions be not taken, gradually die out; and, as has already occurred in some cases, the field maps will become more and more inaccurate and unequal in quality. It is of importance that this result should not be allowed to occur, especially as, independently of the requirements of cartography, the maintenance of field maps up to a reasonably fair standard is for all purposes of administration desirable. It is considered in some provinces that the best security against a gradual decline in the value of field maps whenever these have been initially laid down on professional lines, is the periodical transfer of a limited number of survey officers of responsible position from the professional staff, whose duty it should be to preserve a knowledge of correct methods throughout all grades in the land-record staff and to personally supervise or inspect all surveys which are of a materially more important character than the mere revision of a village map. This policy has been accepted in Madras, in Bombay, and to some extent in the Central and North-West Provinces, while very full effect has been given to it in Burma where the exceptionally shifting character of the cultivation has justified the employment in every district of a superior officer who is either transferred from the Survey Department or is thoroughly trained in survey. The Governor General in Council now desires that the question may receive full and careful consideration in every province, in which no measures have yet been taken, for providing for the maintenance of maps on a correct professional basis and how far the central guidance of competent experts is likely to be useful.

*No. 45 S., dated 4th September 1882.

13. A third matter is the improvement of the supervising staff by securing for the best men in it a reasonable prospect of promotion to higher service. The advantages of this course were pointed out in an imperial resolution

No. 339, dated 14th March 1883.

of 1883. It was then urged that promotion should not merely be permissible but obligatory; that it was not unnatural that vacancies in the regular line should usually be offered to those officials, or to their friends, who come most into personal contact with the officers in whose hands patronage rests, and that since the duties of circle officers usually confine them to outlying parts of the district, their claim to promotion in the regular line is apt to be overlooked unless a certain number of such appointments are strictly reserved for duly qualified members of the supervising staff.

14. Very inadequate effect seems to have been given to this policy except in the Punjab where its success has been marked. No less than one-third of the circle officers have been in the last few years admitted to the higher revenue appointments, and now no difficulty is found in attracting young men of good family and high educational attainments as candidates for the supervisorships. By degrees the educational test has been raised and the time will doubtless come when the appointments will be readily sought for by men who have obtained a graduate's degree at a University or a diploma at an Agricultural College.

A further advantage of the policy was indicated in the 1883 Resolution. It was contended that as the supervising officials acquire from the nature of their duties a considerable knowledge of agriculture and of the condition and circumstances of the agricultural classes, a free flow of promotion from their ranks would infuse into the upper grades of the revenue service a useful acquaintance with the agricultural conditions of the district or province in which they hold office. The Government of India is pleased to observe from the proceedings now before them that this view has received strong support from both the conferences and the local Governments, and that the advantage of leavening the revenue service with officials who have learned their work in the field is fully recognized. In the Punjab the value of the experience gained by a circle officer is so thoroughly appreciated that every candidate for a revenue appointment, whether a circle officer or not, is made to serve an apprenticeship, which may extend to two years, as a supervisor, and the plan is commended to the notice of all local governments and administrations.

15. A difficulty is, in some provinces, presented by the circumstance that the educational standard prescribed for entry into the upper grades of the revenue service is far higher than that which is, or can for some time be, imposed for a circle supervisorship. The difficulty is greatest in those provinces in which education has been most highly developed, in which universities are of the longest standing, and in which at the same time the inspecting staff has been allowed to fall into the worst condition of neglect and delay. While the revenue appointments have gradually become an object of ambition to university graduates, the hereditary offices have been filled by men from whom no educational test of any value has been required. The one service has slowly advanced, the other slowly declined in quality; a gulf has been created between the two which it is not easy to bridge.

In other provinces again, of which the Punjab may be taken as an example, the measures taken to improve the supervisor class were antecedent to the introduction of that high education which is represented by a university. A long period of survey and settlement operations, conducted as a rule without the assistance of the professional survey department, had created a large supervising staff in which existing circle officers were temporarily included and from which, it was easy to select for transfer to the permanent circle staff, intelligent and capable recruits with the very experience that was wanted for the management and control of village officers. On the other hand the educational standard for higher revenue posts was, as is still the case, low in comparison with that in provinces with universities of long standing. The new men, with their practical experience, were found to be often better and more intelligent officers than many of those occupying higher positions in the regular establishments. There has been no wide gulf to bridge, and the dovetailing of the two branches of the service has been therefore a simpler matter.

16. The Government of India, while recognising the fact that the attainment of a policy of perfection must be a work of slow growth, conceive it to be necessary that a 'working plan' should be laid down for the gradual development of a sound system and that, the wide breach, where it exists, between the peripatetic service and the administrative service must be gradually narrowed and eventually closed. In provinces which have in recent years undergone survey operations, no

wiser course can probably be followed than either to select for the peripatetic appointments the best of the survey supervisors who have gained a practical knowledge of field duties, or to train existing circle officers up to the same standard. But a date should be named after which mere field experience and an acquaintance with the village land records should not, without much higher qualifications than these, admit a candidate to a circle appointment.

17. Taking a broad view of the subject, the Government of India have, upon a review of the conference proceedings and the letters with which they are forwarded, arrived at the following conclusions. They deem that a serious obligation rests upon the State to utilize to the utmost extent for the benefit of the public service the educational system established in the country; that the time must come, as indeed in some parts of India it has come, when all officials required for the conduct of business connected with the land, excepting only those whose duties are of entirely a subordinate character, must attain the educational standard represented by a graduate's degree or some equivalent diploma; that it is of equal importance that every official who has to do with land administration should have learned by practical experience the conditions prevailing upon the land with which he will have to deal; that he should be familiar with its agricultural system, with the character and customs of the people upon it, with the methods and principles on which the record of changing facts and circumstances is maintained; that in this view the experience of the large peripatetic staff employed throughout the empire, to the number of several thousands, on duties which ensure the requisite experience, should, not be thrown away; that no opportunity should be lost of drawing from its ranks selected men of proved excellence for service in the higher appointments; and that in order to give effect to this policy, the educational standard of the peripatetic staff must be gradually so raised as to guarantee the intellectual fitness of the men who are to be drafted from it. With the advance of education, increasing competition for pensioned employment, and a widening opportunity of promotion to the upper grades of official service, there will, in the opinion of the Government of India, be no need to fear that the field service will fail to attract candidates of high educational attainments.

Such a result would be desirable in the interests alone of the maintenance of a correct land record and of the proper training and control of the village subordinates by whom it is maintained; but it has an even higher importance in securing the efficiency of the higher official service upon which the conduct of the land administration of the empire mainly devolves.

THIRD RESOLUTION.

Utilization of Land Records.

1. In 1874 Her Majesty's Secretary of State pressed upon the Government of India the desirability of utilizing the facts and statistics obtainable from village records with the object of collecting agricultural information, and, in a despatch of the following year on this subject, explained that the object aimed at by Lord Mayo's Government in proposing the establishment of agricultural departments had been the establishment of a specific branch of the administration whose prime duty it should be to suggest measures for the development of agricultural industry; that one part of this duty was to consist in the collection of statistics which might throw light on questions of agriculture and on the possibilities of improving the resources of the country; that the basis of the scheme should be the utilization of the records maintained by village accountants.

Four years later the Famine Commissioners, adverting to these injunctions, confirmed the Secretary of State's view, and recorded their opinion that 'the 'revenue system in the greater part of British India is such as to present 'unrivalled means of ascertaining in the fullest manner all necessary facts relating to agriculture, but that those means have nowhere been completely utilized 'or made as efficient as they might be.' They then recommended that a director of agriculture chosen for his knowledge of the people and particularly of the agricultural classes should be appointed in each province who would control the land record system; would advise the local government on all matters relating to agriculture and statistics, and superintend all measures designed to improve the agriculture of the country. The creation of imperial and provincial departments of land records and agriculture in and after 1881 was designed to fulfil the objects thus explained. The establishment of a scheme for the effective utilization in the interests of agriculture of information obtainable through the land records is therefore a primary duty of the directors of agricultural [illegible]artments. The question was one of the most important discussed at the recent [illegible]nferences.

2. The opening resolution of 1881, in which the duties of the [illegible]ew departments were first described, explained that an examination of the Famine Commissioners' recommendations in connection with agricultural enquiry showed that their final object was to urge, 'as a practical outcome of an intelligent scheme of investigation, the policy of maintaining agricultural operations at the highest attainable standard of agricultural efficiency; that this policy included the prevention of deterioration as well as the attainment of positive improvement; that it was necessary therefore first to localize every agricultural defect, then to discover its cause, and finally to devise such protective arrangements as may remove or alleviate its injurious action. As an important illustration of the character of the investigation which was to be made, the examination of each agricultural tract in respect to its liability to suffer from drought on the one hand, or the extent to which it was or could be protected from drought on the other, was suggested. The whole scheme of investigation was afterwards briefly designated as 'district analysis.'

3. The form in which the programme of investigation was put forward in the 1881 resolution and the special attention which was drawn to the desirability of mapping out the tracts of a province in relation to their liability to failure from drought led in some provinces to a misconception of the scheme. It was assumed that a general enquiry into the agricultural condition of each district made once for all, and a special investigation of the liability of each part of it to failure from drought would meet the design of the resolution. It was not clearly apprehended that the scheme was to be slowly and gradually worked out; that one by one every agricultural defect should be in the course of time closely analyzed and carefully studied with a view to the possible discovery of remedial action; and that for the purpose of ascertaining the existence and extent of each defect, the utmost use should be made of the information which the land records could be made to yield. Thus while in many parts of India

excellent reports, maps, and atlases were published in illustration of the general condition of each district, no precise enquiry was set on foot as to the agricultural circumstances of each village or group of villages; as to the particular defect or defects which prevented each locality from reaching 'the highest standard of agricultural efficiency'; or as to the possibility of remedial action in each case.

4. The enquiries, however, that were actually made in some provinces threw much light on the position. They proved that, notwithstanding the hereditary experience of the Indian cultivator and the special knowledge which he possessed of methods and appliances suited to the locality in which his crops are raised, many defects do exist in the agricultural condition or system of almost every district which, if they cannot be altogether removed, can at least be considerably modified and lessened. At the agricultural conference of 1890 which met Dr. Voelcker before his report was written, the necessity 'of laborious investigation before we can trace out the causes which have stimulated development in 'some parts of India and retarded it in others' was pointed out, and the advantage of utilizing village records as a basis for detailed enquiry was urged. Dr. Voelcker's report went far to prove the existence of innumerable defects in agricultural conditions and practices, and the importance in many cases of an intelligent analysis of facts and statistics, and of well-organized enquiry from village officers. The conference which reviewed Dr. Voelcker's report in 1893 took the same view.

5. So matters stood when the subject was brought before the recent conferences for consideration and discussion. It was represented to them that agricultural failure, *i.e.*, 'failure to reach the highest attainable standard' might be '(1) of occasional, (2) of gradual, or (3) of persistent character'; that it was to be the object of the whole scheme of enquiry to minimize agricultural distress and agricultural loss in each class of cases; and that the first step was to decide how far the land records machinery could be utilized in the investigations under each head.

(1) *Occasional failure* was explained as "sudden distress due to unforseen calamity, such as failure of rain, hail storms, inundations, etc., requiring, as a rule, immediate relief." In these cases the land records are of primary service to district officials as indicating the extent and character of the calamity. The functions of the director of the land records department are confined to organising or to suggesting how to improve the system under which prompt and continuous information supplied by the records should be brought before the responsible authorities and to ascertaining that proper effect is given to the system. It is left to the district officers to take suitable action. The examination which was made at the recent conferences of the measures which have been taken in the last few years to utilize the land records for this purpose proved that the system now established in every part of India in which land records are maintained is excellent, and that the results have already been most satisfactory.

(2) *Gradual failure* was explained as 'gradual deterioration due to ascertainable causes requiring early and special measures of prevention and relief.' Considerable distress had been known to have occurred in many parts of India in consequence of neglect to relieve the population of agricultural tracts which had suffered from cattle murrains, from swamping due to the interference of drainage by railway embankments or canals, from the growth of a noxious weed, and from other causes which gradually reduce the value of land or affect the prosperity of the people. 'In almost every province,' it was written, 'the detailed records now 'maintained under careful inspection by village officers provide, although in scattered forms and in troublesome detail, all the information necessary for indicating 'the serious deterioration of any agricultural tract; and it only remains to make 'provision for such a clear and simple abstract of the information and statistics 'embodied in the village registers as will enable district officers to grasp the 'pertinent facts without real difficulty or unnecessary waste of time.'

One of the most important results of the recent conferences has been the practical adoption of this plan. In every part of India, in which land records are maintained, a book is now to be kept up by each 'circle' officer, in which will be entered in English figures under appropriate heads such statistics as are calculated to show at a glance the advance or decline in

prosperity of every village; such for instance as the cultivated and irrigated area of the year, the arrears outstanding, the sales or mortgages of land, and so on. Half an hour's examination of a circle book thus kept will indicate at once whether a village or group of villages is declining in agricultural condition; and this fact known, the cause of failure can be ascertained and remedial action suggested. It is important in the opinion of the Government of India that the recommendation, recorded in the proceedings of almost every conference, should be adopted, to the effect that the books should be periodically inspected by some responsible district official, so that within every few years the condition of every village should come under intelligent review, and that notes should be entered by the inspecting officer, explaining the cause of any marked or serious deterioration, and of any suggestions made or action taken to meet the case. Independently of the advantages of the system for purposes of current administration the series of circle books thus maintained will form an historical record of great value to officers who may be hereafter called upon to revise the assessments of land revenue. Directors of departments of land records and agriculture should be instructed to consider it one of their chief duties to ascertain that the circle books are punctually and intelligently examined in every district. On the other hand district officers should be required to communicate to the Director, for entry in his office ledgers, the proved existence of any serious agricultural deterioration that may have occurred in a locality.

(3) *Persistent failure* was defined as failure to reach the highest attainable standard, due to causes or defects of a more or less persistent character, and requiring prolonged investigation. Such causes or defects are, it was explained, want of irrigation, frequent liability to failure of rain, insufficiency in the wood or fuel supply, cattle diseases, plant diseases and blights, want of drainage, the prevalence of saline efflorescence, proved imperfections in agricultural practices, the want of suitable manures, and so on.

6. It is to this class of cases that Dr. Voelcker's report chiefly refers. Many of the defects such as those enumerated demand scientific enquiry by experts including experimental investigations on the departmental farms or on the estates of the courts of wards or of landlords willing to assist in the work. This branch of enquiry will be dealt with in the succeeding resolution. But the land records and the land record establishments can often be utilized for providing a basis for more detailed enquiry. Thus the distribution of irrigation, the character of the rainfall in each tract, the extent of the wood supply can be ascertained from the records themselves. Information as to the occurrence of particular cattle and plant diseases, the areas affected by the outcrop of salts, facts as to agricultural practices, and other agricultural matters can be attained by well organized enquiry from the circle and village officers, to whom a series of questions bearing on the subject under investigation may be circulated.

7. These suggestions are sufficient to indicate the importance of the information which the land records and the land record establishments can under intelligent direction be made to yield. The plan of enquiry must, however, in each case be worked out by the director of the agricultural department with the assitance of the experts placed at his disposal; and whatever system be adopted, the work is one which in its broader aspects must extend over periods of many years. The necessity for detailed enquiries will probably never cease. Whether in the working plan which is to be laid down enquiry at any one time should be limited to one or two subjects was a question which was discussed at the recent conferences, but will be dealt with in the succeeding resolution. What the Government of India desire now to insist upon is that, whatever may be the agricultural defect which is brought under investigation, the officers of the agricultural department should, as a first step, consider how far the land records and the establishments maintaining them can be utilized for providing information necessary to the enquiry.

8. Although the relation of land record establishments to famine administration was not included among the questions placed before either the conference of 1893 or those recently held, it must not be forgotten that one of the objects with which the Famine Commissioners recommended the organization of those establishments as well as of the formation of provincial departments of agriculture and land records was in order that the administrative and executive

officials responsible for dealing with famine might at all times have at their command both the fullest information regarding the condition of every agricultural tract and the people upon it, and in seasons of scarcity be provided with a well organized agency through which, in the first place, continuous intelligence of the state of every village and every suffering person in it would be communicated to them, and, in the second place, direct relief could be in case of need administered under their direction. These first objects of the land record machinery were fully considered in the famine codes drawn up in 1882, immediately after the constitution of the new departments had been directed. Fortunately since those codes were first issued no serious famine or widespread scarcity has until now afflicted the country and time has been thus given to bring the establishments into good working order. Their utility has indeed been partly proved on the occurrence of sporadic distress in limited areas during the past 15 years. But full evidence of the immense advantages foreseen by the Famine Commissioners, resulting from the existence of a well organized "intelligence department," has only been brought now before the Government of India.

