

Government of Madras.

Public (~~190~~¹⁸⁹⁷) Department.

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[Despatch Abstract.]

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Government {1897} of Madras.
PUBLIC.

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G.O., No. 512, 5th May 1897.

MAY.

Bacteriological Investigations.

Ordering that the Government of India be addressed on the question of creating a new appointment for the conduct of —, &c., and of providing an additional medical officer for the purpose.

Resolution—dated 4th November 1896, Mis. No. 5472.

The report of the Superintendent, Civil Veterinary Department, will be submitted for the information of Government.

2. In the Board's opinion, a professional bacteriologist would find ample scope for investigating rinderpest and other cattle diseases in this Presidency, and such study is much required. The Imperial bacteriologist is, however, it is believed, at present studying the disease.

3. As to the training of veterinary subordinates, the Board does not consider that there can be much scope in this Presidency until a school of practical Veterinary science has been founded, and even then it is doubtful how far such training would be of value to men such as could be trained therein.

(True Copy and Extract.)

(Signed) R. V. SRINIVASAR,
Secretary.

To the Secretary to Government, Revenue Department.
„ Superintendent, Civil Veterinary Department.

Endorsement in the Revenue Department, No. 4656, dated 18th November 1896.

Transferred to the Public Department.

(Signed) L. DAVIDSON,
Ag. Under Secy. to Govt.

From Surgeon-Major-General C. SIBTHORPE, F.R.C.P.I., Surgeon-General with the Government of Madras, to the Chief Secretary to Government, dated Madras, 7th November 1896, No. 516.

With reference to G.O., No. 714, Public, dated the 8th July 1896, on bacteriology, I have the honour to report that on its receipt I referred it to the Director of Public Instruction and asked him to call on the Professors of Hygiene and Chemistry to report on the points raised in it, to submit it with their reports to the Council of the Medical College and to return the correspondence with his remarks and observations. I now attach (Appendix I) true copies of the answers.

2. I also attach (Appendix II) letter, No. 746, dated the 28th July 1896, from the Chemical Examiner to Government which was returned to him with your endorsement, No. 1534, dated the 3rd August 1896, to be resubmitted through me.

3. With reference to paragraph 4 of the Government Order under reference, the following replies are submitted to the queries therein made :—

(i) The first twelve or eighteen months of the expert's time should be taken up in studying the methods suitable in Southern India and in training his staff. I would suggest that no work should be sent to him except by the Surgeon-General, the Principal Medical Officer, Madras Army, the Sanitary Commissioner to Government and the Chemical Examiner.

(ii) It would be impossible to give a definite answer to this without going into great detail; but the examination of air, soils, excreta would form a great portion of his work.

(iii) Will be answered by the Sanitary Board. As will be seen above, I do not propose that the Sanitary Board should send him any work.

(iv) In my opinion, the Chemical Examiner could not take any of this work. It would, I consider, be a mistake for the Professor of Hygiene, even if he was relieved of the charge of a certain number of beds (which I consider should be done on its own merits), to be called upon to perform the duties of a trained bacteriologist, as it is clear to me that it is most desirable that the officer who has the teaching of hygiene in the college should have some practical experience in sanitation in India and should have had opportunities of studying the habits of the people, which means that he

should be always an officer of some years' service. It is most essential that the Bacteriologist should be a highly-trained scientific man with, if possible, a developed scientific mind and that he should be well up in the most recent methods of research. He should have been working at the science continuously. It would, I feel sure, be an absolute waste of money to appoint any officer now in the service to these duties and to give him short leave to study up the methods under any one, either in India or in Europe.

(v) I consider the bacteriologist should be allowed an assistant—a locally trained medical man holding a University qualification—and that his pay should be the same as the other assistants in the college which is now under consideration and will probably be the rate of pay as an Assistant Surgeon with a teaching allowance.

He should also be allowed one intelligent attendant on Rs. 12 a month.

4. I consider the Government Bacteriologist should be —

(i) An officer of the Indian Medical Service and that the post should be added to the cadre as a List I appointment.

(ii) That the Right Honourable the Secretary of State should select a duly qualified man on the advice of the University or Collegiate authorities in Great Britain.

(iii) That the pay should be fixed at the grade pay of his rank with an allowance of Rs. 300 a month from date of joining his appointment for the first five years, and after that as a major professorship under G.O.G.G., No. 370, dated the 4th April 1867, with house-rent from date of arrival in Madras.

(iv) This officer should be required to go through the course at Netley and then should be permitted to spend three or four months in some selected laboratory in England or on the Continent.

(v) On arrival in India he should be sent on duty for a month to Agra to Mr. Hankin to study his methods.

(vi) He should be exempted from the rule that requires officers of the Indian Medical Service to do two years' military duty before being employed in the Civil departments.

(vii) He should be permitted to expend a sum not exceeding £100 in Europe on laboratory equipment, which should be sent out for him to the Medical College.

(viii) He should work in the hygienic laboratory of the Medical College and should be provided with special rooms for himself and his assistant.

(ix) He should teach bacteriology to a class in the Medical College during the session.

(x) During the recess he should be permitted to carry on his researches in Kōttagiri or Ootacamund and be allowed his travelling expenses up and down.

(xi) He should be placed in the same position as regards Government as the Chemical Examiner now holds as regards his ordinary work, and under the Director of Public Instruction as regards his duties in the Educational department.

(xii) He should agree to serve in his special appointment for not less than five years, and in the event of his subsequently wishing to revert to the ordinary duties of the profession, he should be placed at the disposal of the Military department and not considered eligible for any permanent Civil Medical appointment until he has completed two years' military duty.

5. With reference to paragraph 5 of the Government Order, the Professor of Hygiene was at the time acting as Chemical Examiner to Government and was not in a position to give a reliable report.

6. With reference to paragraph 6 of the Government Order, I consider that an officer could get an equally good training here in the laboratory of the Chemical Examiner as was done under G.O., Mis. No. 1392, dated 23rd June 1884, which would save the travelling expenses. If Government will sanction such an officer's pay and allowances for a period of six months, I will inquire what junior officers are willing to go through the training and select one.

APPENDIX I.

Copy of a letter from the Director of Public Instruction, Madras, to the Surgeon-General with the Government of Madras, No. 11473, dated the 24th October 1896.

With advertence to your reference of Current No. 658-1, dated the 27th July 1896, and endorsement on Current No. 2215-5, dated the 10th August 1896, I have the honour to forward, as requested therein, the opinions of the Professors of Chemistry and Hygiene as well as those of the Council of the Medical College in regard to the institution of bacteriological researches in connection with that college, and to state that I concur with the opinions expressed by the College Council. I would add that in the event of the Professor of Hygiene being appointed Government Bacteriologist and Lecturer in Bacteriology, the incumbent of the combined appointment—who, it is presumed, will be a commissioned medical officer—should not be disturbed from the college for a period of not less than five years, and that it is necessary that one other officer of the Indian Medical Service should have been previously required to undergo bacteriological training at Agra and Calcutta so as to be in a position to succeed the Professor of Hygiene, either permanently or temporarily, at short notice.

2. The enclosures to your references under reply are herewith returned.

Copy of a Memorandum from the Principal, Medical College, Madras, to the Director of Public Instruction, dated the 6th October 1896, No. M.-1137.

I have the honour to give below the resolutions of the College Council on the subject passed at the last meeting:—

“The Council is of opinion—

- “1. That it would be impossible for the Professor of Chemistry, who is also Chemical Examiner to Government, to perform in addition the duties of Government Bacteriologist or undertake any bacteriological work.

“It is of opinion—

- “2. That the Professor of Hygiene should be appointed Government Bacteriologist and Lecturer on Bacteriology in the Medical College, Madras.
- “3. That it is essential to the satisfactory working of the duties of Professor of Hygiene and Bacteriology that the incumbent should have no hospital duties to perform.
- “4. That in the event of this proposal receiving the sanction of Government, the Professor of Hygiene should be sent to Agra for six months to work under Mr. Hankin in bacteriology and bacteriological chemistry.”

2. The reports from the Professors of Hygiene and Chemistry are also attached.

Copy of a letter from the Professor of Chemistry, Medical College, Madras, to the Principal, Medical College, dated the 4th September 1896.

I have the honour to report that G.O., No. 714, Public, dated 8th July 1896, was communicated by Government to me as Chemical Examiner, and that I have already furnished the information called for by Government. In that letter I stated that the Chemical Examiner's time is already fully occupied with analytical and teaching duties, and that the nature of the Chemical Examiner's duties and the materials associated with medico-legal analyses would be prejudicial to accurate bacterial observations being carried on in the Chemical Examiner's laboratory.

2. As Professor of Chemistry I have to devote two hours daily during the winter and the summer sessions to class-teaching besides the best part of an hour daily which has to be devoted to directing the preparation of class demonstrations, &c. The chemical laboratory of the college is not equipped for teaching bacteriology, and, even if it were, it would be impossible for the Professor of Chemistry to take any part in the teaching of bacteriology, because (1) he could not well do so without detriment to his duties as Chemical Examiner, (2) he could not be expected to be expert enough to teach a class as well as to conduct investigations in two such totally different branches of study.