9. The key note of the system is the division of the whole country into easily managed circles of 50 to 100 villages each. It has been estimated that in the temporary settled provinces there is at the present time at the disposal of the district officers an army of some 200,000 village officials who form a well trained and disciplined rank and file, commanded by a staff of 5,000 or 6,000 circle inspectors, who may be well compared to the commissioned officers of regiments. The duties laid down for the latter in the famine codes and by provincial rules are that in ordinary years they should, as already explained, provide the fullest information and statistics regarding the crops and agricultural conditions of every village,—a duty which in every province has in recent years been, so far as circumstances have admitted, well performed; and that in times of famine they should at frequent intervals visit every village and, if necessary, every house for the purpose of ascertaining whether any person or persons are suffering from want of food or from sickness; whether relief is distributed in accordance with directions received; and whether private charity is encouraged and organized; that they should promote the employment of labour on agricultural operations; invite applications to construct wells and other agricultural improvements; make known the places at which relief works are opened, the nature of each work, and the classes of persons to whom such work is open; conduct the distribution of gratuitous relief to persons unable to leave their homes; report on the price of food, the state of the people and cattle, the condition of the water-supply; and generally bring to the immediate notice of the district officials any occurrence deserving attention. In the performance of these duties each circle inspector has, to aid him, some 20 to 40 village officers.

10. Under the stress of the present calamity by which so many provinces of the empire are afflicted, the services of the land record establishments have proved of the greatest value, and have materially reduced the difficulties which on former occasions of famine resulted from the absence of organized machinery.

FOURTH RESOLUTION.

Scientific and national enquiry under imperial direction.

It has been briefly explained in the prefatory resolution of this series that the responsibility for maintaining and developing a 'national scheme of agricultural enquiry,' devolves primarily upon the imperial department of revenue and agriculture. The term 'agricultural enquiry' must here be understood in its widest sense. It must be interpreted to include investigations in all branches of science which bear directly or indirectly on agricultural interests and on the development of the products of the soil and the word 'national' must be held to apply to all enquiry which cannot, for sufficient reasons, be conveniently confined within geographical or administrative boundaries. The national scheme of agricultural enquiry thus explained embraces, so far as it has up to the present time been developed, the following sciences or fields of investigation :—

(1) Geography	Represented by the Survey Department.
(2) Geology	By the Geological Department.
(3) Meteorology	(Including solar, magnetic and astronomical observations) by the Meteorological Department.
(4) Botany	By the 'Botanical Survey of India.'
(5) Economic Products	By the Department under the Reporter on Economic Products.
(6) Veterinary Science	By the Civil Veterinary Department.
(7) Bacteriology	By the Bacteriological Branch of the Veterinary Department.
(8) Agricultural Science	By the Department of Agricultural Chemistry.
(9) Entomology	By the National Museum at Calcutta.
(10) Statistics	By the Statistical Department.
(11) Forestry	By the Inspector General of Forests.

2. The chief considerations which justify the maintenance of imperial direction over investigations conducted in the fields of enquiry summarized in the preceding paragraph will be briefly noted.

The *first* consideration is that scientific investigations must, with few exceptions, be national and not provincial,—in other words, that scientific research cannot, as a rule, be confined within administrative boundaries. In 1890 it became necessary to point out to the Secretary of State how the system of provincializing investigation in the field of botany 'had led to the curious restriction of research to special localities or provinces, while others, forming in the aggregate the larger section of the empire, had been left without investigation of any kind.' But inequality of results is not the only defect which results from confining scientific enquiries to separate provincial action. The unnecessary duplication of labour is another and perhaps more serious defect. For example, the economic products of two adjacent provinces are to a material degree the same, the exceptions forming but a small percentage of the whole. A cattle murrain again may be due to identical causes throughout India. It would be a waste of labour that simultaneous enquiries should be made by scientific experts as to the botanical character of the same plant in two contiguous areas, or that the bacteriological origin of an epidemic should be sought for at great cost to the State at every provincial centre. Such work can be done once for all at one place for at least a group of provinces.

The *second* consideration is the importance of securing first class experts for purposes of scientific research. The value of results depends mainly on the competence and qualifications of the investigator, especially in a country in which conditions vary much from those prevailing in Europe. In view of this circum-

stance and of the financial impossibility of providing every province with a staff of first class and highly paid experts in each branch of scientific research, it becomes necessary to place scientific investigation, as a rule, under central direction.

The *third* consideration is that scientific investigation must be conducted on the basis of a well-considered working-plan. The development of the scheme cannot be entirely left to the occasional and partial initiation of individual governments. In the despatch of 1890, already quoted, it was shown that the distribution of scientific research has hitherto been unequal, both in relation to the sciences represented and to the areas covered by it, partly because no authority had been made responsible for initiating research in new fields, and partly because action taken in one province had not been taken in others. Systematic botany for instance in some provinces, and systematic geology throughout India, have been strongly represented for a long series of years, whereas the study of the useful and economic products of the country and the practical investigation of minerals had until very recently been neglected, while in some of those fields in which modern science has in recent years been working in Europe, such as for instance that of bacteriology, research has hardly commenced.

3. In accepting the responsibility for the general direction and control of the scheme of national research, the Government of India have no desire to exclude the co-operation of local governments and administrations. They would, on the contrary, wish to obtain their advice and assistance at every important step that may be taken towards the development of the scheme, and to receive for favourable consideration any suggestions for initiating or extending scientific research, of which the importance may be shown. Nor will they refuse, whenever circumstances may admit, to transfer any expert attached to an imperial department to the temporary or partial control and direction of the provincial authorities. Effect has indeed in recent years been given to this policy by placing officers of the geological and botanical departments for a definite period under the orders of a local Government, and again by arranging that the services of certain officers of the meteorological department should be shared by the imperial and provincial authorities. Thus the national character of the scheme of research does not altogether preclude provincial independence and co-operation.

4. In 1881, when the orders of Her Majesty's Secretary of State were received for the creation of agricultural departments upon which the responsibility of organizing a scheme of enquiry was to be placed, the position was found to be this:—Geographical exploration was in the hands of a large imperial department of survey; geology was represented by a well equipped staff of imperial experts; research in systematic botany was confined to Bengal and the North-Western Provinces. A meteorological department comprised one imperial officer and four officers partly imperial and partly provincial. Astronomical, magnetic and solar observations were shared by Madras, Bombay and the Government of India. Forestry was represented by provincial and imperial departments. No other science found a place in the scheme. Since 1881 material expansion, sometimes of the investigating staff, sometimes of the programme committed to them, has been effected. A brief account will now be given of the measures which have been taken for the development of enquiry in each field of investigation since that year.

5. *Geography* was in 1881 represented by a well equipped and important survey department, of which the cost to the State considerably exceeded 20 lakhs a year. The programme which it had undertaken was a large one and may be briefly described as the trigonometrical, the topographical, and the cadastral surveys of India. In 1881 the first of these great surveys had almost approached completion. Considerable progress had been made in the second, while the third was shared with local governments, each of the presidencies for instance having separate cadastral departments of a professional character. At the same time the recently introduced policy of financial decentralization augmented the tendency in many provinces to effect cheap cadastral surveys with non-professional establishments, thus entailing a danger that the provincial maps could no longer be accepted for embodiment in the geographical charts of the professional department.

Previously to 1881 financial considerations had required that imperial expenditure on geographical survey should be reduced. An immediate limit of 20 lakhs had been laid down. But the sudden reduction of a long established service was found impossible, and shortly after 1881 the alternative was adopted of diverting a large portion of the staff from unremunerative to remunerative work. The latter was found in the detailed surveys of forests and of agricultural lands. For this purpose local governments were invited to permit the professional parties to lay down for each district a skeleton map which should be scientifically connected with the stations of the trigonometrical charts, as a basis for the field or cadastral maps plotted in by the cheaper agency, and were asked at the same time to utilize the survey officials for instructing the local surveyors. This policy was carried out to its fullest extent in the Central Provinces, where almost the entire survey was conducted on these principles. Partial effect was given to it in the North-Western Provinces, Burma and Assam. Nothing could be done in provinces in which as in the Punjab cadastral maps were approaching completion by a well trained local agency, but on the other hand in provinces where the local agency had not been trained, much of the field plotting itself had to be done by the professional surveyors.

The advantage to geographical science of the system advocated is that wherever the field maps have been thus professionally connected with the trigonometrical stations, new topographical details, entered from time to time as changes in the features of the land surface may require in the field maps, can be at once transferred to the geographical charts.

Simultaneously with the development of the large geographical scheme, as represented by the three important branches of survey, other scientific work, such as tidal observations, latitude investigations, and cartographical development, has been carried on by experts of the department.

In the meantime the staff of the imperial department has been gradually reduced, and will, as the demands on it diminish, be brought under further contraction. At present the recent annexation of Upper Burma, the development of the North-Western frontier, the opening of a cadastral survey in Bengal, the new requirements of forest departments, and the uncompleted portion of the topographical scheme in the older provinces, form an extensive programme, for the execution of which large establishments are still required.

6. *Geology* has for many years past been represented by a strong corps of experts which till 1881 was mainly devoted to the scientific examination of rocks and strata. After 1881 the policy was introduced of directing the attention and labours of the geological officers also to practical investigations. In 1893, the department was reorganized. Scientific exploration was, as a basis for the study in detail of the mineral resources of the country, still to hold the first place, but a small section of the officers employed, including, whenever required, experts imported for temporary employment, was set apart for the special examination of mineral fields. Changes were made in the rules under which recruits admitted into the department were required to undergo practical training in mines or in laboratories. At the same time the principle of decentralization was so far adopted as to admit of the services of a geological officer being temporarily transferred for sufficient reasons to any provincial government. Recently an inspector of mines has been attached to the department.

7. *Meteorology* was, in 1881, represented partly by an imperial and partly by provincial departments. The Famine Commissioners laid much stress on the promotion of meteorological enquiry. It was, they wrote, of primary importance that meteorological observation should not only be maintained in complete efficiency, but also so strengthened and improved as to ensure the early and punctual supply of information to officials and to the public of weather conditions and prospects. Protection against famine, the safety of shipping, warning against floods, were objects to be held in view. Since 1881 the department has been materially strengthened. A second European expert has been attached to the central office. A complete system of warning signals has been established along the coasts. The number of observing stations has been considerably increased inland. Information is brought by telegraph from 116 instead of as formerly from 50 of the principal stations; detailed statistics illustrated by charts are daily despatched by post, and an abstract of them by telegram, to every part of India. The character and causes of meteorological phenomena

which occur on the continent or on the adjacent seas are being carefully worked out. The provincial officers, who have other local duties not connected with meteorology to perform, conduct their meteorological work in co-operation with and under the general guidance of the central department and furnish the local governments with such supplementary details as they may require.

8. *Botany* like geology is a science which has been officially represented from the earlier years of the century. But as was long the case in Europe investigation was confined to the field of systematic botany, *i.e.*, to the collecting, arranging and naming of species and varieties of plants. Physiological botany and the economic and agricultural uses of plants were not made the subject of organized enquiry. As systematic botany was at one time a favourite occupation of most men with scientific training and tastes, much had been done independently of official agency by medical officers and others in many parts of India. But no organized scheme had ever been worked out for the whole country. In 1881 two officers, one at Calcutta and one at Saharanpur, were officially engaged on completing the botanical survey of Indian plants, but their labours were practically restricted to the two provinces of Bengal and the North-Western Provinces in which they were located. In 1885 a third officer was, at the request of the Government of Madras, attached to that Presidency. Thus, of all India, only three provinces were included in the area of botanical enquiry.

In 1890 the Government of India, in communication with the Kew authorities, expanded the scheme of botanical investigation. The Calcutta officer was placed at the head of a 'botanical survey of India;' the entire empire was, for the purposes of the survey, divided between the three experts, with the occasional assistance of a fourth in Bombay; botanical investigation was to take as far as possible a practical direction; and the officers of the provincial departments of agriculture were to co-operate with the botanical officers in arranging working-plans of enquiry.

Whether in view of the needs to be met in other branches of scientific investigation the staff employed on the botanical survey of India can always be maintained at its present strength, is a question which is still under consideration.

9. The *economic products* of India had not previously to 1881 been brought under systematic investigation. Much scattered information had been embodied in official and private publications, in scientific journals and the like, but was of little practical use, because it had not been collated and published in any accessible form. Advantage was therefore taken of the various requisitions made for collections of the products of India, on behalf of a series of international exhibitions ending with the Indo-Colonial Exhibition of 1886, to allot to an expert official the duty of making a full collection for all India, illustrated by a *catalogue raisonnée* which has recently been completed and published as a 'dictionary of the economic products of India.' The work has occupied 10 years. In 1887 the appointment, hitherto a temporary one, was made permanent. The collections were placed in the national museum at Calcutta, and the officer holding the appointment, whose duties had been, pending the completion of the dictionary, confined to the collation of matter already recorded, is now engaged in making supplementary investigations regarding those economic products in respect to which information is wanting or incomplete.

10. *Veterinary science.*—This includes the investigation of animal diseases, and of the means by which they may be prevented or cured. The enquiry is one of great importance to agricultural industry. The annual loss due to animal disease has been estimated in crores of rupees. It has indeed been officially stated by the local Government of one of the northern provinces that in the course of any five years the destruction caused by rinderpest alone was greater than that caused by drought.

Up to the year 1881 the only step taken towards serious investigation was the appointment in 1868 by Lord Mayo's government of an important Commission whose report fully confirmed the necessity of further enquiry and of well organized measures. No further action, however, was taken until 1890, when proposals were sanctioned by Her Majesty's Secretary of State involving the attachment of a veterinary officer transferred from the military staff to every province and of two officers with central duties to the imperial department of

revenue and agriculture. A scheme was then drawn up for a so called veterinary survey of cattle and of cattle diseases. The survey is primarily directed by one of the imperial officers who is engaged with the co-operation of the provincial officers in collecting and collating information throughout India regarding the various breeds of cattle and other animals useful to agriculture in the country and of the diseases to which they are subject.

11. *Bacteriology.*—Simultaneously with the veterinary survey, investigation is being made as to the possibilities of preventing or curing cattle disease. The treatment of many diseases is known, and veterinary schools under the direction of the provincial officers have now been established at almost every provincial centre for the instruction of native practitioners. A lead in this direction had indeed already been given in Bombay, the Punjab and Madras. But no successful method of dealing with the most fatal and destructive epidemics, such as anthrax, rinderpest, and surra—a disease confined to hot and moist climates—had yet been discovered. Three possible systems of dealing with them had, from time to time, been suggested which may be summarized as extermination, segregation, and inoculation. The first of the three, extermination of diseased or suspected animals, is the method in which most confidence is placed in European countries, but, owing to religious prejudices, is impossible in India. The second, segregation of infected animals, cannot be effected without legislative measures and a large staff of inspectors or police. Various proposals have since 1881 been submitted to the Government of India for legislative action, but have been, with the general concurrence of all local Governments consulted, condemned in view of the harrassment to the people and the great expenditure to the State that they would entail. The third measure, inoculation, which demands bacteriological investigation, is therefore the only preventive measure that may be possible, except indeed in those cases in which medicinal cures can be discovered. In this view the services of a competent expert, Dr. Lingard, were obtained from home, and a bacteriological laboratory was established at Poona. The climate, however, not proving favourable for laboratory investigation, the institution was transferred to a colder site in the Himalayas. In the meanwhile the character and causes of the destructive epidemic, known as surra, of which the wide distribution had not hitherto been suspected, and which is due to a blood parasite, of which the life history could be worked out in any climate, were investigated by the expert at Poona, and the valuable results of his researches have already been published.

The Government of India is now considering the desirability of strengthening, by the addition of a second expert, the bacteriological staff attached to the Himalayan laboratory. Rinderpest, which was declared by Lord Mayo's Commission to be more destructive than all other diseases put together, and which is suspected to be probably amenable to vaccination, will be the primary subject of investigation. The enquiry is one to which special importance is attached, in view of the fact that it can only be conducted in a country in which, like India, the slaughter of suspected animals is not compelled by law. The discovery wherever made of an effective vaccine for rinderpest would therefore be a boon to every country in the world.