3. Personally, I would not presume to undertake any share in the teaching of bacteriology or in investigating bacteriological questions without a thorough and systematic training in the subject over and above the training in general methods with which most of us are more or less acquainted. Even granting that this training was supplied, I believe that it would be impossible for one person to perform both chemical and bacteriological duties efficiently without one or other branch of his work suffering. The thing is too stupendous for one person in the present advanced state of both sciences.

4. The Hygiene department of the college is equipped with suitable materials and a staff which is ready and even quite anxious to begin bacteriological work; and the development of the subject would most appropriately proceed from that side of the college rather than from the Chemical department.

Copy of a letter from the Professor of Hygiene, to the Director of Public Instruction, Madras, dated the 26th August 1896.

In accordance with the order contained in your No. 8139, dated 31st July 1896, I have the honour to report as follows:—

Since taking up the duties of this appointment in September 1890, I have at every available opportunity discussed the matter under consideration and have shown again and again the urgent need that exists for a Professor of Hygiene able to devote himself entirely to the teaching and investigation of this subject. From amongst this correspondence I may select for reference two letters, separated by a period of four years, in which I carefully defined the duties and responsibilities of such an appointment. The first letter* is alluded to in the report of the Medical Reorganization Committee (pages 15, 29). Quite lately, with the permission of the late Principal, I brought up the subject before the Council of the Medical College in a carefully-prepared memorandum accompanied, for convenience, by a summary of its contents. A copy of that summary is attached to this letter.

* To the Principal, Medical College, dated 21st January 1892.

† No. 5. *Vide* Proceedings, dated 25th February 1896.

The complete “statement” and the resolution † passed by the Council of the Medical College thereon are believed to be before the Government at the present time.

Taking the points raised in G.O., No. 714, Public, dated 8th July 1896, as far as possible in order and under the same numerical headings:—

I have, in the letters referred to above, endeavoured to state with clearness and precision what are the actual requirements of the case, but will now attempt to condense the matter into its smallest possible limits.

2. It is essential both on educational and scientific grounds—(2) (i), (ii) and (iii) of G.O., No. 714—that some one be appointed at once to organise and conduct the hygienic department of the Medical College, as fully explained in my “statement” to the College Council (*vide* attached summary).

3. This appears to me to be answered by paragraph 2. I have shown in the above quoted “statement” (*vide* summary attached) that it is neither necessary nor desirable to wait for the entire reorganization of the Medical College before instituting these changes; indeed, the correspondence quoted in G.O., No. 714, seems, by its general tone, to negative the question of such further indefinite delay.

4. The chief point requiring emphasis under this heading is that, before the scientific aspects of the scheme can be rigidly classified and the duties of the bacteriologist stated in a cut and dry fashion, at least eighteen months or two years of preliminary work is necessary for the study of the “methods” of cultivation and investigation suitable to Southern India, and for the training of the laboratory staff. There is, therefore, more than sufficient work for the Professor of Hygiene to do, apart from his increasing educational duties, were he to commence to-morrow with no more definite orders than to ascertain the bacteriological methods suitable to Southern India and to study and report upon the different micro-organisms met with.

Taking the sub-headings in this paragraph, I have the honour to observe that—

(i) The “practical analyses” should only be undertaken at the request of the Sanitary Commissioner for several reasons which space prevents my giving in detail. In urgent cases, such as poisoning by tinned or decaying food, &c., no doubt the Professor of Hygiene could make special “analyses” (*i.e.*, bacteriological enquiries) for the Chemical Examiner, if requested to do so.

(ii) Would answer itself practically in time. Doubtless the Sanitary Commissioner would admit the possibility of articles of food, of soil, of air, of excretal matters, of clothing &c., requiring examination from time to time, but having regard to the technical nature of the subject, it does not seem possible to amplify it without unduly extending this report.

(iii) The amount required will only be limited by the time available. It is certain that, as indicated above, the so-called “general and theoretical researches” must be carried on for some considerable time before the answering of “purely local requirements” becomes possible. To attempt to limit the duties to such local requirements without corresponding general research is to attempt the impossible if the reports are to be of any value. The case is analogous with the exception of any other department, *e.g.*, that of Forestry. If no one had ever studied the bamboo practically as to its species, growth, percentage composition, &c., in Southern India, enquiries as to the suitable kinds for local growth, the best available soil, the amount of silica in the stem and so on could certainly not be answered.

(iv) This has been fully answered in my two former letters referred to. The Chemical Examiner, as I stated in my letter of 21st January 1892 to the Principal after officiating in that appointment, has certainly not got the time to take up such questions, more especially in the present untouched state of this matter. As to the other point, I beg to state once more, as clearly as possible, that the Professor of Hygiene cannot possibly do hospital or any other work in the morning and laboratory work thereafter. Laboratory work (not merely class-teaching) and

hospital work are as trying, if not more so, than any other work performed by Europeans in India, and it is hopeless to imagine that they can be combined. Besides, the mere number of beds does not make much difference to the medical officer—within limits—only to the patients. The former can profitably occupy his morning over twenty cases, or can hurry, as he must do, over one hundred.

(v) The additional (subordinate) establishment required for a start would be *nil*. In any case, the subsequent additions would be very small. However the present salary of the Assistant to the Professor of Hygiene (Rs. 100 and 150 consolidated) would have to be altered to that of the other college assistants. It would be quite impossible to get a suitable man otherwise. As regards the Professor of Hygiene, the essential of the appointment is that it must be a permanent one, in which case the pay would have to be arranged on the same plan as in the case, e.g., of the Chemical Examiner. He would not be permitted private practice, I presume, nor do I think he should be allowed to take it.

5. I have carefully explained the circumstances attending the matter herein referred to in a communication quoted from by the Surgeon-General on page 7 of G.O., No. 714, Public, but I may put it more plainly by saying that the acting Professor, or myself had I been there, could not possibly have submitted a report of any value. Even given the ability and equipment, bacteriological work requires continuous application and a laboratory in full working order before anything valuable in the way of "reports" can be attempted. If there is a good laboratory to draw upon for supplies of sterilised culture, material, &c., something can be attempted slowly by outside workers. Under other conditions, failure or mistaken conclusions are the usual results. In any case the samples sent would have been of small value under the existing conditions of collection, transit, &c. In any important case it is quite necessary for the Laboratory Superintendent or other expert to see the locality and collect the samples himself. In some cases it is even necessary for the cultivation experiments to be commenced at the actual place of infection, if errors are to be avoided.

6. I am only too anxious to go to Agra and Calcutta, and especially between the months of October and April (as suggested by the Government of India, *vide* G.O., No. 714 Public, page 8.) in order to learn all that can be learnt from the experts in charge of those laboratories with reference to bacteriology in general and Indian bacteriology in particular.

Copy of the Summary of Statement referred to in paragraph 1 of the accompanying letter from the Professor of Hygiene, dated the 26th August 1896.

Institution of Degree of Licentiate in Sanitary Science in Madras University.—Serious practical difficulties in obtaining the special instruction for the degree have prevented candidates coming forward; also no sufficient encouragement nor inducements. Lately, greater interest in the degree has been manifested. One candidate took it in 1895, and several persons have made personal enquiries to me regarding the means of study for the degree.

2. *Demand for a Museum of Practical Hygiene since 1883, which has received the cordial support of all officials.*—It is not a costly demand as shown in paragraph 9.

3. *Duties how much increased.*—Up to 1890, they consisted in a six months' course during the winter session. Since then, the laboratory has been built and equipped at the cost of much hard work; and the present duties comprise the original six months' course of systematic lectures, a summer practical course to the students and, since 1895, a three months' course to the Sanitary Inspectors' class, and the general supervision of the laboratory and staff.

4. It is quite certain that no one can carry on hospital duties in the morning and deliver lectures and superintend laboratory work all day, especially in the tropics; but if any work is to be done in the laboratory, either by the Professor or such applicants as the Health Officer for Madras, qualified medical men and others, it is equally certain that I must be present for personal work, for supervision and assistance and for instructions where necessary.

5. The work is in all directions tending towards expansion, both qualitatively and quantitatively, and on educational grounds alone there is more than sufficient work to keep the Professor of Hygiene occupied. Also, as stated above, if he has to lecture and thereafter be in the laboratory during the day, he certainly cannot perform hospital duties in the morning.

6. Again, there is no chance of his arranging for and conducting practical excursions to bazaars, pancharies, sewage works, rubbish depôts, &c., unless he has more time, and the excursions themselves must take place in the morning.

7. *Recapitulation of Duties from an educational point of view—*

- (1) One systematic course } To students of Medical College.
- (2) One practical course }
- (3) One systematic course—To Sanitary Inspectors' class.

(4) Practical excursions for both classes. (At present the Sanitary and Deputy Sanitary Commissioners undertake these for the Sanitary Inspectors' class as a favour, and because the Professor of Hygiene has not the time.)

(5) General superintendence of teaching in the laboratory in the case of individual workers.

(6) Planning, equipping and maintaining of a Museum of Practical Hygiene. There is no room for the models already on hand and no use in attempting a proper collection of local food products, &c.

8. *The Scientific Aspect of the Question, so-called.*—The urgent need for such work in India is now more fully recognised officially. Examples given of the work to be done.

9. *Possible Objections—*

(a) *Administrative*—None that are really reasonable or insuperable.

(b) *Financial*—Something must be done and whether an additional officer is to be added to the sanctioned code or not is not for the writer to determine. The work that is being done and that remains to be done is of practical importance and utility, much beyond some other sanctioned educational work, and if a sacrifice of something is necessary, it should not be in the direction of medical education. The plan proposed—viz., the utilization of an already existing laboratory and staff—is very much cheaper than any other and entails no permanent expense save that due to the separation of the Professorship from hospital duties.

10. Seeing that everything is ready to hand, there is no need for delay on the ground of dislocation of present arrangements or of some future scheme of reconstitution. More students and the sanitation of the Presidency suffer alike from the present arrangements.

APPENDIX II.

From Surgeon-Major J. L. VANGEYZEL, M.B., F.I.C., F.C.S., Chemical Examiner, Madras, to the Chief Secretary to Government, dated Ootacamund, 28th July 1896, No. 746.

With reference to paragraph 4, sub-head (iv), of G.O., No. 714, Public, dated 8th July 1896, I have the honour to state for the information of Government that the Chemical Examiner's time is already fully occupied with analytical and teaching duties, and further that the nature of his duties would not permit of his undertaking more than the ordinary *quantitative bacteriological examination*. This is a test which has been applied to drinking-water and its value lies exclusively in its use as a test of the efficiency of *filter beds* when applied to the same water at regular intervals. Its applicability, however, is greatly limited by the circumstances under which water examinations are usually made by the Chemical Examiner. I explained these points more fully in my remarks on this subject in my annual report for last year. Briefly, the period which has elapsed between the sampling of the water and its examination bacteriologically, the temperature at which the sample has been kept, and other circumstances, very largely modify the multiplication of bacteria. To obtain reliable results the sample of water must be sown in the culture medium very soon after it is drawn, otherwise this test cannot possibly be of any value. For this purpose the bacteriologist must be on the spot, or the culture medium must be entrusted to a competent examiner who happens to be there. I should attach no value whatever to the numerical results obtained by the quantitative bacteriological examination of a water when that water has been collected by a municipal peon in unsterilised vessels, conveyed for days stowed away in a train or steamer, as constantly happens, at temperatures which would be favourable to the rapid growth and death of micro-organisms. Recognising the value of this test, however, I recently suggested to the Inspector-General of Prisons that medical officers of jails should carry out this test themselves at regular intervals as a test of the efficiency of the jail filters, and accordingly he has issued a circular to this effect, containing Mr. Hankin's instructions as to the method of carrying out the test. Under the circumstances just explained the Chemical Examiner himself could not perform such work with any hope of producing reliable results, except perhaps in the case of waters in Madras town itself, unless he travels like the Chemical Examiner and Bacteriologist at Agra does. If, however, Government decides to appoint an officer to undertake bacteriological examinations in Madras, I beg to suggest that such examinations required for Madras town itself would best be discharged by him. It would add only a comparatively infinitesimal amount to his current bacteriological duties, while it will leave the Chemical Examiner to his legitimate work, which is "chemical" and not "bacteriological." Further, as the Government of India has observed in its Resolution, printed in Madras G.O., No. 990, Public, dated 2nd December 1895, "the character of the materials associated with medico-legal analyses would be prejudicial to exact bacteriological observations."

2. With reference to the remarks of Government in paragraph 5 of the order, I have the honour to state that ten samples of water were sent from Bangalore and they were examined chemically and also bacteriologically, but only the quantitative bacteriological test was performed. Even the value of this test was considerably discounted by the fact that the precautions as to collection and packing of water intended for a bacteriological examination had been neglected. It is difficult to believe that the Residency Surgeon, who forwarded these samples, can have joined in the "extreme surprise" which the Bangalore Sanitary Board has expressed in its complaint, when his own part in the play consisted in seriously expecting a bacteriological investigation to be made of water which he had collected in unsterilised bottles and packed in a

way which cannot but have seriously raised the question as to whether the cholera microbe, if it had been found, had not after all been accidentally sown in the water through his neglect of precautions against its introduction by infected hands, infected bottles and corks which had been used instead of glass stoppers, &c.

3. No attempt was made, however, to isolate and identify particular micro-organisms (such as cholera microbe), because this is a task which no one but a trained bacteriologist "working continuously" can attempt. The final opinion in case of doubts as to the identity of any particular micro-organism must be given by the bacteriologist who has handled and worked with the particular microbe, has observed its peculiarities, and can with confidence apply the necessary tests for its identification. Such an expert did not exist in Madras or in this Presidency as far as the Chemical Examiner was aware. When it is remembered that, in the history of the recent precautions taken in England against the importation of cholera, the opinion arrived at in many cases by Dr. Klein, one of the foremost bacteriologists living, was that in the material (not water, but dejecta of suspicious cases) subjected to his examination he could only certify to the presence of a micro-organism which was "undistinguishable" from the cholera microbe, Government will, I trust, be in a position to understand that what the Bangalore Board wanted—viz., an authoritative opinion as to whether the water was infected with the causative organism of cholera—was not obtainable in Madras.

4. When the reference from Bangalore was made to this office, my *locum tenens* (Dr. Robertson) was at the time also acting Professor of Hygiene, and he undertook and performed the whole examination of the water to the best of his ability under all the circumstances related above, and so there was no separate reference made to the Hygiene department from this office. Even had the permanent Professor of Hygiene been here, who is reported to have the ability and the equipment, Government will, I trust, be pleased to observe that a reference to him would not have been more effective, since he himself remarks that he cannot undertake investigations of this nature because "he has not the time" and he could not under present circumstances produce "a report for the accuracy of which he would care to stand sponsor."

From Surgeon-Lieutenant-Colonel W. G. KING, M.B., C.M., D.P.H., Sanitary Commissioner for Madras, to the Chief Secretary to Government, dated Fort St. George, 30th November 1896, No. 2229-S.

With reference to paragraph 4 (ii) of G.O., No. 714, Public, dated 8th July 1896, I have the honour to forward herewith a memorandum on the subject therein referred to.

ENCLOSURE.

MEMORANDUM as to Bacteriological Investigations in the Madras Presidency, by the Sanitary Commissioner for Madras.

Reference* Paragraph 1.—I submit that the difficulty experienced in giving an opinion in this matter is not due to absence of recognition of what is requisite, but to meeting requirements in a manner that shall be approved by Government as to expenditure.

* All references are to paragraphs of G.O., No. 714, Public, dated 8th July 1896.

2. In my letter to Government, No. 253-S., dated 10th February 1896, I explained that my ideal would be the building of a Central Vaccine Institute for supply of the whole Presidency with lymph preserved by any process that might be approved by Government, and attaching thereto an officer who should be its Superintendent as well as hold the post of Government Bacteriologist. The vaccine institute would therefore have attached to it a bacteriological laboratory.

3. The great future of bacteriology as a practical science must in great part lie in its meeting the fast-growing requirements of serum therapeutics. An institute, therefore, that will not only issue animal vaccine cultivated with the perfection that modern hygiene and bacteriological methods can secure but also antitoxins that should prove of the highest value in the hands of the ordinary medical practitioner for combating small-pox, tetanus, bubonic plague, snake-bite, diphtheria, puerperal fever, and, it may be shortly, typhoid fever, and be also a centre where anti-cholera inoculation and anti-hydrophobia inoculation could be practised, would confer more widespread public benefit upon the Presidency at large than could be in the power of any single institution under Government, educational or medical. To some it may not appear there need be any connection between the founding of a vaccine institute and the appointment of a bacteriologist. It seems to me, however, that the moment Government decided to use animal lymph to the exclusion of the humanized variety for vaccination, the scheme I have suggested became at once the most economical and effective.

4. This Presidency may, year after year, attempt to secure animal vaccination under the various systems of petty depôts now relied upon or of direct transmission to calves for fresh lymph cultivation under vaccinators devoid of the requisite education; but the system cannot otherwise than ultimately give place to that I have above sketched, as public opinion becomes more educated to the necessity there exists for correct methods. The frequent demands received from local authorities to approve of this and that scheme which has been excogitated locally to meet very obvious difficulties encountered sufficiently prove that the organization of the Vaccination department and its method of work are behind the times and that this restlessness is the result. This opinion is not founded upon mere theory but on experience worked out by me, under Government instructions at Government expense, in 1891-92. The accuracy of the data obtained at that time has been fully verified in practice by the success of the Mysore Government Institute. Granted then that a vaccine institute is a necessary corollary of the determination to use animal vaccination, it follows that an officer possessed of bacteriological knowledge would be the best description of Superintendent to appoint; granted the presence of a bacteriologist, his services for the public good would be greatly facilitated by his using animals that would be at his disposal after employment for vaccination (for immunization against one disease does not imply immunization against another) or animals not so used, with the object of taking advantage of the special accommodation and nature of the staff employed for vaccination purposes; granted that the most suitable age for calves for vaccine inoculation be (contrary to European practice) when verging on the second year, there would be secured at a period when by further keeping on pasture—which would be a necessary adjunct of an institute—cattle breeding with select specimens in connection with the supply of troops with meat, and dairy farming, could be followed profitably, in view of the first cost having already been debited to other heads.* To found such an institute would mean an expenditure upon buildings that would be but slight when compared with the amounts spent ungrudgingly year by year by Government for buildings for higher educational purposes.