12. *Agricultural science* is a field in which provincial, as contrasted with national enquiry, can be usefully carried on. Indeed most of the work must be done by local observers and experts. Nevertheless it was deemed that, as urged by a conference of provincial officers in 1885, the services of a first class agricultural chemist of European reputation as an investigator of many difficult problems of importance connected with soils and cultivation throughout India, would, if attached to the imperial department, be of considerable use. His main duties would be, in consultation with provincial officers, to co-ordinate scientific investigations, to initiate enquiries, to construct working-plans for provincial farms, and generally to guide with his advice the course of experiment and to preserve continuity of action. He was intended indeed to be little more than the professional adviser of provincial departments.

It was in pursuance of correspondence with Her Majesty's Secretary of State on this subject that Dr. Voelcker was deputed by the Royal Agricultural Society of Great Britain to 'advise on the best course to be adopted in order to apply the teachings of agricultural chemistry to and in order to

effect improvements in Indian agriculture.' He fully confirmed the advice of the 1885 conference. He gave a long list of questions which demanded scientific investigation; dwelt on the necessity of scientific advice to provincial departments; explained the advantage of central direction for the preservation of continuity; recommended that instruction in agricultural chemistry should be provided for national colleges of agriculture; and urged that 'general agricultural enquiry' could not be conducted without men who had made agricultural chemistry a particular study. The conference which met Dr. Voelcker in 1890 supported his opinion that an expert was required for purposes of scientific investigation independently of the needs of agricultural education. Acting on this advice the Government of India applied for the services of two experts—one for assisting in the conduct of laboratory experiment and for lecturing in agricultural colleges; the other for the more important duty of guiding general agricultural investigation. The valuable report which Dr. Voelcker, himself an agricultural chemist, had made on the general conditions and needs of Indian agriculture, gave sufficient promise that the measure would lead to the ultimate development of the sound working-plans of scientific enquiry and experiment. Two experts selected by Dr. Voelcker, under whom they had served as assistants, were accordingly deputed for a term of five years. Sufficient time has not yet been afforded to judge of the practical success of their mission.

13. *Entomology* is a science which, as applied to agriculture, must be held to include investigation into the causes of all plant diseases. The loss occasioned by diseases of plants is even greater than that caused by diseases of animals. For instance, the value of wheat annually destroyed by the weevil alone is estimated at some crores of rupees. As in the case of cattle diseases, there are two distinct branches of enquiry—the one a survey of plant diseases, the general distribution and character of each, and the extent to which damage is caused by them; the other an investigation as to the causes of each disease, and as to the possibilities of prevention or remedial action.

Again, the diseases themselves must be classed under two broad divisions, *viz.*, those which are due to insect pests, of which the life history is known, or can with comparative ease be worked out, and those which are due to obscure blights, of which the origin and transmigrations are imperfectly understood.

Up to 1888 entomology had not been represented. And since that year the only agency which the Government of India has had the opportunity of employing on research in this field has been one of the officers on the staff of the national museum at Calcutta, by whom a survey of the insect pests injuriously affecting agriculture was commenced in 1888 in correspondence and consultation with the officials of provincial departments of agriculture, and by whom, under the direction of the Trustees, a great deal of valuable information as to the character and distribution of insect pests has since been collected and published. The importance of prosecuting such enquiries with vigour under competent experts has been urged at many of the recent conferences, and the question of expanding the scheme of investigation with the view of covering the whole ground of enquiry is under the consideration of the Government of India.

The subject is one which has received considerable attention in the United States under the direction of the Washington agricultural bureau, and it is satisfactory to learn from the reports published by the Indian museum officer that many of the entomological enemies to agriculture are common to India and America, and have been more or less successfully combated to the material advantage of agricultural interests in the latter country. Practical results ought therefore, when the agricultural community are sufficiently educated to accord their co-operation, to be quickly achieved.

14. *Statistics* may properly be included in any scheme of scientific research, and occupy indeed the first place in the programme committed to the special departments created under the orders of Her Majesty's Secretary of State in 1881. The commercial and agricultural statistics of each province had, from the time when they were first collected, been, as a rule, reviewed and turned to practical use by the local authorities, but no measures had until recently been taken for their comprehensive examination and review by any central bureau. In 1895 proposals were submitted to and sanctioned by Her Majesty's Secretary of State for the constitution of an imperial department of statistics.

It was explained in the resolution announcing this measure that the disconnected manner in which provincial statistics had hitherto been compiled and published seriously detracted from their value; that their intelligent examination, collation, and discussion was necessary in order to secure uniformity and to render them as useful as they might and should be; and that they would henceforth be placed under the control of an officer skilled in such matters who would deal with them continuously upon a uniform plan, and would collate and publish the results in a properly digested form. The first series of reviews will shortly be issued by the newly constituted statistical bureau.

15. *Forestry* is a science which has during the last 20 years received much practical attention. A properly organized department was created in 1864, and has from that time continuously been under the central guidance of expert officials brought from Germany, to which country India owes the successful introduction of scientific forestry into this continent. The executive administration of forests in each province is in the hands of the local authorities, but the imperial government has nevertheless a large share in developing the system and principles upon which the science of forestry is practically applied. All forest officers may be said now to be experts, and for the most part their scientific investigations are carried out under the direction of the local governments whom they serve. On the other hand the education of the European officers in the science of forestry is provided for at a college supported by the imperial government in England, and of the native officials at a national school directed by an imperial officer in India. All schemes for the management and development of provincial forests technically called 'working-plans' are in their scientific aspect scrutinized and corrected by imperial officers: and the forests themselves are periodically visited by an imperial Inspector General with a view to the guidance of the executive officials in the scientific investigations which are to determine the character of the trees adapted to each locality and climate and the appropriate treatment of them. Finally, it is the task of the Government of India to formulate, in consultation with local governments and the imperial experts, the broad principles upon which the scheme of investigation and development is to be based.

16. The share in the national scheme of the agricultural enquiry which devolves primarily upon the imperial authorities has now been explained; the measures taken, since the new department was created in 1881, towards the expansion and promotion of scientific and agricultural enquiry under central direction have been briefly described; and the position in which the programme now stands has been roughly indicated. There are still many defects in the general scheme. It is still unequal and incomplete. What may be termed the older sciences—geography, geology and botany—continue for instance to occupy a much greater share of the State expenditure devoted to scientific investigation than the newer sciences which comprise researches into the obscure diseases of animals and plants. Long standing departments have profited by the traditional respect which has been paid to them. Those of more recent birth have had to struggle against financial difficulties and against the opposition which is necessarily offered to anything new. The Government of India have not omitted to take under consideration the question of equalizing the claims of each branch of scientific enquiry, and will as time goes on take such opportunities as may offer themselves of expanding investigation in the more modern fields of research.

17. The Government of India cannot, however, work alone. In view of the considerations which have been explained they are compelled to initiate and organize under central direction the various departments of national enquiry which have been described, but the work that is done in the field requires the active and sympathetic co-operation of all local and provincial authorities. As already indicated, this principle has been recognized by the Government of India in decentralizing, so far as it has been possible, the operations of the survey, of the geological and of other departments, of which the officers have been temporarily placed under the orders of provincial authorities. The occasion is now taken to explain to local governments and administrations the material aid which can be given to the development and to the effective working of the scheme by the active co-operation and intelligent advice of the provincial departments

of agriculture. Already in the proceedings of the recent conferences the Government of India is pleased to observe that strong recommendations have been recorded in favour of promoting active research, in connection with the nature, prevention and cure of plant diseases due to insect pests and other more obscure causes. So too at the agricultural conference of 1893 a request was made that botanical investigation might be made to take a more practical direction. Appeals such as these for the extension and development of scientific enquiry from departments and officials who have the opportunity of observing in the course of their field duties the real needs of the agricultural community will at the same time assist the Government of India in developing the scheme of investigation in right directions and strengthen their hands in organizing on a sound basis a staff of scientific investigators.

18. But the duties of agricultural departments will not end here. The officers of the departments should take every opportunity of working out, in conference and personal consultation with the expert investigators, a plan of operations, and of assisting them in obtaining the facts and statistics which they may require. Thus in the case of botany they should explain to the botanical expert when he visits or is invited to the province in what directions further information is required regarding agricultural plants, and should assist him to compile, and if necessary to publish a complete account of the field crops, fodders and other useful products of the locality. Similar action may be taken in the case of minerals in consultation with the geological officers. Again, they should make themselves acquainted with the measures being taken by the veterinary officers for the survey and study of cattle disease, and should assist them in obtaining the information which they may wish to collect from agriculturists. They should bring to the notice of the reporter of economic products any facts and details which are likely to be of interest to him, and supply him freely with information under all branches of their work which it may be desirable for him to publish; they should bring to the notice of the forest officers or of the authorities responsible for the administration of land the needs of each locality for forest or fodder reserves, and should assist them to devise useful schemes by which requirements may be met. Above all, they should take the utmost advantage of the advice and guidance of the agricultural experts attached to the imperial department whose services have been freely placed at their disposal by the Government of India, and who themselves stand in need of the local knowledge and special experience which only the provincial officers possess.

If during the next few years the active and intelligent co-operation of the provincial officers is thus accorded to the various departments and experts who are engaged in the investigations which directly or indirectly are required by agricultural interests, the Government of India are assured that, with the advice and assistance of local governments and administrations, they will be able to effect material progress in the great national work of scientific research.

FIFTH RESOLUTION.

Scientific and local enquiry under provincial direction.

1. It is important to bear in mind that the creation of agricultural departments in India has been due to the occurrence of famines. The Commissions appointed on the occasion of two serious famines, in 1866 and 1878, to advise the Government on the action to be taken for the mitigation of distress caused by failure of harvests in the future, recommended, as a principal measure, the creation of agricultural departments for the institution of scientific enquiry and experiment which should lead to the gradual increase of the food-supply of the country and to the greater stability of the agricultural outturn. The scarcity by which so many parts of the empire have, in the present year, been afflicted, brings renewed importance to the main object for which agricultural departments were designed, and imposes fresh responsibility upon all local Governments and Administrations to give the fullest possible effect to the policy advocated, a policy which was explained in the Famine Commission's report of 1880 in the following words:—

'Our report' they wrote 'has clearly shown how greatly agriculture pre-'dominates over all other interests and employments in which the people are en-'gaged; how essential we think it that technical agriculture should be called 'in to enable the productive power of the soil to be applied in the most effective 'manner, not merely to add to the wealth of the country, but also to secure a 'food-supply which shall keep pace with the increase of the population.'

2. In the opening Resolution of 1881, in which the programme of the new department constituted was set forth, the Government of India endorsed this view; they explained that the chief aim set before agricultural departments by the Famine Commissioners was 'the maintenance of agricultural operations at the highest attainable standard of efficiency.' They admitted that the first step must be the organization of machinery by which facts and statistics could be collected; that the ascertainment of agricultural defects was necessary before remedies could be provided to cure them; that the departments themselves must be made financially useful to the administration previously to embarking upon schemes involving material expenditure; that as it would only be through, and by, the native community, that agricultural improvements could, on any important scale, be carried into the country, measures must be taken to secure their co-operation by a proper system of intelligent instruction in the schools; but they agreed that when preliminary action had been taken to attain these objects, the principal efforts of the departments were to be directed to ascertaining how agricultural defects could be cured; by what methods agricultural produce could be increased, and by what measures the stability of the agricultural outturn could be strengthened and maintained.

3. During the first few years after the constitution of the provincial departments the Government of India were content to know that the new establishments were devoting their main attention to the organization of the system under which agricultural facts and statistics were to be collected with a view to their utilization—firstly, for the introduction of remunerative reforms into the land revenue administration; and secondly, as a basis for agricultural experiment and improvement. They proposed, however, that when sufficient progress had been made in this direction, renewed attention should be drawn to the main object for which the new departments were created. And an earlier occasion than that now presented would have been taken to discuss with local Governments and Administrations the general plan on which agricultural experiment and reform should proceed, but for the desire of Her Majesty's Secretary of State that on a matter of such great importance to the country the opinion of an acknowledged agricultural expert should first be obtained. It was in accordance with this view that Dr. Voelcker, the consulting chemist to the Royal Agricultural Society, was deputed to this country with instructions 'to 'advise on the best course to be adopted in order to effect improvements in

'Indian agriculture.' Acknowledging the judiciousness of a measure which was designed to prevent the inauguration of extragavant and ill-considered schemes of agricultural reform, the Government of India deemed it wise to take the utmost advantage of Dr. Voelcker's mission by inviting local Governments and Administrations to depute such officers and experts as might be most competent to assist him with their combined advice to meet him, on the conclusion of his first tour round India in 1890, at a general conference, the object of which was declared to be 'to secure the enunciation by the Government of India of those general principles which it is required to lay down in such form as will *primâ facie* be acceptable to local Governments.' Dr. Voelcker availed himself of the advice of the conference, of the value of which he recorded his acknowledgments, in the exhaustive report which he submitted two years later and in which he recommended that positive action should be taken in many directions. Again the Government of India considered it desirable that, before dealing with these recommendations, or formulating principles based upon them, a second conference of selected officers and experts from all provinces should be assembled in 1893 to discuss the measures finally suggested by Dr. Voelcker. The Government of India were thus constrained to await not only the recommendations of Dr. Voelcker himself and of the conferences which examined his proposals, but also the views and opinions of local Governments and Administrations, before endeavouring to formulate the principles upon which the agricultural reforms advocated by the Famine Commissioners should be attempted. In order to ensure a full and careful consideration of the questions concerned conferences were held for a third time in each province during the recent cold weather. The time has now come when His Excellency in Council is in a position to announce the general plan upon which the provincial departments of agriculture should be called upon to base their efforts to fulfil the principal object for which they were designed and created.

4. There is perhaps no subject upon which more diverse opinions have been expressed than that of the possibility of improving under official direction the agricultural conditions of India. It has been held that the natives of an oriental country have learned by experience the methods best suited to their own soils and climate; that practices successful in the western are unsuited to the eastern hemisphere; that the lessons taught on an English farm have no bearing on the cultivation of an Indian field; that the labour-saving machines of Europe and America are useless in a country where manual labour is extraordinarily cheap; that interference with the indigenous system of agriculture is dangerous; and that above all officials who have had no agricultural training are less suited than any others to direct or suggest reforms.

While admitting that these and similar arguments require that great caution should be exercised in framing official schemes for the improvement of agriculture in any part of the empire, the Government of India cannot allow them to be accepted as barring the prosecution of official effort. The time has indeed arrived when neither the imperial nor provincial Governments are justified in taking up any such position. Putting aside all other considerations, the strong expression given to opposite views by the two Commissions appointed by Her Majesty's Secretary of State to advise the Indian Government on these matters, *viz.*, by the Famine Commission of 1880, and by the special expert sent out ten years later—views confirmed by conferences of selected officers and experts from all provinces—has practically taken the decision of the issue out of their hands. At the same time the Government of India are convinced on independent grounds that official direction of efforts aimed at agricultural reform will be, and indeed has been, in this country productive of practical results of importance. It is true that hitherto, in accordance with the deliberate policy put forward in 1881, and for the reasons already explained, the attention of agricultural departments in the provinces has been diverted from rather than directed to positive agricultural reforms; that they have been urged to effect financial economies and to organize careful schemes of agricultural enquiry before entering upon a serious campaign in the field of agricultural experiment; that they have been told not to expect widespread results until the educational system of the country has been improved. Nevertheless in some provinces, and notably in the two presidencies of Madras and Bombay, not only has considerable advance been made in establishing schemes of useful

and scientific experiments under the direction of competent experts, but examples have been forthcoming of their financial value to the State and to the agricultural community. Failures have, it is true, been numerous, but as pointed out at the Bombay Conference a failure means at least success in setting a doubtful question at rest while one financial success outweighs the cost of many failures. A few instances, noticed in the proceedings of the recent conferences or in Dr. Voelcker's report, may be given of substantial and profitable results which amid many failures have followed agricultural investigations officially directed.

5. (1) In 1877 a conference attended by officers of the geological and of the revenue and irrigation departments of more than one province, of whom two were the late and present secretaries of the imperial department of revenue and agriculture, was held in a district of the North-West Provinces for the purpose of discussing the possible methods of reclaiming lands rendered unculturable by an excess of salts. There are in various parts of India, and especially in the north, several thousands of square miles of lands thus excluded from cultivation. An elaborate scheme of experiments including flooding, drainage, the application of chemical and other manures, and various methods of agricultural treatment, was laid down by the conference, and was carried out by experts of the agricultural and irrigation departments. After some years, a system of treatment, within the reach of any enterprising agriculturist, was developed which admits of the profitable reclamation of saline lands hitherto condemned as unculturable. Although the widespread extension of the process of such profitable reclamation cannot be expected until the land-owning classes have been so educated as to take spontaneous interest in the work, yet the results obtained have proved that a material addition to the cultivated area of the country can, in the course of time, be made, and that saline land once thoroughly reclaimed may be made capable of producing excellent crops. It is estimated that every hundred square miles that can be recovered will, if, as is often the case, the land is within reach of the canals, produce annually upwards of a million of maunds of food-grains.