* For the latter purposes, the proximity of the proposed model farm in Coimbatore district would have facilitated mutual support.

5. With Coimbatore and Salem districts close at hand whence to obtain calves, and with the facility offered by the future Nilgiris Railway, a suitable site could have been selected on the lower elevations of the Nilgiris; and there are doubtless other suitable localities in the Presidency. The educational requirements of students could have been met under such a scheme by relieving (vide suggestions contained in paragraph 3 of the Government order under reference) the Professor of Hygiene of a certain number of beds in his function of Assistant Physician, so as to enable him to give routine instructions in the existing Medical College laboratory, whilst only students or post-graduates who showed the capability of making bacteriology a speciality not a mere part of a routine curriculum would proceed to the combined bacteriological and vaccine institute.

6. Reference Paragraph 4.—If any scheme less ambitious than the above be adopted, as suggested in my letter, No. 253-S., dated 10th February 1896, I consider that the officer appointed for bacteriological purposes should perform—(1) "The present duties of the Professor of Hygiene in the Medical College, which would necessarily include the teaching of bacteriology, theoretically and practically, in a laboratory already existing; (2) the training of the future class of Sanitary Inspectors; and (3) routine bacteriological investigations for the Sanitary department."

7. I do not conceive it would be necessary to appoint separate individuals as Professors of Bacteriology and Hygiene, respectively; one officer under this smaller scheme would suffice. The complete withdrawal of the care of beds in the hospital from the Professor of Hygiene would necessitate a redistribution of duty in connection with the General Hospital, but I am led to believe from paragraph 3 of the Government order under reference that some such scheme is already under contemplation. To enter into any suggestion on this point would lead me beyond my province into matters strictly medical. I can only say that the combination of the functions of Professor of Hygiene and of the Bacteriologist is feasible and presents certain economical characteristics.

8. It would be impossible from lack of time at disposal for the Chemical Examiner to undertake any duties in connection with bacteriology. Even if he had time, it must be remembered, although there is some convenience in associating the two sciences, they have practically nothing in common.

9. The opinion that the duties of the Professor of Hygiene and of a bacteriologist cannot be united arises from what I believe to be an exaggerated idea of the importance of teaching bacteriology to students, and, consequently, of the time that would be so occupied. As a fact, there is very little in bacteriology to be taught. If only the amount of knowledge gained from being taught were taken into account, the tyro of six weeks' standing would not compare badly with the specialist who had devoted his life to the work. The bacteriologist proper is only evolved after years of dearly-bought experience as to how easily human judgment may be misled as to minute similarities and dissimilarities of form, and how readily a single error of commission or omission may stultify the labour of lengthened periods. When bacteriologists differ in opinion—and this they do very largely—the verdict lies, not upon certain details that could

be gained by book knowledge or teaching, but on experience as to manipulation and appreciation of form. If this simple statement be accepted as correct—and, in my opinion, it cannot be open to doubt—there naturally follows the query as to what is the scope of utility in medical education of bacteriology.

10. There is an ill-defined idea abroad that this infantile science is so indispensable that some great results that have hitherto not been reaped may be expected from its being taught to the ordinary medical student; that in some way or other the Presidency will soon have an army of bacteriologists at work in its interests. Yet, when the student is taught physics, chemistry, botany, zoology or geology, it is well understood that not one in a thousand will become a specialist. The utmost that will occur from their absorbing certain great facts in these sciences is that when in contact with their professional work, they will be able to interpret the various factors influencing results more readily. Thus, after undergoing an elaborate course of quantitative and qualitative chemistry, all that is expected of the general practitioner is that he should be able to apply a few simple tests and comprehend why certain drugs are incompatible. Similarly, after having gone through a course of bacteriology, there is ensured a full belief in the microbial theory of disease, and, consequently, in surgical and medical practice and in the application of hygienic measures, the full necessity for precautions against microbial infection is recognized. A man so trained will not use a filthy lancet for vaccination nor neglect antiseptic precautions when called upon to perform the smallest surgical operation, nor, when he works as a sanitarian, will he be satisfied with sanitary works so constructed that they are "good enough" only when not subjected to strain, or when contrasted with the grade of luxury formerly known to the country. Indeed, it has been claimed by good authority that the teaching of the ordinary student bacteriology has much the same influence in securing that details shall not be neglected as factors in obtaining total results as teaching Euclid has in general education. And, here, I must ask that the scope of bacteriology be not confused with the fast-growing applicability of simple microscopical research in elucidation of matters clinical, pathological and sanitary. For this work, there is infinitely more scope in the life of the ordinary practitioner than for bacteriology proper.

11. In short, all that can be done by the bacteriologist in the way of teaching would be to give, say, six lectures illustrated by exhibition of cultivations and supervision of practical work by students during one hour for twenty days per annum. Now and again from the midst of these students will be found one who shows a special aptitude for bacteriology: such a man would be given facilities for practical work on his own lines or by aiding the bacteriologist as a demonstrator. But he would not require one atom more theoretical teaching than the ordinary student. He would have to carve out his own way to knowledge. Even were the actual small part in medical education I have laid down for bacteriology incorrectly stated, and were it possible for each raw student, by the professor devoting more time to him, to become a capable bacteriologist, of what use would this *rara avis* be? Hundreds of men in Great Britain have now undergone prolonged courses of instruction in bacteriology; but is Great Britain proportionately richer in bacteriological results? No; the public and the Sanitary department of the British Government look to a very select few for opinions—indeed, so select that practically but one voice in England at the present moment gives its verdict. Nor could any other result be expected, unless it were possible to multiply bacteriological laboratories with specialists attached indefinitely.

12. In my opinion, therefore, the tendency to regard so fixedly the teaching of bacteriology as the great point to be subserved is likely to obscure the plain fact that if teaching be added to the duties of the bacteriologist, it will form but a light task, and that the chief use to a Government and a people of a bacteriologist is with reference to disease prevention in all its branches.

13. The proper place, therefore, for the bacteriologist is, not as an officer of the Educational department, but of the Sanitary department subject to being lent to the Educational department for the service described.

14. *Reference Paragraph 4 (ii).*—There is no article of food—fluid or solid, animal or vegetable—that may not require examination for microbes inimical or beneficial to man. There is no secretion or excretion, or part of the organized whole of the lower animals or man, that may not require search. Air itself and everything penetrable by air demand attention. In fact, there is little on the earth or in the earth or its surroundings that may not require scrutiny by the bacteriologist in the course of investigation of facts supporting sanitary investigations.

15. Presuming the instance of a population suffering from cholera possessed of but two sources—a well and a river—for water-supply, the sanitarian may believe that the medium of spread is water, but owing to contamination having taken place under circumstances unknown, he is in doubt whether it be the well or river water that is at fault. The only course open would be to watch the results of infection so as to exclude the contaminated source. In an institution where a disease resembling cholera has suddenly appeared, the medical authorities may declare the disease to have all the symptoms of ptomaine, or arsenical, poisoning. A bacteriological examination might in both cases settle the difficulty in time and probably save many lives. A fever attacks a locality that whilst having much of the malarial type still bears resemblance in some of the cases to typhoid; or, again, with the fever may appear swellings resembling bubonic plague. Identification of the typhoid or plague bacillus in either case would decide the diagnosis. In dealing

with a free population subject to not one but numerous sanitary errors, the sanitarian might have a long search and much "piecing" together of testimony before he could decide that such and such a milk, water, raw vegetable, or shell-fish was the medium of infection. A town possessed of an milk, water, raw vegetable, or shell-fish was the medium of infection. A town possessed of an irreproachable water-supply and good filter-beds is attacked with cholera or typhoid fever; there is no history of contamination but certain imperfections of the sanitary engineering work explain how it was possible for entry of the unfiltered water would explain the whole matter. The employes of or cholera bacilli in the unfiltered water would explain the whole matter. The employes of dealers in skins become suddenly attacked with fever and pneumonia, others with carbuncles in exposed parts; the sellers of the skins declare, in reply to the sanitarian's query, that the skins are not those from animals dead of anthrax; but the bacteriologist can readily prove the presence of anthrax spores on them.