(2) In Bombay the Agricultural Department undertook the introduction of European methods of manufacturing dairy produce. A Swiss expert was imported and experiments were set on foot. The following account of the results is given in the proceedings of the recent conference held in the Bombay Presidency. 'No enquiry was necessary to prove the superiority of the English and 'continental methods. What was essential was to popularize the improved 'methods and teach the use of improved machinery. Local dairies were 'established at Poona and Bombay. The demonstration was successful and as 'success was secured the departmental dairies were closed. Up to date about 'five lakhs of rupees worth of improved dairy machinery has been 'imported and the improved methods have spread throughout India. Milk 'separators are now privately set up in villages on railway lines and the separated 'cream imported to cities where it is made up into butter whence it is largely 'exported to foreign countries. The price of milk in out-lying villages has risen 'and milch cattle have increased in number.'

The success obtained in Bombay led to the temporary transfer of the Swiss expert to the North-West Provinces where within two or three years he was established on the very saline lands which were visited by the conference of 1877, and which have been since converted into a profitable dairy farm whence dairy produce is now exported to Assam, Baluchistan, and other remote parts of India.

(3) Another experiment, initiated in 1885 at the instance of the Agricultural Department in a district of the North-West Provinces, and referred to in Dr. Voelcker's report, has borne fruitful results which have been recently noticed by the local Government. Land 'which was mostly a net-work of ravines affording grazing of the poorest description,' was experimentally enclosed as a fuel and fodder reserve. An expenditure of ₹3,000 has at the end of 10 years brought in an annual income of over ₹1,000 from the wood and grass raised in what had been, as Dr. Voelcker observed, simply waste-land. There are, it is believed, several hundreds of square miles of waste ravine lands on the banks of the large rivers of Northern India, of which the reclamation would be of material advantage to agricultural interests, and the success of the experiment has already led to the extension of the system in similar tracts.

(4) One more example may be given of material financial results obtained by investigations conducted in a scientific basis under official direction. Between 1870 and 1880 careful field-to-field enquiries were made in the North-West Provinces and later on by the agricultural and canal departments in the Bombay Presidency as to the cost of applying canal irrigation to cultivated land. These have led directly and indirectly to an improvement in the canal revenue of something like thirty lakhs a year not only without detriment to, but with distinct advantage to, agricultural interests, in view of the fact ascertained in both Provinces that the lavish use induced by unduly low rates of canal water on unmanured land leads to its deterioration.

These illustrations will suffice to indicate that important financial and agricultural advantages can be secured by experiments and investigations intelligently conducted under official direction. But they also show that the controlling officials must be assisted by competent experts; that continuity of intention and effort is necessary; that occasional success can only be obtained amid many failures; and that a long period of years is required for the definite ascertainment of positive results.

6. The Famine Commissioners strongly insisted on the necessity of employing, under the general direction of the provincial departments of agriculture, competent experts trained at home. 'There must' they wrote 'be employed a certain 'limited number of persons possessing superior technical and scientific knowledge 'of practical agriculture, whose task it would be to aid the Government in its 'endeavour to introduce improved methods of cultivation. These should be 'trained specialists and their number might probably be at the rate of two or 'three to a province and in all cases their scientific training should be followed 'by a year of practical application to agriculture before they are sent out to 'India.' The agricultural conference of 1890, while considering it essential that a director of an agricultural department should be provided with competent expert assistants, contemplated the possibility of their being eventually obtained from high class agricultural colleges in this country, but admitted the necessity in the meantime of a European training. This view was confirmed by Dr. Voelcker and by the agricultural conference of 1893. Dr. Voelcker advised that the expert assistants employed 'should have passed through a training such 'as that given at Cirencester or similar institutions followed up by—and this is 'essential—subsequent practical experience on a farm.' 'The reservation' he added 'as to practical experience is in my opinion so important that it constitutes 'my reason for advocating the employment, at first at any rate, of European 'rather than native assistants, though it is quite possible that natives will 'occasionally be found with the necessary qualifications.' The conference of 1893 endorsed this view in a resolution to the effect 'that it is essential to the interests 'of agricultural improvement that there should be in each province a highly-'trained technical assistant to the Director of agriculture, and that unless and 'until natives sufficiently well trained and qualified are available, he should be a 'European expert.' They further urged that the expert should be supplemented by a staff of native assistants trained in this country and that suitable institutions should be established for their education. The conferences recently held have in all the larger provinces supported the recommendations of the conference of 1893.

7. Influenced by this strong consensus of opinion, the Government of India have arrived at the conclusion that the time has now come when in every province in which no such arrangements have yet been made, a definite scheme should be drawn up under which a strong and efficient staff of agricultural experts will be within a limited period placed at the disposal of the provincial department of agriculture, and that, as recommended by the conference of 1893, unless and until natives sufficiently well trained and qualified are available, the staff should include a European expert. They are aware that the present moment is one at which no avoidable expenditure on new establishments can be immediately proposed, and that they must at present be satisfied if a programme is arranged, with due deliberation and regard to future requirements, to be carried out as soon as circumstances admit. But the very cause of present financial difficulties, famine, is in itself, as the Commissions of 1866 and 1878 have indicated, the strongest argument which can be used in favour of expenditure as soon as financial pressure is relieved of which the main object is increase of the

food-supply; while the few illustrations which have been given of the financial and agricultural advantages which have already followed intelligently directed experiment, indicate the remunerative character of the outlay which will be incurred, and the increasing protection which will be afforded thereby to the agricultural community against the difficulties and distress in the seasons of failure which must inevitably occur from time to time in future years.

8. These observations do not apply with equal force to all provinces. In the two presidencies of Madras and Bombay, for instance, the measures already taken or contemplated for the equipment of the agricultural department are possibly adequate; while in the two provinces of Burma and Assam where agricultural conditions are of exceptional character, and where rice is the staple product, action is not so urgently called for as in other parts of the empire. But the Government of India desire to be informed by every local Government and Administration what in their opinion will be the full staff of agricultural experts and assistants which should, when circumstances admit, be placed under the control of the provincial department, in order to enable it to efficiently prosecute its primary and most important duty.

9. The employment of European experts and a trained staff of assistants involves the establishment of experimental farms. On this subject nothing has been recorded in the proceedings of the recent conferences which affects the opinion of the Famine Commissioners and of Dr. Voelcker that 'experimental enquiry conducted by means of experimental farms is a necessity in India for the development of agricultural improvement.' To what extent experimental farms should be multiplied in any one province is a question which it must be left to each local Government to decide from time to time as the scheme of agricultural experiment is developed. 'The decision must' writes Dr. Voelcker 'be partly based on considerations of expenditure and staff, but the main consideration should be whether there is anything definite to learn, a particular question to solve, and whether this has any relation to the agriculture of the country around.' In the meantime the Government of India have no hesitation in requiring that the definite scheme for which they have called should include at least one central experimental farm adequate both in area and in the staff with which it is equipped to ensure the conduct of experiments on the system advocated by Dr. Voelcker.

10. It has been frequently urged that a single experimental farm in a large province is on account of the varying character of soil, climate and other agricultural conditions inadequate for the purpose of testing suggested improvements, for ensuring the applicability of methods more or less successful in one locality to other parts of the province; or for bringing useful results to the notice of the agricultural community of various districts. It was partly for these reasons that Dr. Voelcker advocated the establishment of supplementary 'demonstration farms' on which the results of useful experiments might be tested and exhibited. The Government of India are not afraid to look forward to a time when native gentlemen and landlords under the influence of a well-designed system of general education will undertake the expansion of experiment and demonstration on their own estates, but they trust that in the meantime the utmost advantage will be taken of the opportunity to set them an example by utilizing estates under Government management for the intelligent trial of agricultural improvements. This policy was strongly urged by the Famine Commissioners who advocated that managers of such estates should act as an enlightened and prudent landowner would act in respect to his own property by utilizing the results of science and adopting any well-tested and clearly demonstrated improvement in methods of farming. The Government of India have been pleased to observe that prominent attention has recently been called to this opening for the expansion of agricultural reform by the Lieutenant-Governors of Bengal and of the North-West Provinces, and they desire that the directors of the provincial departments and managers of estates under official control may in every province be required to give their earnest and continuous attention to this plan of developing and testing all agricultural experiments which have in them any reasonable chance of possible success.

Where estates under the management of Government officers are not available, it may be desirable to consider Dr. Voelcker's suggestion of the establishment of demonstration farms.

11. The system on which experimental and demonstration farms should be conducted has not been examined at any of the conferences which have been held, nor in the opinion of the Government of India could any precise recommendations have been usefully formulated for general guidance. Dr. Voelcker's chapter on the subject offers many useful suggestions which should be carefully considered by the agricultural staff responsible for the conduct of experiment, but it must be left entirely to the officers of the provincial departments to decide, in consultation with the imperial chemist, what the detailed arrangements should be.

It is natural that these should differ in each locality. But there are certain broad principles noticed by Dr. Voelcker to which prominent attention may be drawn. The *first* and most important is the necessity of a working-plan which, as in the case of forests, must be continuously maintained and, unless for strong reasons sanctioned by the director of the department, not interfered with until the experiments once set on foot have yielded definite results. The *second* is 'that the issues in each case should be simple and that the object of an experiment should, as a rule, be the only varying factor involved in it', in other words that an experiment should be confined to the trial of a single issue. The *third* is that the recording of results should be as far as possible on an uniform plan, and that they should be published and circulated for general information.

The framing of the working-plan and the system on which results should be reported are matters which should be arranged in consultation with the imperial officer who has been placed, with this object, at the service of the provincial departments.

12. When in any province the department of agriculture has been equipped with a European or equally competent expert, with a staff of trained assistants, and with an experimental farm or farms, a programme or working-plan will be formulated not merely, as above directed, of the experiments to be carried out on the farms, but also of the series of investigations which are to be made into the defects in the agricultural system for which it is the object of experimental action to provide a remedy. Dr. Voelcker, in his report, gives a long list of *primâ facie* defects, to which the attention of agricultural departments should be directed, and it is known that many others exist to which Dr. Voelcker made no reference. The question how these should be dealt with has received prominent attention at the conferences which have recently been held, and the general conclusion arrived at has been that it would be desirable—*firstly*, that a cursory enquiry should be made which, by the examination of the agricultural system in a few typical districts, would indicate roughly the most important defects for the removal or minimizing of which remedial action is required; *secondly*, that when this had been done, enquiry and experiment should be concentrated for a definite period on a very limited number of 'defects.' It was generally agreed that, though exceptions to this course might be occasionally made at the discretion of the director of the department, it would be found embarrassing to enter upon a campaign at one and the same time against all the various evils known or suspected to interfere with agricultural prosperity. This view commends itself to the Government of India who, while not desiring to restrict the power of the agricultural departments to expand their field of enquiry for good and sufficient reasons, think it desirable that local Governments and Administrations should understand that His Excellency the Governor General will be satisfied to know that at least one prominent agricultural defect is being subjected to searching investigation and experiment in each province.

13. The adoption of this view renders it inexpedient for the Government of India to attempt anything like a review of the numerous recommendations contained in Dr. Voelcker's report for the improvement of agricultural conditions. Taken one by one the subjects with which his report and the proceedings of the 1893 conference deal will occupy the attention of the agricultural departments for very many years to come, and each subject must be carefully studied by itself in all its bearings at the time when it is taken up. The illustration given in the succeeding paragraph will explain what is meant by the term 'agricultural defect' and the general character of the enquiry and action needed in dealing with it.

14. The order in which defects should be selected for successive enquiry and experiment will depend on the conditions prevailing in each province and must

be left to the discretion of the directors of the provincial department under the orders of the local Government. But the Government of India may point to one subject which, in view of its important and universal bearing on the agricultural outturn, they deem to deserve special attention in every part of the empire and which, if no reason to the contrary exists, they would be glad to see taken up as the first subject of enquiry in all provinces. The subject is this. In other oriental countries, *e.g.*, in Japan and in China, as well as in the western countries of Europe and America manure provided by cattle and other animals is, as a rule, whether liquid or solid strictly conserved. In India there are great difficulties in the way of preventing the latter from being used as fuel, but the former or liquid manure is mostly allowed to run to waste, and the practise of securing it for the fertilization of the field is hardly known. The results of scientific experiments in America have however indicated that the productive value of the liquid is even greater than that of the solid manure and lead to a conclusion that the utilization of the former would very materially increase the food-supply of the country. The defect may then be thus defined:—'a neglect to use a highly valuable manure which is within easy reach of every cultivator.'

The advantages of dealing with this particular agricultural defect are that any reform which can be effected does not involve serious outlay of capital; that it is one that can as proved in China be carried out successfully in a tropical climate and without European appliances; that the neglected manure being within the reach of every cultivator any increase in produce which can be effected by it is capable of indefinite multiplication.

15. As the discussions at the recent conferences imply that some doubt has existed as to the system on which the investigation of agricultural defects should proceed and also provide some useful suggestions for a plan of enquiry, an indication will be given of the general method which may be followed in conducting an investigation into the subject which has been suggested for enquiry.

Firstly.—Existing facts and practices must be ascertained. For this purpose local enquiries should be made by the director, the agricultural experts, and their assistants in convenient localities as to the use, if any, which is now made, of the liquid manure in each district or agricultural tract.

Secondly.—A series of questions should be drawn up, and circulated for reply to managers of Government estates, circle inspectors, officers of the land record staff and other selected officials as well as to any intelligent landowners or farmers willing to take part in the enquiry, with the view of eliciting detailed information as to existing usages in every part of every district.

Thirdly.—A careful study should be made of the conclusions arrived at in America and Europe both as to the best methods to be adopted, and as to the actual value in increased outturn, of the application of liquid manure to various crops.

Fourthly.—The system in other oriental countries should be ascertained. In connection with this and the previous question the imperial officer, whose duty it would be to provide the required information, should be consulted.

Fifthly.—A series of experiments should, in consultation with the imperial officer, be set on foot at the experimental farms, with the view of ascertaining how the most approved practices in other countries can be brought within reach of the Indian cultivator by the adoption of simpler methods and cheaper appliances.

Sixthly.—When methods promising *primâ facie* success have been worked out on the experimental farms they should be subjected to more practical trial on estates under Government management or on the farms of intelligent landowners willing to accord co-operation.

Seventhly.—The progress made in the investigation in each province should be periodically communicated to the editor of the *Agricultural Ledger* for publication in that journal in order that the agricultural department of each province may be kept informed of the character and results of experiments being made in every other province. It is understood that already in some provinces investigations and experiments, the result of which would be of general interest, have already been set on foot. An account of these should be published.

16. The defect which has in this case been suggested as the subject of general enquiry is the neglect to use a manure which is universally available, and the application of which would undoubtedly result in a material increase in the

food-supply of the country. The full investigation of the subject will, if it is taken up, probably occupy many years. The same may be said of many other enquiries. And for this reason doubt has been expressed at one or two of the recent conferences, whether the policy of confining attention to one subject at a time is desirable, and whether it should not be left entirely to the discretion of the provincial agricultural departments to decide what the scope of their enquiries should be.

17. In order to prevent misapprehension on this point, the Government of India consider it necessary to explain that their intention is not so much to demand any rigid restriction of the provincial programme as to point out that the absence of any limitation of the field of experiment has in many provinces appeared to lead to indefiniteness and uncertainty in design, and to want of continuity in action; that enquiries commenced by one officer have been put on one side by his successor; that the agricultural defects and difficulties which have to be dealt with are, as indicated in Dr. Voelcker's report and in the proceedings of the agricultural conferences, so numerous and grave that any attempt to deal with them simultaneously and exhaustively cannot, with the small staff at the disposal of the agricultural deptartment, fail to prove embarrassing; that the investigation of any one subject must, if it is to yield successful results, be complete and thorough; that when a question has once been taken up for examination it should not be abandoned until an answer to it has been found; and that the programme or working plan of the department must, however much or little it may be restricted, be at least clear and definite.

18. The Government of India have in the immediately preceding paragraphs been dealing with the complete and thorough investigation of large and important questions, and have not intended to refer to the working plan of an experimental farm. The main object of such a farm is the trial of a long series of continuous experiments for the purpose in each case of proving a single fact. Here the working plan may legitimately include the simultaneous trial of as many experiments as the director, guided by his advisers and by the imperial expert, may determine to be eventually required for the broader investigation of any subject. Thus, assuming that the question of improved seed grain is one which has been decided to defer for five years, there would nevertheless be every reason to ascertain in the meantime by continuous experiments on the farm plots whether selection of seed does in five years make any material difference in the outturn of any particular crop. What would be deferred to the fifth year would be the general investigation into the practice and conditions obtaining in each district.

19. Subject to these considerations the discretion of the departments to expand the field of enquiry and experiment need not, especially in those provinces where an adequate staff of experts and assistants has been provided, be restricted by any absolute rule. It would not indeed under any circumstances be desirable that the investigation of a single subject, such as that offered as an exemplar, should be carried to the end before a new question is taken in hand. The time and attention which each subject demands must necessarily be greater in the first year or two of enquiry than in subsequent years when the most useful lines of experiment have been determined. What the Government of India do wish to demand is that every agricultural department should always have before it for special and thorough investigation at least one agricultural defect of importance; and that if more than one are brought under enquiry at one time their number should not be so great as to lead to desultory and imperfect action in the case of any one of them.

20. In conclusion it must not be forgotten that an important factor in the success of the working of a provincial agricultural department is the qualification of the director himself. This officer should, wrote the Famine Commissioners in the first part of their report, be chosen for his knowledge of the condition of the people and particularly of the agricultural classes, while in the second part they advised that a certain number of officers should receive a preliminary training at home before going out to India, and that meanwhile any officer selected should be allowed to spend a year or some longer period at a school of agriculture in Europe. The Government of India granted this last permission, of which advantange was taken in two provinces, and in 1889 local Governments were asked to offer their opinion as to the manner in which junior

officers could be best trained in future so as to secure a succession of efficient officers to an appointment which requires technical knowledge and special experience. The replies that were received were almost unanimous to the effect that the director should be an officer who had served an apprenticeship in the settlement department, and in view of the importance then attached to the organization of the land record system which was to form the basis both of land settlements and of agricultural enquiry, the Government of India were content to accept this decision. There seems, however, to be no doubt that in some provinces questions of agricultural improvement have been too greatly subordinated by the director to land record work, and that as suggested by Dr. Voelcker the agricultural duties of the office have been practically neglected. The Government of India are not disposed to press the view of the Famine Commissioners that training of a technical character in an agricultural college is necessary, though it certainly may be useful, for the qualification of a civilian officer to direct the agricultural department. If the department is equipped with a competent European expert and with trained assistants, the general direction of the department may, they think, be left to a carefully selected officer who has shown aptitude and inclination for the class of duties which the superintendence of the department involves. They are not, however, assured that in all cases sufficient consideration has hitherto been given to the agricultural side of the departmental programme in the choice of the officer to whom the control of the department is committed, or as suggested by Dr. Voelcker, that progress in agricultural enquiry and experiment has not been hindered by too frequent changes in the incumbency of the appointment.

21. Akin to this important matter is the question placed before the recent conferences whether with a view to their co-operation in the development of agricultural enquiry and improvement the training of junior civilians could not be improved, and in one province—Bombay—in which considerable attention has been given to the subject, it was suggested that all young officers should go through a short course at an agricultural college or farm during which they might at least learn something of the various crops raised in the province and of the general agricultural system which prevails in it. The question is one which deserves the consideration of local Governments and Administrations. Among those 'who have a bent towards natural sciences and practical investigations' it will probably be easy to appoint an officer from time to time to the station to which the college or farm is attached to receive a course of instruction in the agricultural department, in addition to their ordinary duties. From these eventually successors to the directorship may be chosen. It is of special importance too, that now that settlement operations are coming under contraction, some steps should be taken to ensure the better qualification of a certain number of officials to co-operate in the scheme of agricultural enquiry. On this subject the Governor General in Council invites the further opinion and views of all local Governments and Administrations.

SIXTH RESOLUTION.

Agricultural Education.

1. The subject of agricultural education in country schools was one of those to which the Famine Commissioners, in their Report of 1880, advised that the attention of agricultural departments should be directed. In the opening resolution of 1881 the Government of India pointed out the necessity of securing the co-operation of the native community in working out any programme of agricultural improvement, and in correspondence which ensued with Her Majesty's Secretary of State on the general policy which should be followed by agricultural departments represented that no general advance in the agricultural system could be expected until the rural population had been so educated as to enable them to take a practical interest in agricultural progress and reform.

2. These views were confirmed by the agricultural conference of 1888, which urged that the measure most immediately demanded was that of educating teachers competent to give instructions of the required kind, and in the same year the Government of India, dealing with the proceedings of the 1888 conference and with the report of the Finance Commission on the expenditure of the new department, issued a resolution in which a clear explanation of the general policy advocated was put forward. It would be the duty of every Government, it was urged, to ascertain by careful and continuous experiment and enquiry what improvements were possible, and during the long period of years which these investigations would occupy, to give serious attention to the education of the agricultural classes. Extravagant expenditure on attempts to introduce improvements, until they had been thoroughly tested by experiment and until the agricultural population was prepared to receive them, was to be avoided. A resolution issued in the same year in the Home Department on educational policy placed a direct obligation on agricultural and educational departments in every province to work out a practical scheme of agricultural education

No. 345-55 C. I. dated 25th March 1890.

3. In one province, Madras, in which an agricultural college had been established for many years, considerable attention had been already given to the educational question, and when in 1889 a committee, appointed by the Government of the presidency to examine the working of the agricultural department and of the college, submitted its report, it was found that the conclusions arrived at pointed in the same direction. 'It is to school and college education,' wrote the Madras Government, 'that the committee attach most importance, and more than half of their report is devoted to this subject.' In view of the fact that the practical experience attained and the serious consideration given to the question for a long period of years in the Madras presidency entitle the opinion of the committee to great weight, a brief exposition of their views, confirmed as they have been by the conferences recently held both in Madras and in other provinces, deserves a prominent place in this resolution. Their whole report indeed is one which merits the careful perusal and attention of all officers connected with the work of agricultural administration.

4. The main defects in the Madras scheme of agricultural education were found to have been that instruction was specialized in a college of high class, had no connection with the educational curriculum of primary and secondary schools, and was confined to students designed for agricultural employment either as officials or on their own estates. The verdict of the committee was this: 'We 'do not look forward,' they wrote, 'to all students of the college engaging in 'the direct exercise of agriculture; we are firmly convinced that the end in view, 'the dissemination of higher scientific knowledge of agriculture and of the scien-'ces allied to it, will be greatly furthered by leavening the Revenue, Forest, Edu-'cational and other Departments and callings by men who have received a 'thorough course of instruction in the agricultural college.' Turning then to the broader question of general education, they continued: 'We are persuaded that 'no means of increasing the efficiency of the Agricultural Department can be 'really effective unless the people are taught to understand what is defective in

'their present system of agriculture, where it is capable of improvement, and 'the best means to that end. We believe that this can only be done, first, by 'extending their general education, *i.e.*, by teaching them not only to read, 'write and cypher, but to use their knowledge so that they may, in however 'humble a manner, become thinkers, observers, experimenters * * * * *. Unless 'the intelligence of the cultivator be developed, and developed in such a direc- 'tion as to lead him to devote a better trained intelligence to his own art, and 'to apply thought, observation, and experiment to matters which concern his 'material well-being, we believe that progress, if not absolutely impossible, 'must be so slow as to effect little appreciable change in a generation. We 'assume, as an axiom, that the wealth of this country may be enormously in- 'creased by improved methods of cultivation, by the introduction of new pro- 'ducts, and by the rational treatment and development of stock. Education 'is the mightiest lever that can be applied, however great and beneficial the 'influence on the intelligence of the people of railways, roads, canals, good 'markets, and good ports and outlets for produce may be; these are necessary 'and helpful to agriculture as educators, but they must fail to produce the 'greatest material progress posssible, and secure that progress when attained, 'if the people remain ignorant and wedded to bad and, often, injurious 'methods.'

5. Impressed by the value of these conclusions, founded as they were on practical observation of the inadequate results of an imperfect system, the Government of India commended them to the special notice of the agricultural conference which was to meet the Secretary of State's delegate, Dr. Voelcker, in 1890. That conference fully supported the Madras views. It urged the extension of primary education; the combination of agricultural teaching with it; and the employment of students agriculturally trained in all departments of Government service in which an opening could be made for them. In convening the agricultural conference which was to deal with Dr. Voelcker's Report in 1893, the Government of India again drew the prominent attention of local Governments and administrations to the subject; and alluding to the request contained in the Home Department's resolution of 1888, that the Educational and Agricultural Departments should be required to work out in concert a practical programme, stated that 'it was essential that, with the co-operation of the 'Educational Departments, measures should be taken which will render the 'agricultural population capable of assimilating new ideas and of understanding 'any suggestions made to them, as time goes on, for the improvement of their 'agricultural methods, and which will qualify them to take that active part in 'the scheme of agricultural reform without which no effective results can be 'expected.'

6. These views were confirmed by the conference of 1893, and in the Home Department's resolution of 1894, reviewing the progress of education, the policy of 'making instruction in the rudiments of agriculture part and parcel of the 'primary system of instruction in the country rather than teaching it as a subject 'apart from the general educational programme,' was impressed upon the Educational Departments, at the same time it was admitted that there was already evidence of a general tendency in the provinces to modify the course of primary education in a practical direction.

7. Finally, in 1895 the Government of India decided to invite local Governments and Administrations to require the subject to be thoroughly examined in each province by a committee which should be composed of selected officers of the provincial revenue and agricultural and educational departments, and which an officer on the imperial staff should be permitted to attend for the purpose of providing facts and statistics from other provinces.

8. Hitherto general principles rather than actual practices had come under consideration. The leading objects of discussion were now to be the positive ascertainment of any defects that might exist in the present scheme of primary education; the extent to which effect had already been given to the principle of including agricultural and practical instruction in the ordinary school curriculum; and the reforms which were still possible in the direction of developing in the younger students the habit and powers of observation. In bringing these questions forward in 1895 the Government of India took the opportunity of explaining in the appended Resolution that the essential matter was not so

much the adaptation of the educational scheme to the training of agriculturists as the framing of the plan of instruction so as to promote in the pupils taught the power of assimilating any kind of technical instruction; that the mere acquisition of knowledge was to be subordinated to the development of faculty; that the powers of observation should be brought into play and improved by exercise; and that the actual teaching of a particular trade was of less importance in the first instance than educational methods which will adapt the pupil for the subsequent of technical of any description. These views were supported by quotations from recognized authorities. The late Professor Huxley had written that 'a system of education which does nothing for the faculties of 'observation, which trains neither the eye nor the hand, and is compatible with 'utter ignorance of the commonest natural truths may be regarded as strangely 'imperfect.' In a report of the Royal Commission on technical instruction it had been stated that while 'the system hitherto prevailing in English rural schools 'actually unfitted the children of farmers for an agricultural career, yet there was 'nothing in any scheme of rural education specially designed for the agricultural 'classes which should unfit the children for any other career for which they 'were specially suited.' The scheme was to be based, they said, on what a child could see round him, and it followed therefore, as pointed out by the agricultural conference held at Simla in 1893 that 'any such system established in rural 'schools must, for whatever class intended, acquire an agricultural colouring 'because the surrounding objects are themselves agricultural.'

9. His Excellency in Council has been much gratified by learning from a perusal of the proceedings of the recent conferences and of the reviews thereon by the local Governments and Administrations that these views have met with universal acceptation; that much has already been done to give effect to the principles embodied in them; and that the deliberations of the conferences are likely to lead to many important and practical reforms in the same direction. It is interesting also to observe that since the discussions were held a strong movement has been made in the United Kingdom for legislation with the object of removing the defect, noticed in the Resolution of 1895, *viz.*, the absence of any such preliminary training in primary and secondary schools as is required to enable the students to understand and assimilate the teaching offered in technical institutions.

The conclusions arrived at in the course of the recent discussions will now be briefly explained.

10. The basis of the enquiry which the conferences were invited to make in connection with the adaptation of the educational scheme to the interests of agriculture was a series of recommendations which were recorded by the agricultural conference of 1893 and which grouped themselves under four heads:—

I.—Primary education.
II.—Readers and text-books.
III.—Training schools.
IV.—Higher education in agriculture.

These divisions may be conveniently taken under separate and successive consideration in the present resolution.

11. *I.—Primary Education.*—The definition of "primary education" adopted in 1886 by the Education Commission in their report was 'that 'primary education be regarded as the instruction of the masses *through the* '*vernacular* in such subjects as will best fit them for their position in life and be 'not necessarily regarded as a portion of instruction leading up to the University,' and they advocated that 'the standards of primary education be revised with a 'view to simplification and to the larger introduction of practical subjects such as 'native methods of arithmetic, accounts and mensuration, the elements of physical 'and natural science and their application to agriculture, health and industrial 'arts.'

12. The general principles thus put forward are in sufficient accord with the policy which, as already explained, has met with general acceptance, but are, under the strict letter of the definition adopted by the Commissioners, only applicable to vernacular instruction. It would, in the opinion of the Government of India, be unfortunate if this restriction were to be held to exclude any lower

schools, in which education is commenced from the beginning in English, from the material advantages afforded by a system of instruction based on principles which are almost uniformly accepted in all civilized countries, which were advocated by the Education Commission, and which now, after discussions extending over many years, have been strongly urged for adoption as a basis for all educational schemes by the general consensus of provincial authorities. In most of the provinces of India no such exclusion is possible. But the position is not the same in all.

13. The despatches received from Her Majesty's Secretary of State in 1854 and 1859 on the subject of national education indicated that a distinction should be made in the educational courses prescribed for the rich, middle, and poorer classes respectively. In several provinces the same elementary instruction in the vernacular is provided for the younger pupils of all three classes, and can be moulded into any form which the local government considers to be best. The trifurcation comes later. In some of the eastern provinces on the other hand, a separate scheme is provided for each of the three classes from the lowest stage and in such institutions as may adopt English as the language through which elementary instruction is conveyed the course of study may be determined not so much by the provincial authorities as by the requirements of the course leading to educational diplomas and degrees.

14. The Education Commissioners represented that 'their attention was 'not called to this important variation in the educational scheme of different 'provinces until discussions on primary education had been closed when it was 'too late to find time for its consideration'; they took some pains, however, to marshal all the arguments on both sides, but stated that 'in the conflict of 'views, and considering that no opportunity had been given of arriving at a 'definite conclusion, they refrained from expressing an opinion.' They explained at the same time that by the system under which the three courses were kept entirely distinct the main object sought was 'to keep down the standard to the 'requirements of the masses and not to raise it by considering the wants of the 'well-to-do classes who are not, properly speaking, the masses.' The Government of India have no desire to enter on the present occasion into any detailed discussion of the merits of the two systems, but consider it expedient to point out that the reforms now suggested in the primary education of vernacular schools are in no way connected with the special wants of the well-to-do classes, that they are founded on general considerations equally applicable to every class; and that if they conduce to the better development of the intelligence of all children, of whatever condition in life, it would seem to be a question whether this advantage should be withheld from the well-to-do classes. The question is one which seems at least to deserve the consideration of local Governments and Administrations of provinces in which any class of school is excluded from reforms admitted into the general scheme of early education.

15. Turning now to the position of primary education in schools—and in most provinces this means all schools—in which the plan of elementary instruction is controlled, under the direction of the local Government, by the educational departments, it appears to have been ascertained in the course of discussion at the recent conferences that while in many provinces, and notably in Bombay, material effect had been given to the principles advocated, yet that substantial defects did often exist which it would be desirable to remove. The nature of the imperfections discovered and the character of the remedies suggested will be more easily comprehended if it is first explained what the plan of education ought to be if based on the principles supported at all the conferences.

The first point is that in all schemes of practical education designed to train pupils at an early age in habits of observation, the readers and text books—which should deal as far as possible with familiar objects—must be illustrated and explained by the concurrent exhibition of the objects themselves or of pictures and models of them. Thus 'object lessons' play an important part in the elementary teaching of every 'subject,' whatever that subject may be, which enters into the curriculum. Even such an abstract 'subject' as arithmetic may be elucidated by 'object lessons,' while in communicating a 'knowledge of the commonest natural truths,' to use Professor Huxley's phrase, 'object lessons' are absolutely essential.