16. It must not be conceived that in speaking thus, I personally believe that the evidence adduced by the bacteriologist is infallible or that he is the authority to decide sanitary questions; as a rule, the utmost performed by him is to confirm the presumptive evidence gathered by the sanitarian. As a fact, unfortunately, it has been proved in disastrous fashion that specifically contaminated water has been pronounced by experienced bacteriologists as fit for potable purposes. The bacteriologist in these matters is, however, a distinct aid to the sanitarian in advising poses. The bacteriologist in these matters is, however, a distinct aid to the sanitarian in advising as to early identification of pathogenic microbes; indeed, a Sanitary department in the present day unaided by a bacteriologist is in as indefensible a position as if not provided with the aid of an expert chemist. These statements will sufficiently explain my remark, which Government desired should be amplified, as to the "aiding of sanitary precautions by the early identification of well-known microbes."

17. Again, in affording guidance as to the grade of perfection to which sanitary efforts should extend, investigations by the bacteriologist would be of great utility in determining the life-saving value of sanitary works that have been, or may be, executed by Government for the collection, storage, purification or distribution of public water-supplies. Bacteriological investigation would not only exhibit the value of work already fulfilled, but would serve the important purpose of calling attention to modifications that may be requisite before the occurrence of epidemics demonstrated where protection from ingress of pathogenic microscopical life had not been arranged for with requisite completeness on the "good enough" theory that finds ready acceptance with the laity, on the erroneous supposition that economy is subserved or that "half a loaf is better than none." &c. To determine with safety the rival merits of suggested water-supply sources, the fullest information is desirable. It frequently happens that the choice of a certain source to the neglect of another involves vast expenditure. In this case, a statement of the results of bacteriological examination under varying conditions in addition to the present system of chemical analysis, when both are read in the light afforded by a sanitary survey, can afford data of much utility. When such information proved that a water could not be entirely relied upon as to freedom from specific contamination, much information could be obtained, before deciding to use or reject it, by employing experimentally on a small scale chemical or biological methods (and various forms of sanitary engineering apparatus in connection with them) having definite ends of purification in view that might be applicable in practice on a large scale. Only by checking the results of such experiments by bacteriological and chemical examination could any opinion of moment be arrived at. Not only could the best class of treatment be thus decided upon, but the various modes of putting them into practice could be tested and positively determined. In the numerous questions implicated in the disposal of sewage and sewage effluents by purification, filtration and various modes of sewage-farming, the opinion of the bacteriologist would be of importance in demonstrating how far expenditure for securing high grades of purification only obtainable by complicated and expensive modes would be requisite. Indeed, I consider that the employment of a bacteriologist of proved competency in connection with the application of sanitary engineering methods would not only conduce to increased efficiency but serve the best interests of economy of public funds.

18. *Reference Paragraph 4 (v).*—If the Professor of Hygiene were relieved from his work as Assistant Physician, under the arrangement suggested in paragraph 3 of the Government Order, it would suffice to provide him with a whole time Assistant of the Civil Assistant Surgeon class and on the same scale of pay. A skilled student as demonstrator should receive Rs. 50 per month as an honorarium during the bacteriologist's pleasure. Two men of the Attender class, and one peon, should suffice for establishment. Granting that the laboratory were in complete order, contingencies ought to be covered by Rs. 1,000 per annum.

19. *Reference Paragraph 4 (i).*—There is scarcely any department of Government that might not be expected from time to time to require bacteriological examinations to be conducted on its behalf. The Board of Revenue might demand opinions upon diseased agricultural products; the Jail department on articles of food and water; the Veterinary department might demand the protective vaccines or the identification of pathogenic germs peculiar to the lower animals; the Abkari department might enquire as to the significance of certain unfavourable changes in the course of manufacture of alcoholic preparations; the Vaccine department might require the identification of the causative agent of deterioration of vaccine during cultivation or storage or a pronouncement of its freedom from injurious microbes; the Medical service the identification of typhoid, tubercular, cholera and other pathogenic microbes in excretions of patients, and opinions

as to the purity of "vaccines" and "antitoxins" received from other sources the Engineering department might wish to know the cause of decay of wood under unusual conditions or the discolouration of walls. Of the public, at times the dairy farmer, alarmed as to the flavour of butter or cheese, may wish to know the cause; the manufacturer of vegetable dyes as to their improvement, or cause of the inferiority during manufacture. The wide range of utility to the Sanitary department has already been discussed. Medical officers attached to jails would require quarterly supplies of agar-agar; other officers might demand similar supplies for their own investigations. If anti-cholera inoculation be adopted in this Presidency, the bacteriologist would be expected to make the systematic issue of vaccines.

30th November 1896.

(Signed) W. G. KING, Surgn.-Lt.-Col.,
Sanitary Commissioner for Madras.

No. 4567-C.

MEMORANDUM.

With reference to memorandum, No. 2479, Public, dated 26th November, and in continuation of memorandum, No. 3507-C., Public Works, dated 3rd October 1896, the undersigned has the honour to state that replies to clauses (i) and (ii), paragraph 4, of G.O., No. 714, Public, dated 8th July 1896, have not been received from the Superintending Engineers, II and V Circles, to whom urgent reminders have been sent. The Superintending Engineers, I, IV and VI Circles, and the Chief Engineer for Irrigation, have no suggestions to make, and the Superintending Engineer, III Circle, and the Superintending Engineer on special duty, Tanjore, do not know of any article besides water for which bacteriological analysis is likely to be required in the Public Works Department. The Consulting Engineer for Railways adds the item, soil. The Consulting Architect, in a letter, No. 4397, dated 30th November 1896, copy of which is enclosed, makes what appear to be some valuable suggestions, to which attention is invited. The undersigned has nothing to add to the Consulting Architect's remarks, and with reference to clause (v), paragraph 4, of the Government Order, has the honour to state that no additional establishment would be required in the Public Works Department for the purpose of the proposed reform.

2. If the Superintending Engineers, II and V Circles, make any suggestions of importance, the purport of their replies will be communicated.

MADRAS, (Signed) D. McNEIL CAMPBELL, Col., R.E.,
3rd December 1896. Secretary to Government, P.W.D.

To the Public Department.

ENCLOSURE.

LETTER from G. S. T. HARRIS, Esq., Consulting Architect to the Government of Madras, No. 4397, dated 30th November 1896.

With reference to your No. 3506-C., dated the 3rd October 1896, I have the honour to inform you that, in addition to the bacteriological examination of waters, that of sewage in all forms might be taken up and intimately gone into and considered, and the results put upon a satisfactory basis with regard to its economic and hygienic application under various conditions.

2. Then as to building materials and their liability to contamination with specific microbe is a subject of vital importance, its usefulness as a means to an end when the construction is under consideration of a hospital, a jail, an asylum, a hall, or any other structure, private or public, in which crowds may assemble or numbers dwell, is so evident as to hardly call for mention; but the consideration of the best means of furthering this object is a practical one, and it is to be determined how far this department, which is the constructional side, can assist the party of research. For instance, I am responsible for a large number of hospitals in different parts of India, and my actual knowledge as to the mephitic properties of wall linings for wards, &c., is absolutely incomplete. I am not able to declare whether, under given climatic conditions, wooden, cemented or tiled walls should be preferred, or whether tiled, asphalted or earthen floors should be laid down. I am aware these matters are more or less determined on in Europe, but it is doubtful whether they efficiently apply to India under her sun and in her climate.

3. It appears to me that small sections carefully cut out from the walls or floors and ceilings of existing and long-tenanted hospitals, wards, prisons, cells, stables, &c., might with advantage be submitted for examination to the bacteriological laboratory.

4. Apart from the question of pure bacteriology, there is an infinite number of matters relating to buildings and building materials about which our knowledge is of the scantiest, and

which can only be settled by careful experiment undertaken in connection with a hygienic laboratory. Such, for example, are the relative absorptive powers of the different materials for heat and the rate with which the latter is again radiated and conducted therefrom, the rate of absorption of moisture by them and its retention, their capillary powers, &c.

5. For example, there is no doubt that the teak buildings in Burma, even in the very hottest months, cool down within an hour of sunset, while the pukka buildings in the same place remain hot throughout the night, and I have no doubt that the laterite roads in Madras are less heated and retain less heat than do those which are granite macadamized.

6. The relative coolness of buildings coloured white, grey, red, ginger-coloured, &c., might also be investigated.

7. The proper means of ventilation of every style of building should be carefully experimented upon in the laboratory and elsewhere by one trained in the methods of modern hygiene, and these would yield results of the highest value. For instance, I have in some hospitals applied to the wards through and through nether ventilation by conduits driven beneath the floors which were grated, and these have been much approved by medical officers, but it is not a method which is general.

Proceedings of the Sanitary Board, No. 68-S., dated 23rd January 1897.

Read—the following papers:—

G.O., No. 714, Public, dated 8th July 1896.

Endorsement by the Sanitary Commissioner, No. 433-S.B., dated 13th October 1896.

Proceedings of the Sanitary Board, No. 242-S., dated 13th November 1896.

Letter from the Sanitary Commissioner, No. 2276-S., dated 30th November 1896.

Resolution.

In paragraph 4 (iii) of G.O., No. 714, Public, dated 8th July 1896, the Government called for information as to the amount of work that would be required of a bacteriologist by the Sanitary Board in connection with actual local requirements apart from general and theoretical researches.