The next point is that all pupils should have the opportunity of gaining a 'knowledge of common natural truths'; in other words, should be taught elementary science. It is not necessary for this purpose that the pupils should be taken through a course of lessons and text books dealing with each particular science from the a b c of it to a very advanced stage. School boys have no time to receive instructions in every science from the beginning to the end. But that they have no time to go to the end is no reason why they should not be so taught that they may grasp the elementary facts and principles on which the most important sciences are founded; that they may obtain an intelligent knowledge of common natural truths; and that they may have their faculties so developed that in their subsequent career they can easily assimilate instruction in any subject or science which they may elect to take up.

16. Three defects, involving important departures from the canons laid down in the preceding paragraph, were, in one province or another, found to exist. The *first* was that in the educational curriculum 'object lessons' are sometimes treated as a separate 'subject,' and not only so, but as an 'optional subject,' that is to say, pupils may choose whether or not they will learn 'object lessons' at all, and if they do so choose, they study 'object lessons' as something apart from other subjects. It has now been admitted at all the recent conferences that 'object lessons' should be treated as a 'compulsory *system*' of education and not as an 'optional *subject*.' This indeed is how they are treated in Bombay and in some other provinces where readers and text books in practically all subjects are illustrated and explained by 'object lessons.'

17. The *second* defect was that many pupils are debarred from attaining a knowledge of common natural truths and principles because the curriculum is so framed as to exclude the teaching of elementary truths and principles in any science or subject, unless that science or subject is followed by the pupil to the very end of the school course. Thus 'geography' is in some provinces allowed to be an optional subject, and the lowest or most elementary 'standard' in geography, *i.e.*, the 'standard' laid down for those boys of the lowest class in a school who take up that subject is 'instruction in the meaning of a map or plan,' supplemented by 'making maps of the school room and its compound or by comparing maps of the village and of its surrounding fields with the facts on the ground.' It is obvious that all boys whether they take up geography or not should be taught in this way the meaning of a map or plan, a proper comprehension of which is necessary for all professions, including agriculture, as well as for the ready understanding of all educational works which are illustrated by maps, plans and diagrams. But under a curriculum which makes 'geography' an optional subject and gives to it exclusive possession of instruction in the meaning of a map or plan, a boy who elects not to learn geography is deprived of the opportunity of learning what a map or plan means.

18. The same subject, geography, may be employed to illustrate the *third* defect, which is that for purposes of elementary education instruction in any one subject taken up is carried too far; so far indeed that time is not left for others equally important. Thus boys who had taken up geography were found to be learning by heart the name and position of every county in England; the advantage which when they first joined the school they had gained over other boys, in learning how to read maps and how to draw plans, was thus handicapped later on by the disadvantage involved in the waste of time devoted to acquiring knowledge practically useless to them.

It was admitted at the conferences where the subject was discussed, that when once the principles of geography have been learned, and a knowledge of those geographical facts likely to be useful to the pupil through life has been gained, valuable time should not be lost in a wearisome study of details of which a knowledge does nothing to improve the faculty, and is otherwise of little or no positive use; that the time would be far more usefully employed in acquiring a knowledge of 'common natural truths' in other branches of science.

19. It is not the intention of the Government of India to follow province by province the discussions which turned on these questions or to criticise the suggestions made in the direction of reform at each conference. They deem it

sufficient to observe that there seems to have been little difference of opinion on the questions raised; that where defects of the kind described had existed the officers representing the education departments, supported by the other members of the conferences, have agreed to suggest appropriate reforms; and that the local Governments have in every case indicated their willingness to accord favourable consideration to their proposals.

20. On three points only do they consider that definite suggestions or remarks may be useful. The first is this: It appears to have been rightly assumed at the earlier conferences that the term 'elementary science' may be so widely interpreted as to include object lessons illustrating 'natural truths,' the meaning of a map or plan, and other simple subjects of the kind as well as the elements of botany, of zoology and of other so-called 'sciences.' Taking this view they suggested that 'elementary science' thus interpreted should be a 'compulsory' and not an 'optional' *subject*. This was a step in the right direction. But at the later conferences it was advised that 'elementary science' should not appear in the curriculum at all as a separate subject, but be taught in school readers illustrated by object lessons, care being taken that no important elementary science should be omitted from the books supplied to the reading classes. This latter plan has already been adopted in the educational scheme of the Bombay Presidency, and to a certain extent in that of some other provinces, and is commended by the Government of India for favourable consideration elsewhere.

21. The second matter to which attention may be drawn is of importance In the educational despatch of 1854, Her Majesty's Secretary of State quoting from the Lieutenant-Governor of the North-Western Provinces stated that the land-record system in Indian provinces 'offered the stimulus of a direct interest 'for the acquisition of so much knowledge as would enable each man to look 'after his own rights' thus indicating that it would be an advantage to the community to include instruction in this subject in the educational course. The conference of 1893 took up this question. 'The ultimate objects,' it was said, 'at which the education of an agriculturist aims, are not all of them directly 'connected with the tillage of the soil. It is of importance to every cultivator 'that he should be able to understand and interpret the meaning of entries in a 'cadastral map; that he should have proper acquaintance with the system of 'rural accounts; and that he should be able to read and comprehend the land-'records maintained by the official staff. For these purposes he should receive 'instruction in drawing, arithmetic and such simple surveying and mensuration 'as can be easily taught to any boy. It is equally desirable to bear in mind both 'that the objects enumerated in the preceding paragraph are often of as much 'importance to those who, though not actually tillers of the soil are likely in 'after life to hold any interest in land as to those who cultivate it, and that 'instruction in the direction indicated is as useful for general purposes of educa-'tion as any other kind of teaching. It is perhaps even more useful.'

The same arguments were pressed at some of the recent conferences. The plan had already been introduced in some provinces, among others in Assam, where 'the advantage of teaching the people the use of the cadastral village map' was held by the director of the land-record department to be 'very great as gradually enabling them to become more independent of officials in arranging their own affairs.' The Financial Commissioner of the Punjab, supported by the conference, went further in urging that as the bulk of the population, whether actually engaged in tillage or not, were interested in land, instruction in the village map and records would be generally useful to the whole community. The Government of India, adopting the same view, have no hesitation in inviting local Governments and Administrations to require their educational officers, in consultation with the departments of land records, to devise, where this has not already been done, some plan under which instruction in village maps and land-records should be included in the curriculum of education for all calsses. Similar arguments exist in favour of instruction in simple commercial accounts.

22. The third matter which deserves notice is the position which 'agriculture' should take in the school course. Two questions were considered. One whether 'agriculture' should be taught as a separate subject at all, or, like

elementary science, be embodied in readers; another whether, if admitted as a separate subject, instruction in it should be optional or compulsory.

It seems to have been generally agreed that in the earlier training of boys in the lower primary schools the interests of agriculture would be sufficiently served by compulsory instruction in elementary science (on the system already advocated through readers illustrated by object lessons) in view of the fact, noticed in a preceding paragraph of this resolution, that almost all instruction conveyed in rural schools through the medium of object lessons must acquire an agricultural colouring because the surrounding objects used for illustration are themselves connected with agriculture. In these opinions the Government of India is disposed to agree.

In most provinces, however, it was considered that 'agriculture' and 'sciences ancillary to agriculture' should be at least made *optional* subjects at a later stage in the school curriculum. Opinions differed as to the exact point in the school course at which these should be brought in and as to the character of the instructions to be given. But it was generally recognized that a distinction would have to be made between instruction designed for general educational purposes, and a course of study leading to an agricultural diploma or degree.

With these remarks the Government of India is content to leave the questions at issue to the decision of the local Governments and Administrations.

23. *II.—Readers and text books.*—The distinction accepted at the recent conferences between 'readers' and 'text books' was that while the former contain easy lessons on a variety of subjects, the latter deal exclusively with a particular subject or science. The agricultural conferences of 1890 and 1893 laid much stress on the necessity of simplifying both readers and text books. The defects pointed out in school books dealing with elementary science and agriculture were that the language employed was often above the comprehension of young boys; that the terms used were too technical; that the vernacular translation of English scientific words was frequently imperfect; that the subject matter was not seldom badly selected; and that the text books sometimes aimed at carrying the pupil further than was necessary for any practical purposes.

24. The Government India is pleased to observe from the proceedings of the recent conferences that a great deal has been done during recent years in almost all provinces to reduce these defects and that further attention is now to be given to the subject. The compilation of good readers and text books for the young in connection with agriculture and sciences ancillary to agriculture is a task of which the difficulty is not always appreciated. In England the best text books on such subjects have often been written by men of the highest scientific reputation. In some of the continental countries they are compiled and issued under the supervision of the central bureau of the Government. In India on the other hand, while there have been many useful books compiled for school use, no uniform policy has been adopted in their preparation, and there appears to be in consequence a considerable inequality in the character and value of both readers and text books in various provinces. Taking the case of agriculture, one primer on this subject has been compiled by a civilian, another by an agricultural expert, others have been based on these two books by educational officers, while others again have been independently compiled by non-officials. Evidence was given by a skilled witness at one conference that the current text books on agriculture and other such subjects are quite unsuited for young learners; that they are too abstruse; and that they deal with chemical problems and other matters beyond the comprehension of the pupils.

25. Uniformity in India is impossible. Any attempt at precise uniformity in teaching was deprecated by the Education Commission. The differences of language; of climate and physical condition; of the natural objects used for oral lessons, or as illustrations of school books; of local customs and practices; all these are insurmountable obstacles to uniformity of text in readers and primers required for educational purposes. But it may be doubted whether these variations need stand in the way of a general uniformity of plan and system.

26. It has been said that nothing requires a higher exercise of the intelligence than to serve up knowledge in a form in which it can be easily assimilated and digested by the young, and so far as this is the case, the compilation of school books demands the employment of the best intellects in the country for the work. The question indeed has been raised whether the scheme on which elementary readers and text books relating to agriculture and allied sciences are to be framed should not be worked out and revised from time to time by a competent committee of educational and other official experts who would, initially, deal only with the frame-work and general design of the educational books, leaving details to be filled in by provincial authorities, so as to suit the circumstances of each locality and who would subsequently offer criticisms on any defects which might present themselves to their notice in the completed books. The subject is however one which demands fuller consideration. At present the Government of India are content to record their opinion that readers and text books dealing with agriculture and allied sciences should not only be brought up to an equally high standard of arrangement, simplicity and clearness throughout India, but also that they should not fall in these respects below the best standards in Europe; that it would seem difficult to attain this object unless some of the very best men available in the country are allowed to devote for a certain period the whole of their time and attention to the subject; and that the matter is one of such grave importance in connection both with the interests of agriculture and with the sound education of the people as to deserve deliberate investigation.

27. *III.—Training Schools.*—The Conference of 1893 insisted on the necessity of providing teachers competent to give instruction in the elementary principles of agriculture. The conferences which have now been held go further. They demand that teachers should be trained to teach all elementary sciences on the system of 'readers and object lessons' and in many provinces lay stress on the impossibility of introducing the system unless school masters are specially trained in it themselves. That something has been done in this direction has been admitted, but that, taking India as a whole, progress has not been sufficiently great is clearly proved. One obstacle exists in the fact that the teachers in the lower classes of schools are so poorly paid that they cannot in many parts of India be compelled to go through a course in training schools; another that even in the case of those who do attend the training schools, it is not always easy to provide for them at those schools competent instructors in what is really a difficult branch of a schoolmaster's work.

28. The desirability of instructing schoolmasters how to teach by means of object lessons and readers has been acknowledged by local Governments and Administrations, to whom must be left the decision as to what practical measures can be taken to develop training schools in this direction. But apart from this general question there appeared to be, at more than one of the recent provincial conferences, a strong feeling in favour of requiring training school students, either before or after appointment as masters, to pass through a course on an agricultural farm. This measure had indeed been urged by the conference of 1893.

29. In Madras, where the subject has for some years been under discussion, it was proposed that training school students should go through a course under a competent agricultural master on experimental farms in the vicinity of training institutions. The management of the farm would be in the hands of the agricultural department and the instruction of training school students in the hands of the educational department, who would utilise the agricultural farm and the experiments conducted on it for purposes of illustration. The Madras Government, while apprehending that a considerable time will be required to bring the scheme into operation, have accepted these views as sound. In the Central Provinces practical action has been taken in sending annually from each of the western districts four students or schoolmasters after they have passed through the training schools for a six months' course under an Educational officer at the agricultural farm in Nagpur. Strong evidence was given in this province that schoolmasters thus trained were the only efficient teachers of agricultural subjects and of cognate sciences in the schools. The extension of the system was strongly advocated by the revenue officials on the conference.

30. In the North-Western Provinces a few students go through a two years' course at a Government farm, some of whom are understood to be designed for schoolmasterships, and the Allahabad University has so far supported the movement in the interests of a supply of agricultural teachers as to allow a special examination in science and agriculture from those of the farm students who go up for the 'school trial' certificate. The students are not, however, as proposed in Madras and as is the case in the Central Provinces, trained by the educational but by the agricultural department, and the course is perhaps too long and the numbers too few to have any wide influence on the educational staff.

31. In Bombay, where special attention has been paid in the training schools to the practical instruction of teachers, one of the seven training schools is provided with an agricultural teacher who has obtained a College diploma, and it has been recommended by the Bombay conference that all the training schools should be similarly equipped. The question of using farms for the instruction of training school students was not raised at Bombay, but the principle has been accepted as regards training school teachers in the suggestion that the College diploma shall include a practical course on the Poona farm.

In Bengal the utilization of the Government farm for the purpose of training schoolmasters was recommended.

Thus there is a decided movement which has already taken some positive form in the direction of according to schoolmasters a practical training in agricultural subjects.

32. The Government of India recognize the undoubted utility of the policy advocated and accept the preliminary success obtained in the Central Provinces as *primâ facie* evidence of its practical results and feasibility. They invite all local Governments and Administrations to bring the question, where this has not already been done, under the serious consideration of their agricultural and educational departments, and to state, in forwarding the agricultural report of the year, what views they have formed on the subject.

33. *IV.—Higher agricultural education.*—The discussions on these subjects led to important conclusions. The Government of India have not hitherto pressed for the early establishment of high-class agricultural institutions in view of the fact that no sufficient evidence had yet been produced to show that students trained at them would find any satisfactory opening in life. They held too that high-class educational institutions professing to teach such subjects as agriculture, forestry, veterinary science, etc., should be national rather than provincial; that one or two national colleges would meet the present needs of all India; that the colleges, if founded at all, must be equipped with a highly competent staff of teachers; and that the replication of the expense in every province would not be justified. Following this view the 1890 conference, considered that the agricultural college already existing in the Madras presidency and a second to be attached to the Forest School at Dehra, would satisfy the needs of all India.

34. Dr. Voelcker recommended that special attention should be directed to agricultural education in colleges, but added that separate institutions would not be needed if existing colleges of science were expanded by the addition of an agricultural branch. The conference of 1893 did not formulate any specific recommendation, but agreed with the conference of 1890 'that the claims 'of men trained in scientific agriculture to appointments in the revenue and 'cognate departments should be as freely recognized as those of men trained in 'law, arts, and engineering.'

35. The question has now been put on a somewhat new footing by the argument urged in the three provinces of Madras, Bombay and Bengal, that a thorough and practical education in agriculture and allied sciences, ending in a high-class college diploma or in an agricultural degree, develops the intelligence of students just as well as a literary course; that it certainly fits them as well, if not better, for duties in the land revenue and cognate services; and that it is very desirable to encourage the appointment of men so trained. This policy has long been advocated by the Madras Government, who have recently carried it into practical effect by a Government order making the diploma in agriculture of the same value as a B.A. degree as a qualification for higher Government

service. It was further pointed out at the Madras conference that the proposed measure of passing all training school students through a practical course on a Government farm would require a staff of training school teachers instructed in the more advanced branches of agriculture; and that in recent years ten per cent. of the college sudents belonged to the land-owning class. The college was therefore needed—(1) for a large number of candidates for official employment, (2) for a certain number of training school teachers, and (3) for a material number of landowners.