2. The Board has had an opportunity of perusing a copy of the memorandum of the Sanitary Commissioner on the subject, which was laid before Government on the 30th November 1896, and is of opinion that the remarks in paragraphs 15 to 17 of that paper sufficiently indicate the amount and nature of the assistance which a bacteriologist might be expected to afford the Sanitary Board.

(True Extract.)

(Signed) R. PARSONS,
Secretary, Sanitary Board.

To the Chief Secretary to Government, Public Department.

Memorandum, in the Public Works Department, No. 527 C., dated 27th January 1897.

Read—the following papers:—

From Lieutenant-Colonel C. C. RAWSON, R.E., Superintending Engineer, V Circle, dated 5th December 1896, No. 125 W.C.

With reference to your memorandum, No. 3506 C., dated 3rd October 1896, I have the honour to state that, in addition to the bacteriological examination of water for drinking purposes, I think that it would be well to examine the bacteria or fungi which cause dry rot in timber with a view to its prevention, also occasionally the water used for feeding boilers requires examination, there has been great trouble at the boiler of the engine of the workshops at the College of Engineering owing, it is believed, to the presence of sewage in the feed-water. The mixture of sewage water which is usually found in the river Cooum might, I think, be subjected to careful bacteriological examination to settle, if possible, the question as to whether the smell from it during the hot weather is dangerous to human life.

From Major W. L. C. BADDELEY, R.E., Superintending Engineer, II Circle, dated 6th January 1897, No. 499 G.L.

In reference to memorandum, No. 3506 C., dated 3rd October 1896, I have the honour to report that no practical analyses are required for the Public Works Department and the only article that may require bacteriological examination is the water in the Kistna canals during epidemics of cholera.

Memorandum—No. 527 C., dated 27th January 1897.

Copies forwarded to the Public Department, in continuation of this office memorandum, No. 4567 C., dated 3rd December 1896.

(Signed) D. McNEIL CAMPBELL, Colonel, R.E.,
Secretary to Government, P.W.D.

From the Officiating Under Secretary to the Government of India, Home Department (Medical), dated Calcutta, 10th December 1896, No. 1091.

ABSTRACT.—Inquiring when the final orders of the Government of Madras may be expected on the question of arranging locally for the bacteriological examination of specimens of water.

Letter—R. No. 1322, dated 21st December 1896, to the Secretary to the Government of India, Home Department (Medical).

With reference to Mr. Nathan's letter, No. 1091, dated the 10th instant, I am directed to state that complete replies have not yet been received to G.O., No. 714, Public, dated 8th July last, a copy of which was forwarded with Mr. Price's letter No. 715 of that date. They have again been called for and a further communication will be addressed to you as soon as they are received.

(Signed) A. T. ARUNDEL,
Ag. Chief Secretary.

ORDER—No. 512, Public, dated 5th May 1897.

From the papers read above it is clear that, while there is large scope for a Bacteriologist in this Presidency, it is impossible to provide satisfactorily for the conduct even of routine bacteriological examinations without setting apart for the purpose the services of an officer who can devote himself continuously to the subject. Under present conditions such an officer is not available. The Government of India will therefore be addressed on the question of creating a new appointment and providing an additional medical officer for this purpose.

2. The following letter will be despatched :—

[Here enter letter No. 513, Public, dated 5th May 1897.]

(True Extract.)

Chief Secretary.

To the Surgeon-General.
" Sanitary Commissioner.
" Sanitary Board.
" Chemical Examiner.
" Revenue Department.
" Public Works Department.
" Local and Municipal Department.

Ed. C. M. Thumbarwamy.

Government { 1897 } of Madras.
PUBLIC.

Recd.

Regd.

1897.

Enclosures

Spare copies

Letter, No. 513, 5th May 1897.

MAY.

Bacteriological Investigations.

Submitting that a new appointment should be created for the conduct of —, &c., and an addition made for this purpose to the number of medical officers allotted to the Madras Presidency.

PUBLIC DEPARTMENT.

LETTER—from

THE CHIEF SECRETARY TO THE GOVERNMENT OF
FORT ST. GEORGE,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
HOME DEPARTMENT.

SIR,

With reference to the correspondence ending with my letter, Public Department, No. 715, dated 8th July 1896, I am directed to state that His Excellency the Governor has, on consideration of the question of arranging for the conduct of routine bacteriological investigations of water, &c., locally, found it impossible to pass any final orders on the subject.

2. At the time when my letter quoted above was written, it was thought that it would be possible to attach to the Chemical Examiner or the Professor of Hygiene or to divide between them the duty of conducting routine investigations of the nature of that referred to by the Bangalore Sanitary Board. Inquiry has, however, shown that this would be entirely out of the question, as the regular duties of the former fully occupy his time and as, though he does make quantitative bacteriological examinations, the identification of any particular micro-organisms is beyond the scope of the training of a Chemical Examiner.

3. In the case of the Professor of Hygiene there would be little difficulty as far as regards preliminary training and the provision of the laboratory necessary for the conduct of bacteriological work. It is to be observed, however, that if any reliable results are to be obtained, the investigator must be a man who has not only been specially trained in bacteriology, but who has the leisure to devote himself continuously to the study of the science and to the practice of the art of investigation. The Professor of Hygiene has at present teaching as well as hospital work sufficient to amply occupy his time, and under these conditions no satisfactory results could be expected if bacteriological investigations were added to his other duties, for he most certainly would be unable to devote to them anything but the scantiest attention.

4. The larger question as to what should be done towards extending the knowledge and utilizing the results of bacteriology has for some time past been engaging the attention of His Excellency the Governor in Council. The recent establishment of the Bacteriological Institute at Agra limits to some extent the scope of this Government's duties in the matter, but there still remain the questions of educating the students at the local Medical College and of providing for what may be regarded as part of the Bacteriologist's work—antitoxin treatment and cholera inoculation. As regards the question of education it is only necessary to point out that, if the Madras Medical College is to keep abreast of other institutions in medical training and to satisfy the requirements of the General Medical Council, it is necessary that bacteriology should be included in its curriculum. With regard to inoculation for protective and curative purposes, I am to say that this Government feels very strongly that it cannot neglect the duty laid upon it of bringing within the reach of the people of this Presidency methods of which the advantages are now so widely recognized. At present there are in Madras neither the materials for such treatment nor the knowledge

how to apply it: although in special cases recourse could, no doubt, be had to Agra for the former, the benefits thus obtained cannot be compared with the advantage that would accrue from the presence in Madras of an officer competent to prepare anti-cholera vaccine and antitoxins, and to teach others how to use them. In connection with the reorganization of the Medical College and the General Hospital, which have been recently under consideration, but with regard to which final orders have not yet issued, the question has been raised whether the services of an officer could not be spared for bacteriological work: this has, however, been found to be absolutely impracticable. The need for a Bacteriologist is one with regard to which there can be no doubt, and this need is, with the advance of science, daily growing greater. His Excellency the Governor in Council, after very careful consideration of the subject, has arrived at the conclusion that if any bacteriological work at all is to be carried on in this Presidency, it can be so only by an officer who can devote his whole time and attention to it. I am, therefore, to submit, for the consideration of the Government of India, that a new appointment—that of Government Bacteriologist—should be created, an addition being for this purpose made to the cadre of this Presidency. His duties would consist in the examination of all samples sent to him by local bodies and the various public departments, the teaching of bacteriology in the Medical College and the preparation of such antitoxins and serums as might from time to time be required; to this might be added the teaching of hygiene, which is a kindred subject. It is considered that, to avoid constant changes in the holders of the appointment, it would be advisable that the salary of the new office should be placed on the same footing as that of the Chemical Examiner and range from Rs. 700 to Rs. 1,250 per mensem according to rank.

5. In conclusion, I am to express the hope that the Government of India will be able to recommend to the Right Honourable the Secretary of State the creation of the appointment proposed and the addition to the number of medical officers allotted to this Presidency which would thereby become necessary.

I have the honour to be,

Sir,

Your most obedient servant,

Chief Secretary.

Public (1896) Department.

CURRENT No. 2



From

The Surgeon-General with
the Government of Madras.

Order

No. 445

Dated 24th September, 1896.

Received 26th } sep 29 96
Registered 28th }

Enclosures —

Spare copies —

SUBJECT.

Stating that the report regarding
Bacteriological researches in the
Madras Presidency is under reference
and will be submitted on receipt of
its reply.

J.S.
9/29/96
2

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

[1],

No. 445

3152
OFFICE OF SURGEON-GENERAL
WITH THE GOVERNMENT OF MADRAS,
Madras 24th September 1896.

From

Colonel D.F. Bateman,
~~SURGEON-MAJOR-GENERAL~~ ~~S. SETHUPATHI~~, F.R.C.S.

Ag: SURGEON-GENERAL WITH THE

GOVERNMENT OF MADRAS,

To

THE HON'BLE THE CHIEF SECRETARY TO GOVERNMENT,

Public. DEPARTMENT.