36. It is evident that if the policy indicated is followed in other provinces there may be justification for a larger number of high-class agricultural colleges than the two advocated by the conference of 1890. The policy has been very strongly pressed in Bombay and is supported by the authorities there on similar grounds to those urged in Madras. 'We want,' it was written in a note submitted to the Bombay Government, 'as officials in the districts, rather 'than technical experts, men who have had their thoughts directed to agricul- 'ture and whose minds have been taught to dwell on it; whose reports on the 'state of the crops, the imminence of famine or the condition of the agricul- 'tural population will be animated by personal interest and intelligence of things 'agricultural; who, when endeavours are made to help the cultivating classes 'by a State loan, distribution of seed and so forth, or to stimulate them to 'adopt well-tried improvements, will have their zeal quickened by sympathy 'with and appreciation of the measures proposed.' The conferences in Berar and the Central Provinces followed the lead given in Bombay and suggested that students should be sent from those provinces to the Bombay College. The Bengal conference, adopting similar views, claimed that the province was justified in having a college of its own, and recommended that the engineering college at Seebpur, near Calcutta, should be expanded for the purpose. The conferences held in the Punjab and the North-Western Provinces endorsed the arguments put forward in Madras and Bombay, but were prepared to advocate the establishment of one college for the two Provinces. In Burma and Assam local conditions did not justify proposals for a high-class agricultural institution in either province, though it was admitted that students might occasionally be sent to one or other of the colleges elsewhere. Thus the outcome of the deliberations of the conferences has been that there should be four high-class agricultural colleges, *viz.*:—at Madras, at Bombay, at Calcutta, and at some place in Northern India. These four institutions would meet the ordinary requirements of Berar, the Central Provinces, and the Punjab, and the occasional needs of Burma and Assam. The opinions of local Governments on the question will be separately invited.

37. In every province which possesses or makes use of an agricultural college, there must, it has been urged, be a special school course leading up to it. This has been provided in Madras and Bombay, and will doubtless be arranged for elsewhere when the time comes to do so. In Bombay the question has been raised of establishing an agricultural degree at the University, in addition to the College diploma, and was, when the conference closed, under the consideration of the authorities.

38. A subsidiary question was discussed at the conferences, whether in addition to the college there should be a school at which students should be trained for certain subordinate revenue appointments and for such posts as assistant managers on court of wards, estates, etc. School classes have already been established at the Government farms in Nagpur and Cawnpore with this object, the Nagpur farm being also utilized by the educational department for the instruction of training school students and schoolmasters. The period of the agricultural course is two years in both places, but the course for schoolmasters is at Nagpur only six months. In Bengal the conference suggested that there should be two courses of different lengths at the same college, the shorter for subordinate officials, the longer for those who aspired to the College diploma. The question is one which requires further consideration and which would be perhaps more satisfactorily worked out by inter-communication, with the consent of local Governments, between the educational and agricultural departments of the provinces concerned, and by a review of the results which have been obtained at Nagpur and Cawnpore.

39. The local Governments and Administrations in their reviews of the conference proceedings have generally agreed in the policy put forward—and the Government of India are themselves prepared to give it every encouragement. But they look upon this, as on all other approved recommendations of the conferences, as only a part of a general working-plan which must be developed as circumstances, admit. For the present they are content to place upon record the conclusions which they consider to be justified by the discussions which have been held:—

(1) that agricultural degrees, diplomas or certificates should be placed on the same footing as corresponding literary or science degrees, etc., in qualifying for admission to Government appointments, and more particularly those connected with land-revenue administration;

(2) that there should be not more than four institutions giving a high class diploma, *viz.*, at Madras, Calcutta, Bombay and some place in the North-Western Provinces, and that these should be utilized by other provinces;

(3) that the diploma should eventually be compulsory in the case of certain appointments, *e.g.*, agricultural teachers at training schools, assistants to the director of agriculture, etc.;

(4) that the practical instruction of candidates for certain subordinate appointments at a school class or an experimental farm should be further considered;

(5) that a special school course leading up to the agricultural diploma degree or certificate, is required;

(6) that the practice of allowing school masters either before or after appointment to pass through a course of a few months on a Government farm is one which deserves consideration.

Extract from the Proceedings of the Government of India in the Department of Revenue and Agriculture,—(No. 19—98-1, dated Simla, 20th September 1895.)

READ—

Paragraph 25 of Government of India, Home Department Resolution, No. 199, dated 18th June 1888, on the Review of Education in India in 1886.
Proceedings of the fifth meeting of the Agricultural Conference held at Simla in October 1893.
Paragraphs 527 and 528 of Dr. Voelcker's Report on the improvement of Indian Agriculture.
Paragraph 17 of Government of India, Home Department Resolution, No. 2, dated 7th September 1894, on the Progress of Education, 1887-88 to 1891-92.

RESOLUTION.

In paragraph 17 of the second Resolution mentioned in the preamble, allusion was made to the suggestions of Dr. Voelcker respecting the education of the agricultural classes. The subject has now to receive renewed attention in connection with the recommendations of the agricultural conference which was convened in October 1893 to consider Dr. Voelcker's Report.

2. The general view taken by the Government of India in the Resolution of 1894 was that greater success is to be expected from making instruction in the rudiments of agriculture part and parcel of the primary system of instruction in the country, than from teaching it as a subject apart from the general educational programme, and that such general enlightenment and intellectual expansion of the agricultural classes as would enable them to perceive for themselves the small reforms which are within their means and opportunities, would be more likely to produce substantial results than special instruction in particular agricultural processes. This view is in practical accord with the opinions expressed by the delegates of Local Governments and Administrations at the Conference of 1893. In their second Resolution they recommend that as a general rule instruction in agriculture should be combined with the existing course of education and not depend on separate special institutions.

3. The principles which govern the introduction of agricultural instruction into the educatonal system apply also to all branches of technical instruction. The question, therefore, is not merely how to adapt education to the training of agriculturists, but how so to fashion the plan of instruction as to promote in the pupils taught the power of assimilating easily any kind of technical instruction. The moulding of the educational scheme into a form which will lead to such a result is one on which ideas and methods have during recent years undergone a radical change in all of the more advanced countries of Europe. One great feature in the change has been the substitution of the idea of development of faculty for that of mere acquisition of knowledge. It is now acknowledged that the hand and the eye should be trained; that the powers of observation should be brought into play and improved by exercise, and that the actual teaching of a particular trade is of less importance, in the first instance, than educational methods which will adapt the pupil for the subsequent reception of technical instruction of any description. "A system of education," writes the late Professor Huxley, "which does nothing for the faculties of observation, which trains neither the eye nor the hand and is compatible with utter ignorance of the commonest natural truths, may naturally be regarded as strangely imperfect." All technical instruction must indeed be founded on a preliminary training of a practical character in primary and secondary schools. In the reports recently submitted from various counties in England on the results achieved at technical institutions a common cause of failure was found to be the absence of any training of the powers of observation in the schools of lower grades. On similar grounds a charge was laid against the educational system formerly prevailing in the rural schools of England that it "actually unfitted the children of farmers for an agricultural career." "Nevertheless," wrote the author of the second Report published by the Royal Commission on technical instruction, 'there need be nothing in any scheme of rural education specially designed for the agricultural classes which should unfit the children for any other career for which individually they may be better suited." The Government of India hold the same view. They admit indeed that agriculture, as the mainstay of the prosperity and wealth of the greater part of the population of India, deserves, more than any trade or profession, the special attention and care of those who are responsible for the instruction of the rural classes; but they are convinced that the early school instruction which is most calculated to produce eventually the best agriculturists will be equally useful to those who intend to follow any other occupation.

4. At the same time the circumstances and surroundings of rural schools must give to any educational plan based on the principles already indicated a leaning towards agriculture. In the official syllabus for rural schools in France it is laid down that "teachers should commence by directing the attention of pupils to visible and tangible objects which they should make the children see and feel, and then put them face to face with concrete realities, from an intelligent comprehension of which they will be led, by a gradual exercise of their reasoning faculties, to the formation of abstract ideas." And in the Report of the Royal Commission already quoted it is urged that "rural education should be based on what a child can see round him." The view recorded in the

proceedings of the Conference of 1893, that any system of practical education in rural schools must, for whatever class intended, acquire an agricultural colouring, because the surrounding objects are themselves agricultural seems therefore to be unexceptionable.

5. In the Resolution of 1894 on Educational Progress the Government of India have acknowledged that there is a general tendency to modify the course of primary instruction in the desired direction. In some Provinces material progress has been made. But they are not fully aware how far the principles advocated have been systematically adopted, or to what extent opportunities exist for their wider introduction. Nor have they been informed what action, if any, has been taken on the suggestion in the 25th paragraph of the Resolution of 18th June 1888 that conference should be held with which the Agricultural Department should be associated for the purpose of discussing the educational systems in its bearings on agriculture. It is true that the questions under examination have not so far as the agricultural classes are concerned, yet assumed the general importance, which they will possess in the future, in view of the fact that as a rule the rural population actually engaged in tillage have not hitherto made any appreciable use of the rural schools, otherwise than with the object of training their children for occupations which have no immediate connection with agriculture. But the time must soon come when this position will be changed. Serious discussion of the subject ought not to be longer postponed.

6. The Governor General in Council desires therefore that the suggestion of the Resolution of 18th June 1888 should now be carried out, and that advantage should be taken of the visit of the officer deputed by the Government of India to discuss the proposals of the Agricultural Conference of 1893 to hold in each Province a Conference of such officials as the Local Government may appoint, including, it is suggested, representatives of the Educational and Agricultural Departments, for a formal examination of the Resolutions recorded at the fifth meeting of the Conference of 1893 with the view of submitting definite suggestions and proposals for the consideration of the Local Government or Administration.

7. The Government of India do not wish, until Local Governments and Administrations have had the opportunity of recording their own views, to deal further with the specific proposals of the Conference, nor do they desire to authorize the officer deputed by them to convey any final judgment on the issues raised. The chief duty of that officer will be to place for their information before the Local Governments or their representatives either facts and statistics obtained in other provinces, or the reports of other Provincial Conferences. For the present a sufficient indication has been given of the general views of the Government of India and of the desire of the Governor-General in Council that the subject should be earnestly examined in the interests of future agricultural development.

SEVENTH RESOLUTION.

Publication of agricultural information.

The despatch of Her Majesty's Secretary of State directing in 1881 the formation of departments of agriculture, stated that one of their main objects was to be 'the rendering available of facts and statistics in order that Government and its officers may always be in possession of an adequate knowledge of the condition of the country, its population, and its resources.' This injunction must be held to include the publication in an easily accessible form of all information likely to be useful to the general public. No. 55, dated 16th June 1881.

2. The various agencies established or contemplated by which information, facts and statistics are or will be collected have already been described. They have been brought under three main divisions—(i) Land-record establishments; (ii) Scientific departments under imperial direction; and (iii) Provincial departments of agriculture and their experts. The duties in respect to collecting and publishing information which devolve in each case upon the provincial and imperial departments, respectively, will now be considered.

I.—Information derived from land-records.

3. Information supplied by the land-records and by the establishment which maintain them can be 'rendered available' in three ways:

Firstly, by the arrangement of the records themselves in such form that they can be easily searched by district officials and be made to yield readily information of any kind that is required. This has been or now will be effected in every province in which village records are maintained. The system accepted at the recent conferences for providing a simple abstract of the facts and statistics for each village, which will at once indicate its progress or decline, has already been described in the third resolution of this series. And the whole scheme of land-records has now been so arranged in every part of India which possesses land-record establishments that information is promptly conveyed to the authorities of injury or distress caused by sudden calamities.

Secondly, by the collation and review of the statistics for each district and division for the province, and for the whole empire. This duty is respectively performed for the province in the annual or periodical reports of district and divisional officers, in the review of them by the land-record department, by the higher revenue authorities, and by the local Governments; and for the empire by the compilation and discussion of them in the statistical department of the Government of India, by which department they are published for the information of the general public, of the home authorities, and of Parliament.

Thirdly, by the collection and collation of special facts and statistics under appropriate subject heads. The method which is advised of arranging information under subject heads, with a view to its eventual publication in an intelligible form, will now be described.

4. The system may be most conveniently described as a system of 'ledgering', and is an essential duty of the departments of land-records and agriculture. In every departmental office arrangements should be made for the separation of pamphlets, extracts, letters, reports, etc., referring to each subject which is of sufficient importance to deserve a distinct heading, in such a manner that all papers relating to that subject may be brought together for convenient reference. If this principle is observed the details may be left to the discretion of the departmental officers. But as the system is one which has been successfully elaborated in the office of the Reporter on Economic Products that official has been instructed to publish a brief description of it for general information.

5. The Government of India have already indicated in the third resolution of this series how the land-records and the land-record establishments can be utilised for supplying facts and statistics in respect to any agricultural practices or conditions which may be the subject of enquiry—such as methods

of cultivation, the diseases of agricultural plants and of cattle, and so forth. Information thus directly solicited would be naturally ledgered under its appropriate head and published, if necessary, by the department or supplied to the scientific department which requires to utilise it.

6. Beyond the information thus specially sought for there are many facts and statistics which are brought to the notice of district officers in their inspection of the records or otherwise, which are of sufficient interest to deserve compilation and perhaps eventual publication by a central office. Thus in the abstracts (to which allusion has already been made) of village statistics, the occurrence of various agricultural defects in particular localities may be brought to light. In one group of villages it may be the prevalence of a noxious weed, in another the continual recurrence of a plant disease, in a third the spread of saline efflorescence, in a fourth the appearance of an obscure cattle murrain. Some system should now be established under which district officers should be encouraged to communicate to the department of land-records notes of any remarkable facts bearing on agricultural conditions which may come to their notice through the village abstracts. It would probably suffice that an order should be given by the district officer directing that a copy of any entry in the circle books recording the occurrence and cause of any serious deterioration affecting a group of villages or an agricultural tract should be sent to the office of the Department of Agriculture.

7. It will be presently explained that the system of 'ledgering' advocated will not require that any facts and statistics thus supplied need be immediately utilised by the central department of the province. It will suffice that they should be recorded in their proper place, until the time comes when the subject to which they relate is brought under special examination. Information thus collected will, when eventually collated and reviewed, be of material use in providing that 'adequate knowledge of the condition of the country' which Her Majesty's Secretary of State called upon agricultural departments to supply.

II.—Information published by scientific departments under imperial control.

8. The second agency by which information is collated and published includes the scientific departments directed by the Government of India. Some of these are independent of provincial aid, their publications being regulated by the heads of the departments in communication with the imperial Government.

9. In every branch of work progress in executive operations is published in annual reports. But other information of more general interest is published in special reports, the character of which will now be briefly described.

In the *Survey* Department the maps and charts that are issued at the head-office practically embody the greater part of the geographical information secured by Survey operations.

The *Geological* Department publishes special memoirs containing a detailed account of the results of any important investigation made by its officers, and exhibits its collections for the inspection of the public in the Indian Museum at Calcutta. An annual review of the mineral products of India for the information of those interested in mining enterprise and others is published annually at the request of Parliament, and is edited by the reporter on economic products.

The *Meteorological* Department is one on which the obligation to provide full and ample information for the use of officials and of the public was strongly urged by the Famine Commissioners. The measures taken, under the direction of the Government of India, to fulfil this object have been already indicated in the fourth resolution of this series. By daily maps and weather reports, telegraphed and posted to all parts of India, by storm warnings, by weekly and monthly reviews, annual reports on weather published in the official gazettes, and by special memoirs on storms, tides, and rainfall, the meteorological department has given full effect to the policy which has been pressed upon it.

The *Botanical* Survey of India has recently commenced the issue of a series of 'records', edited by the director, in which are embodied the results of the tours and investigations of the botanical officers throughout India. Special monographs are also published by the director under the title of 'Annals of the Botanic Garden', while the herbaria at the head-quarters of

each officer are open to the inspection of the public. The botanical officers are further required to communicate to the reporter on economic products for eventual publication by him any facts of interest which their investigations may bring to light in connection with plants of economic value.

Economic products have, since the Imperial Department of Revenue and Agriculture was created in 1881, constituted the largest field in which organised measures for collating and publishing information have been taken by the Government of India. In no department of science is information more required by the commercial and general public as well as by officials engaged in administrative work. As already explained in the fourth resolution of this series a descriptive catalogue under the title of a dictionary of economic products has been prepared and published by Dr. George Watt, the official reporter, its compilation having occupied ten years. But the dictionary was only designed to bring together facts and statistics already recorded in some form in books, reports and journals, or in the manuscript papers of Government offices. The still more important work of collecting and collating new information has now been commenced, with a view to its ultimate incorporation in a revised edition of the dictionary, as well as to the current publication of so much of it as may be of immediate interest.

10. A scheme has been drawn up under which the current work is divided into three branches:—

(1) The compilation of 'handbooks', which are practically revised 'dictionary' articles, relating to a limited number of economic products, about twenty, of which collections are annually sent to the Imperial Institute. The handbooks are designed for circulation and sale in England and other countries, as well as in India.