SIR,

With reference to your reminder Memorandum dated the 18th instant calling for an early ^{reply} to G.O.No.714, Public, dated the 8th July 1896, regarding Bacteriological ^{re}searches in the Madras Presidency, I have the honour to state that the matter is under reference to the Educational Department and on receipt of its reply a report will be submitted to Government.

I have the honour to be,

Sir,

Your most obedient Servant,

D. Bateman

Surgeon-Colonel,

Acting Surgeon-General with

the Government of Madras.

Comd

Public (1896) Department.

CURRENT No.



From *The Surgeon General
with the for of Madras.*

der

No. 454

Dated *20th September 1896*

Received *22* } *October 96.*
Registered *3* - }

Enclosures 1

Spare copies "

SUBJECT.

*Intimating that the
Annual Examined Report
Regarding Bacteriological
Researches in the Madras
Presidency is under review
to the Director of Public
Instruction and will be sub-
mitted on receipt.*

*J.S.
25/10/96*

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

Public (1896) Department.

Current No. 2711 of 1896

CURRENT No.

From The Chemical Examiner
Madras

Order

No. 927

Dated 21

Received

Registered

Enclosures Nil

Spare copies

SUBJECT.

Stating that the reply
to G.O. No. 714 Pub. dated
8th July 1896 regarding
Bacteriological examination
in the Madras Presidency
was despatched through
the Surgeon General on
the 5 August 1896.

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

No. 927

CHEMICAL EXAMINER'S OFFICE,

Madras, 21 September 1896.

From

SURGEON-MAJOR J. L. VANGEYZEL, M.B., F.I.C., F.C.S.,

CHEMICAL EXAMINER,

Madras,

To

THE Chief Secretary to Government
Public Department
Cottacamund

Enclosures. Sir,
in C.

With reference to Memorandum
Public Department, dated 18th September 1896
I have the honor to state that the
reply to G.O. No. 714 Public dated 8th July
1896 regarding Bacteriological researches
in the Madras Presidency was despatched
through the Surgeon-General on the 5th August
1896.

I have the honour to be,

Sir,

Your most obedient Servant,

W. B. Vangeyzel

M.B., F.I.C., F.C.S.,

Surgeon-Major,

Chemical Examiner.

[35]

No. 1054

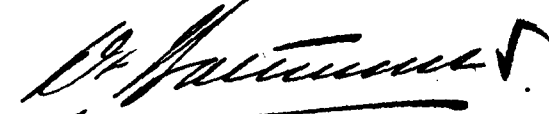
OFFICE OF THE SURGEON-GENERAL
WITH THE GOVERNMENT OF MADRAS,
Madras, 30th September 1896.

To

THE HON'BLE THE CHIEF SECRETARY TO GOVERNMENT,
Public. DEPARTMENT.

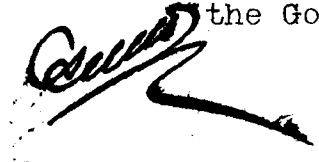
Forwarded.

2. The Chemical Examiner's report was forwarded to the Director of Public Instruction in continuation of a previous reference from this Office referred to in my letter No. 445 dated the 24th September 1896. It will be transmitted along with my report to Government when all the papers are returned by the Director.



Surgeon-Colonel,

Acting Surgeon-General with
the Government of Madras.



Public (1896) Department.

CURRENT No. .



From

The Public Works Dept.

Order

No. 3507C

Dated 3rd October 1896.

Received 6th

Registered 7th

Enclosures —

Spare copies —

SUBJECT.

Informing that the officers of the Dept have been called upon to report on the points in clauses (i) & (ii) para 4 of the G.O. No. 714 Public of 8-7-96 re - the Bacteriological researches in the Madras Presidency.

L. S. S. S. S.

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

CURRY

No. 3507C

Government of Madras.

PUBLIC WORKS DEPARTMENT.

MEMORANDUM.

Dated Madras, 3rd October 1896.

With reference to reminder from the Public Department dated 18th September 1896, calling for an early reply to G.O. No. 714, Public, dated 8th July 1896, the undersigned has the honour to state that it was understood that the G.O. was communicated for information only, and that a reply from this department was not necessary. Officers of the Department have now been called upon to report on the points in clauses (i) and (ii) para 4 of the G.O., and the substance of their replies will be communicated in due course.

J. S. Curran Col. R.E.
Joint Secretary

By J. S. Curran

The Public Department

[
1,000-25 96.

Public (1896) Department.

CURRENT No.

From the Secy. Sanitary
Board.

Order

No. 2425

Dated 12 }
Received 14 } 11-96
Registered 14 }

Enclosures

Spare copies

SUBJECT.

Stating that the
Sanitary Commissioner
should advise the Board
on the subject of Bacterio-
logical investigation in the
Presidency, dealt with in
Public G. O. No. 714 of
8-7-96.

y.s.

BACK PAPERS.

G.O.	No.	Department.	Date.

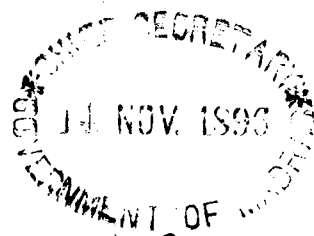
FURTHER PAPERS.

G.O.	No.	Department.	Date.

Government of Madras

Sanitary Board Office

Proceedings of the Sanitary Board etc.
dated.



read the following:—

G.O., No. 714 Public, dated 8th July 1896.

Endorsement thereon by the Sanitary Commissioners No.

433 S.B., dated 13th October 1896.

Resolution.

The question dealt with in the Proceedings of Government read above is one on which the Sanitary Commissioners should advise the Board. The separate report on which the Sanitary Commissioners is now engaged will accordingly be awaited. It should be submitted to Government either through the Board, or a copy should be supplied to the Board simultaneously with the submission of the original to Government.

(True Extract)

N. Carlson.

Secretary, Sanitary Board.

To
The Sanitary Commissioners &
The Chief Secretary to Government, Public Department.

[Pub.]
29
1,000-28-10-06.

Public (1897)) Department.

CURRENT No.

Order

From the Secy to Govt.
Public Work Department

No. 741C 46

Dated 6 " }
Received 7 " } February 97.
Registered 9 " }

Enclosures

Spare copies

SUBJECT.

Drawing attention to
P.W. Sub. to 527C 427-1-97
regarding Bacteriological
Examination of Certain
Articles and Stating that
no further Communication
may be expected.

This need not be printed

the Public ~~Health~~ Department.

Public Works (1897) Department
Current No. 781
Recd: 22.1.97

NOTE FOR THE *Chief Secy*

This file re bacteri-
ology seems likely to be
hung up for some time
more. Final replies have
been rec^d from Revenue
& L. & M. Dept & from the
S. G. & D. P. I. but the San'y.
Bd. & the P. W. D. promise
definite replies later. The
San'y Board has not replied
at all. he has had plenty
of reminders - no doubt
Dr King is dealing
with the subject in the
- comms - & of course
Dr. King is perhaps not good
doing anything with the
file till complete & settled.
will not look at any
proposals for extra expendi-
ture just now.

J. S. B.

17. 11. 96.

I suppose the replies still due
must be awaited. I note however
that in letter no 715 to L. & M.
(P.O. 74-75. Pub. 8. Aug. 96)
there is no mention of the subject

5.013
20/11/6.

I don't think this and go up to
C.S. with. Can't it say Court's
O.S. be argued on some how?

The undersigned
has the honour to
inform the Public
Works Department
the Sanitary Board
and the Sanitary
Commissioner that
the further disposal
of the questions
referred to in G.C.
No. 714 Public, dated
8th July 1896, awaits
their replies, which
it is hoped will

A handwritten signature in dark ink, appearing to be "J. E." or similar, located at the bottom right of the page.

Public Dept
C 174215

No. 13228 21.12.96

Letter to

Shakey to the South
Home Dept
(mally)

Sir,

With reference to
Mr. Nathan's letter of

1091 of the 10th instant
I am directed to state
that complete replies
have not yet been
received to go. of 714
Public of 8th July last
a copy of which was
forwarded with Mr.

Price's letter of 7.5.96
that date. They have

again been ~~urgently~~ called

for and the matter
a further communication will
~~be addressed to you as soon~~
~~as possible~~

as they are received

35B
18.11.96. 18/12/96

CW
18/12/96

Bacteriological Examination

Hon. W. H. W. Polio C.I.E.
+ cine

FOR ORDERS.

I still think that, as I said in my
note of 28/4/96 in g.O. 714, 5th
Divide opinion, the most satisfactory
way of dealing with these pending medi-
cal questions, would be to take time
in order, and to begin by disposing
of the papers regarding the reorganiza-
tion of the Medical College of Fort Hospital
which have been so long under consideration.