(2) The issue of a series, designated 'the Agricultural Ledger,' of pamphlets containing any information of interest communicated to the official editor (the reporter on economic products) by any of the scientific or provincial departments. This series covers more ground than is occupied by economic products including as it does notes on any subject connected with agriculture; but economic products, under which head are comprised all field and garden crops and all forest produce, occupy the largest space in the publication. The agricultural ledger is intended for circulation to all officials interested in the subjects dealt with, as well as for distribution to the public.

(3) The collection by the reporter of extracts from journals, from settlement reports, and other such sources of information, as well as of notes communicated from time to time by private or official contributors. These are ledgered in the reporter's office on a system which brings together all papers referring to the same subject in such manner that the information they contain can be readily utilised, and if necessary condensed, whenever the subject may be eventually dealt with, whether in a handbook, a number of the ledger series, or finally in a dictionary article. At the same time any matter of immediate interest to the commercial public is communicated in special circulars to those concerned in anticipation of more formal publication.

11. The heads of all departments, provincial and imperial, have already been invited to bring to the notice of the official editor any passages in reports and publications connected with their work which deserve to be brought to his notice for inclusion in his office ledgers or for communication to the public. The Government of India take the present opportunity to direct continuous attention to this useful practice, which tends to the preservation in an accessible form of much valuable information, which would be lost sight of in the pages of reports on current administration or of other blue books which are relegated to the shelves of official record-rooms, and seldom again consulted.

12. In the *Veterinary* Department a system of ledgering similar to that employed in the economic product department is adopted. When sufficient information of interest on any subject connected with cattle, horses, animal disease, etc., has been collected by the special officer who, as stated in the

fourth resolution, is charged with this duty, it is communicated in the form of a number of the agricultural ledger series for publication by the official editor.

The *Bacteriological* branch of the department publishes the results of its investigation in a series of special memoirs, which are issued whenever sufficient matter is available for publication. In some cases these would be communicated to the agricultural ledger.

Information collected in the department of *Agricultural Science* is communicated in the manner already explained to the official editor of the agricultural ledger for issue in that series.

In the section of *Agricultural Entomology* memoirs are issued from the Indian Museum by the officer on the staff engaged in investigations in that field. The information collected by him is also made available for publication in the agricultural ledger series.

General information about *Forestry* is conveyed to the public in an annual review published by the Inspector-General of Forests, while any detailed facts and statistics of interest are published in the agricultural ledger series. A useful periodical entitled the 'Indian Forester,' to which Forest officers are the chief contributors, is utilized by the Department for conveying interesting information to the official and general public.

In the department of general *Statistics* periodical reports, reviewing the statistics received from all provinces and departments, will now be published periodically by the Director-General of the newly-constituted department. These comprise, among others, monthly, quarterly and annual reports on exports and imports, on inland road, rail and river-borne traffic and crop forecasts and outturns. One of the most important publications is an annual return of the agricultural statistics of British India presented to Parliament.

Independently of the new statistical department, the imperial department of agriculture undertakes the publication, periodically revised, of a *statistical atlas* in which the circumstances and resources of the empire are illustrated by maps, statistical diagrams, and brief descriptive essays contributed by directors of scientific departments or by other selected officials. The second edition of this work has recently been published.

Art and *Industries*, though not represented by any separate imperial department, have not, in the scheme of publication, been overlooked. An illustrated journal of Indian art to which all officials and others interested in the subject in India or in Europe are invited to contribute, was, in the year 1888, brought out at the instance and with the aid of the imperial Department of Revenue and Agriculture by a well-known London art publisher and is issued monthly. A 'technical art series' containing illustrations of Indian art and architecture is also published by the officer in charge of the Photographic section of the imperial survey office. Both of the above publications are partly designed for educational purposes as well as for preserving a knowledge of the best art of the country. A third series, designated 'drawing examples' and also published by the Survey Department, contains a special selection of oriental art drawings for use in schools.

III.—Information published by Provincial Departments.

13. The third agency upon which the duty devolves of publishing information, facts and statistics on agricultural and scientific subjects otherwise than in connection with land-records, comprises the agricultural departments of the provinces and experts under their control.

14. The system of 'agricultural ledgers' adopted by the Government of India was taken from Madras, in which Presidency for some years the practice of issuing 'agricultural bulletins' had been established. There are many subjects of provincial importance which are too dependent on local conditions and circumstances, to be of useful interest to other provinces or to the general public. The maintenance of a provincial as well as of an imperial series of publications is, therefore, most desirable, and some other provinces have now followed the example of Madras, and the Government of India would be glad to see the practice adopted in every province.

15. Those papers in a provincial series which are of general interest outside the province are, under a scheme for provincial co-operation recently circulated,

to be communicated to the editor of the imperial series for wider circulation, and in this view the pamphlets of both provincial and imperial publications are to be of the same pattern.

16. The Government of India cannot press too strongly upon local Governments and Administrations the desirability of encouraging the directors of agricultural departments to provide for the free and constant contribution of useful information to the imperial editor. As explained under the previous sections such information may be of two kinds, either for immediate publication in the imperial series, or for inclusion in the ledgers of the editorial office. With this object the agricultural department should, subject to the instructions of the Local Government, devise a system under which, as in the imperial departments, all passages in official papers and reports, of which the preservation for future publication may be desirable, should be marked and brought to their notice. To no class of reports do these remarks refer more particularly than to settlement and land administration reports. Much of the interesting information on agricultural subjects contained in them is lost to future generations of officials unless promptly extracted and ledgered under appropriate heads. A schedule of the headings which should be adopted for this purpose has been elaborated in consultation with provincial authorities and is now in force throughout India.

17. There is another class of facts and statistics in which the Agricultural Department is essentially interested and which especially demand a careful system of ledgering, *viz.*, the results of experiments on Government farms or of investigations into agricultural practices and conditions. These, which are often of a technical character and of interest only to those actually engaged in agricultural experiment, do not always come within the scope of the agricultural ledger series or of the provincial bulletins. But papers on each subject, intelligently ledgered, may, as previously suggested by the Government of India, be usefully communicated direct by one provincial department to another, and may, whenever of general interest, be published in the provincial bulletins or communicated for inclusion in the ledgers of the imperial editor.

Every provincial department must at least be required to include in the information thus communicated to other departments—

(1) a statement of the working plan arranged in consultation with the agricultural chemist for every experimental farm and of the progress made in carrying it out each year in order that the officials of the agricultural department in each province may be kept punctually informed of the experiments, their objects and results which are being carried out in all other provinces;

(2) a statement each year of the agricultural defect or defects which have been made the subject of special enquiry during the past 12 months and a report on the progress and results of the investigation;

(3) any remarkable facts which may at any time come to the notice of the department, and which are likely to be of interest to the agricultural departments of other provinces.

18. In the Bombay Presidency the system has been followed of publishing a statistical atlas, on the plan of the imperial atlas, in which the conditions and circumstances of each district are illustrated by maps and statistical diagrams, and the measure is recommended by the Government of India for general adoption. Such atlases are of use and interest to the general public as well as to the administration.

19. The main principle which the Government of India conceive it necessary to bear in mind in the development of the scheme for recording facts and statistics is that the record of them in general reports dealing with a variety of subjects is of little or no practical use, unless those which are of interest are at once seized upon and preserved in ledgers under intelligent direction. The principle was accepted by the agricultural conference of 1893, and the Government of India trust that it may now, as far as possible, be carried into effective practice on a well-organised system by the departments of land-records and agriculture in every province in which action has not yet been taken to this end.

EIGHTH RESOLUTION.

Annual Reports.

1. One of the subjects which was brought before the agricultural conference of 1893 was the form which should be adopted for the annual reports prepared by provincial agricultural departments. It was, however, decided that the question could best be dealt with when the agricultural programme, which was to be based upon the proceedings of the conference, had been definitely determined. The scheme which is to be worked out by provincial departments has now been finally settled in communication with local authorities and governments and is embodied in the preceding resolutions of this series. The annual reports should, in the opinion of the Government of India, follow, as far as possible, the arrangement which has been observed in those resolutions.

2. The Government of India last dealt with the subject of departmental reports in the 3rd paragraph of their Resolution No. 52, dated 14th September 1887, and do not require that any material departure should be made in future from the instructions which it conveyed and which had for their object the curtailment of annual reports. The paragraph referred to is quoted below for purposes of easy reference :—

Paragraph 3 of Resolution No. 52, dated 14th September 1887.

3. *Report of the Department of Land Records and Agriculture.*—The annual publication in every Province of the Report of the Department of Land Records and Agriculture in the form prescribed in Circular Resolution No. 54 A., dated the 28th April 1884, is, in the opinion of His Excellency in Council, essential for the purpose of indicating the progress which may be annually made by the Department of Land Records and Agriculture in connection with the measures adopted in pursuance of the recommendation of the Famine Commissioners in each portion of the Empire. The report consists of two main divisions – Land Records and Agriculture—and is designed to show the executive work of the Department, not to comprise discussions on administrative measures, or to contain any description or summary of the economic or agricultural circumstances of the season. The Local Government may, however, require information of this kind to be submitted by the Department to the Chief Revenue authorities of the Province, for utilization in preparing the Land Revenue Administration Report, and may prefer that for that purpose it should be included in the land record section of the Departmental Report, rather than be submitted by independent communication. There will be no objection to this course. But there seems to be no reason why statistical statements concerning crops, irrigation, tenures, etc., should find a place in the Report of the Department as well as in the Annual Land Revenue Administration Report, to which latter they should, in the opinion of His Excellency in Council, be confined. The Agricultural section of the Departmental report should be restricted to an account of the executive operations of the Departmental officers, and to a brief description of, or reference to, any results of special interest which may have been obtained during the preceding twelve months, whether in farms, gardens, Government estates, or otherwise, but should avoid lengthy discussions on agricultural subjects and need not contain any detailed examination of the working of gardens, farms, or other agricultural institutions, which should be dealt with in the Department by orders on the annual reports. In accordance with the above remarks, His Excellency in Council is of opinion that no other review of the Annual Report of the Director of the Department of Land Records and Agriculture than that which may be included in the review by the Local Government of the Land Revenue Administration Report is necessary; and that it will suffice if a copy of the Report, together with any orders which may be passed thereon, is submitted for the information of the Government of India.

3. The question which remains for consideration is the arrangement which should be followed in framing an account of the executive operations of the Department. In Circular No. 54 A., dated 28th April 1884, headings had been prescribed which were based upon the agricultural programme embodied in the Resolution of 1881 dealing with the duties of agricultural departments. These will hereafter be replaced by headings corresponding with the subjects dealt with in the Resolutions which are now issued in supersession of the Resolution of 1881.

4. The first Resolution of the new series is prefatory and requires no notice in the annual report. But it will be desirable that the annual report should commence with a prefatory chapter in which will be recorded among other matters a brief notice, any changes which may have occurred in the personnel of the Department, and a short description of the tours taken by the Director and of their general object.

5. The second Resolution deals with the measures taken to improve land record establishments. The work of the department in connection with land records is in most provinces described in a separate report which is incorporated with the land revenue administration report of the year. The Government of India have no wish to interfere with this procedure which is doubtless the most convenient to all branches of the administration concerned. But they desire that the annual report of the department should contain a brief notice of the progress made in efficiency and knowledge of survey the land record establishments; of any new measures which have been taken during the year to improve the standard of the land record officers; of the extent to which promotion has been granted to the higher revenue service; and of any other circumstances of a general character which may indicate that the gradual improvement of the land record staff is held in view.

6. The third Resolution deals with the utilization of the land records. Under this head should be described the general working of the system prescribed for the maintenance and inspection of circle note books; it should be explained whether as a rule they are punctually maintained and intelligently examined by district officials; and some general indication should also be given of the use made of the land record staff to supply information on agricultural questions under enquiry in accordance with the instructions of Resolution V or otherwise.

7. The fourth Resolution deals with the scheme of scientific enquiry carried out by imperial departments. Under this head the report should state to what extent during the course of the year the provincial department has lent its co-operation to, or made use of, any one of the imperial departments named in the Resolution; and should describe any work done in the province, whether with or without the aid and advice of the imperial officers, in any of the fields of scientific enquiry to which the Resolution refers. The progress made in Civil Veterinary work should, in accordance with the instructions of paragraph 13 of the Resolution marginally quoted, be especially described under the various heads detailed in that Resolution.

No. 18, dated 25th May 1892.

8. The fifth Resolution refers to positive agricultural experiment and improvement. As stated in the orders of 1884 already quoted in the second paragraph, it is not desirable that the annual report should enter into any lengthy discussions on agricultural subjects or describe the working of the farms. The separate reports on the farms themselves, which are submitted to the local Government as well as the notes on any interesting experiment or improvement which the Department is required to communicate to the editor of the agricultural ledger will supply detailed information to all who may require it. The annual report is only intended to indicate the general character of the programme which the Department is carrying out. The section of it which deals with the subjects of the fifth Resolution should therefore open with a conspectus of the farms which are under the control of the Department and of the staff by which they are managed; it should indicate the system, if any, which is adopted for carrying experiments into estates under Government or private management, and for obtaining the co-operation of native landowners. It should then give a brief description of or reference to any results of special and material interest which have been obtained on farms or estates during the preceding twelve months. It should next explain what particular agricultural defects have been made the subject of special investigation during the year, and if a report on the results of such investigation has been already published in the agricultural ledger, should refer to the number and date of the journal in which it has appeared, such reference obviating the necessity of giving any special account of it in the annual report. Finally, it may include a record of any interesting facts which have been otherwise brought to light during the year in connection with agricultural enquiry and improvement, although in these cases also a reference to the agricultural ledger ought to prevent the necessity of anything more than a brief allusion to them.

9. The sixth Resolution deals with agricultural education. Under this head should be included a statement by the Director for the information of the local Government how far the educational system of the province is found to meet the requirements necessary for the instruction of boys or students designed for village accountantships, for circle appointments, or for an agricultural calling;

and to what extent that system is or should in his opinion be supplemented by special departmental arrangements and educational classes.

In dealing with agricultural education he should, as far as possible, follow the arrangement adopted in the resolution on that subject and bring his remarks under the various heads there given.

10. The seventh Resolution deals with the publication of information, facts and statistics. Under this head the following points should be noticed in the annual report:—

(1) The extent to which information has been obtained from the district circle note books of the occurrence and cause of serious agricultural deterioration. This may be illustrated by a record of the number of communications received.

(2) The system maintained for ledgering useful facts and information from district and settlement reports, from the reports of the scientific departments or from similar sources of information, and the general progress which has been made or the difficulties which are found in the ledger work.

(3) The publication, or measures, if any, taken for the preparation of a statistical atlas, or of any other special works designed either to illustrate the agricultural or economic conditions of the province, or of any part of it, or to indicate the position and needs of any agricultural or commercial industry.

(4) The number of papers communicated by or through the agency of the Department to the Agricultural Ledger. A list of these should be given in an appendix to the Report.

(5) The number of papers received from or communicated to other provincial departments.

11. In conclusion, it is left to the discretion of the Director, under such instructions as he may receive from the local Government, to bring forward any matter of interest which has been brought to his notice during the year and which bears upon the work of his department.

12. Under the instructions of this Resolution the headings of the chapters of the Director's report will be—

I. Prefatory.
II. Land Records Establishments.
III. Utilization of land records.
IV. Scientific and national enquiry under imperial control.
V. Scientific and local enquiry under provincial direction.
VI. Agricultural education.
VII. Publication of agricultural information.
VIII. Final.

The Government of Madras.
" " Bombay.
" " Bengal.
" " North-Western Provinces and Oudh.
" " Punjab.
The Chief Commissioner, Central Provinces.
" " " Burma.
" " " Assam.
" " " Ajmere.
" " " Coorg.
The Resident, Hyderabad.
" Inspector General of Forests.
" " " Civil Veterinary Department.
The Agricultural Chemist to the Government of India.
The Reporter on Economic Products to the Government of India.

ORDER.—Ordered, that a copy of the foregoing Resolutions be forwarded to the Local Governments and Administrations and officers noted in the margin, for information and guidance, and that the Resolutions be published in the Supplement to the *Gazette of India* for general information.

Ordered also, that a copy be forwarded to Sir E. Buck, lately Secretary to the Government of India on special duty.

(True extract.)

DENZIL IBBETSON,
Secretary to the Government of India.

G. I. C. P. O.—No. 1055 R. & A.—18-3-97—1500—F. C. C.

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