It would appear, however, that India is calling for a further report which was promised in the letter
7/15
8.7.96 as it ~~is~~
possibility of the local conduct of such ~~investigation~~ logical investigation as may from time to time be required. The currents appear to afford the materials necessary for this further report, so we may as well send it in as to

The origin of the idea about the
 local interest of bacteriological
 investigations was that all origi-
 nally understood should be kept for
 the Institute of Hygiene, that we
 should content ourselves with the
 local employment of an officer,
 who, besides doing things needed
 in the preparation of anti-cholera
 vaccine, would also be
 the Professor of Bacteriology & Hygiene.

and would have so many beds
in the Genl. Hosp! - The currently

The present draft (in printed form
et al) in reply to G.O. no 714
Public d. 8.7.96

It was for the record a King's file
under this name:

(a) That relating to the original
proposal of Mr. Sargent Jan^y that
in Jan^y 1895 that a Geo^y Delema
it should be appointed. Geo^y in
its order on the subject required the
denial of such an appointment
to postpone the question for

(1) ~~each~~ reason
(2) that relating to the purpose of
the part of Indian localities to
biological laboratory at Apr
to attach officers of the I. N. S. to
it & to the office of the Chemical
Exam^r at Calcutta for training.

(E), Kit relating to the complaint of the
Bangalore Sanitary Board that

There is nothing in the President's
charge but biological sciences
of improved value can be
made.

In its letter no 715, d. 8-7-96

This Govt. promised to communicate

to the Govt of India the fact
when passed on the subject of

sanitary bacteriological research.

It was an order to pass these

orders like the questions in

para 2 of the G.O. (No 214)

was called. The Govt of India

has now sent a reminder

on the subject.

2. The G.O. under reply

shows clearly that Govt. only

contemplated bacteriological

steps with regard to these

sanitary bacteriological

research. It goes on to mention

that bacteriological research

education of students being

the main object of the

med. College. The Govt of India

was prepared. Nevertheless the

Superintendent (with its enclosure)

of the Professor of Hygiene (the

Govt. of India) include proposals regarding

original research.

With J. J. [unclear] [unclear]
Chairman, Committee

There is, however, that a man
carrying on investigations, would

be able to take any part in

the Govt. as well. This is not only

a question of time, but of the

of the subject. The Govt. of India

is not only a question of time, but

of the subject. The Govt. of India

is not only a question of time, but

of the subject. The Govt. of India

is not only a question of time, but

of the subject. The Govt. of India

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is not only a question of time, but

of the subject. The Govt. of India

is not only a question of time, but

of the subject. The Govt. of India

2
It is explained by the Professor
of Hygiene that it is quite
impossible to expect modern
bacteriological investigation
lots of any value unless sent to
the Government, but it has
disposed the results of original
research showing the importance
in general principles necessary
and to be done in this local
condition.

He further says that in the S.O.
under reply are not answered in the
any great measure by anyone
except the Government. The
D. King is fact supplies in behalf
of other departments in proportion
which those departments have
not themselves given.
The question was taken in order:
(i) For that Deptts of the public
service are prepared analysis
to be undertaken.
The Sanitary Commissioner shows
that nearly all Deptts may from
time to time have work for
a bacteriologist. Attention is
drawn to the report printed
on page 12 of the current file,
where this matter is clearly stated.

3/3/98
I will not say that we should not have
Govt. of India that this entire matter is not
original research, which it has been decided
to undertake this work.

3/3/98
I will not say that we should not have
Govt. of India that this entire matter is not
original research, which it has been decided
to undertake this work.

The Board does not expect anything but a
 just addition to the San. Commission's work;
 the Veterinary Dept. is unable to
 say anything definite in the
 course of a workable plan;
 The Board of Revenue does not
 expect to have any work to
 read the proposed Deceleratory,
 while Mr. Surgeon Genl. expects
 that only the medical authorities
 the Sanitary Commission (and
 the Sanitary Board) & the
 Chemical Exams. should read
 work. The fact is that the
 work to be sent to the proposed
 Deceleratory Exam. would probably
 be limited only by his time &
 capability. If a plan for working
 on time examination is decided
 upon experience alone will show
 for how many Department work
 should be undertaken, at present
 the Sanitary Comm. has to take in account the examination
 of a few men have his hands completely full.

(ii) "What particular articles,
 besides rules, should be
 referred to Deceleratory Exam.
 Attention is again invited to
 Dr. King's memorandum (Printed
 for. page 11.) para 14. where
 he gives details as to the substance
 in regard to such exam. papers
 as required. Dr. Mr. Surgeon

x/p 6.
 Anyway, he must be em-
 ployed at work if his work
 is to be of any value
 AD

Genl. the Professor of Hygiene
 shirk the question on the ground
 that to answer it would occupy
 much time & involve too much
 detail.

(iii) "What amount of work will be
 required of the Deceleratory by
 the Sanitary Board in connection
 with actual local requirements, apart
 from general & theoretical research
 The remarks of the Sanitary Comm.
 in paras 15-17 of his memorandum
 deal clearly with this point &
 are accepted by the Sanitary
 Board as an expression of its views.
 In this connection however the ob-
 jection of the Professor of Hygiene
 that it is impossible really to
 separate general & theoretical research
 from inquiries about actual local
 requirements has to be borne in
 mind.

4. The remaining two questions deal
 with the establishment required
 for handling the investigations
 contemplated in questions i-iii
 As all the officers who have replied
 have raised up the question of

original research & teaching with
but ~~theoretical~~ investigations for
practical purposes no any accurate
estimate can be formed of present
of the probable existing establishments for
bacteriological investigations. The
positions are:

(iv) "What portion of the work
can be undertaken by the Chemical
Exam^r by the Professor of Hygiene
if he is relieved of the charge of
a certain number of hours."

All the officers concerned report
that the Chemical Exam^r can
have nothing to do with Bacteriological
investigations. The Chemical Exam^r
himself explains that he is able
to conduct (which is fact conducted
in the case of this letter from
Bangalore referred to by the Gov^t

of India) a quantitative bacteriological
examination. He adds however that
even in this position as the number
of months his investigations under
present conditions cannot be very
accurate. That he has a great
difficulty to give any opinion on the
possibility of particular Micro-
organisms. Thus it is that the
Bangalore Board requires

47
The Gov^t of India apparently expects
the Gov^t to provide for (the, like
the Professor of Hygiene ^{the Professor of Hygiene} declares that an
expert is required. Putting
under the Chemical Exam^r it
remains to be seen how much the
Professor of Hygiene can do.

In some remarks by the Professor
of Hygiene on this subject printed
on page 7 of G.O. no 714 (The S.O.
under reply) it is said that the
Professor (Sergeant Capt. Grant) has
the training & the appliances but
not the time to make bacteriological
exam^s of water in the Hygiene Laboratory.
It is also pointed out that to enable him
to make reliable reports systematic
work on the subject is necessary.

The Director of Public Instruction
contemplates the appointment of
the Professor of Hygiene as Gov^t
Bacteriological & Chemical &
Bacteriology.

The Professor of Chemistry states that
the Hygiene Dept of the Medical
College is equipped with suitable
materials & staff which is

John Smith: anxious to begin biological work.

The Professor of Hygiene himself says
that his work can be given to the
Professor of Hygiene provided he is
relieved of his hospital work. He
points out that this work cannot
^{be} carried & agrees with Mr. [unclear]
[unclear] does not give much
relief as a doctor ^{as to approximate the length} neglects ^{this} ^{of his most important}
~~his patients by Mr.~~ demands a long time ~~for his patients~~
by the ~~and many of his patients~~.
He insists again on the necessity
of devoting time to ^{systematic} research
as without experience of what sort his
reports would be valueless. He
is anxious to go to Africa to learn all
that is to be learnt on this subject.

The Sanitary Commission (after
 reflecting on an ideal scheme a laudible
 secure deposit with a Doctor's
 Stocked) proposes that the
 Officers appointed for District and
 purposes should perform the
 duties of the present Professor
 of Hygiene, including the teaching of
 Bacteriology, Therapeutics, and the

1882
The Committee on the Med. College
Recommendation speed that of
the Prof. of Hygiene is to undertake
him. Research he should have no
attached duties, wide passage
of the rest.

x. The Council of the Harvard College also proposes that the Professor of Hygiene should be appointed Assistant Surgeon and should be relieved of hospital work.

any opinion, it is before
the & take one of the men we
we - one of our regular staff -
in & bring in an outsider. I have
doubt several of your men
competent - e.g. Ross,
List & Grant

It would be one of the least we are expecting
as there is not the slightest chance of its
being sanctioned. The Govt. would want
that in some form of possible without
extra expense, or if there is some ^{unfavourable} ~~unfavourable~~
at as small an increase in expense
as possible

5
BS

(ii) The training of Sanitary Inspectors
a problem. (iii) Routine District
meeting chairs for the Sanitary
Dept. He does not go into the
question of relieving the Prof. of the pressure
of his Hospital work: that he
can wear beyond his province, like
he ^{undoubtedly} seems to regard it as ^{advisable},
Dr. Hargreaves, who is very deeply
interested in this kind of work,
writing to me.

The Senate for ^{the} does not consider
it for anyone but an expert - a
trained Doctor of Juris - should
be appointed. He makes detailed
proposals for the addition of
an expert to the ranks of the
I.C.S. & proposes the ret. of pay
on which he should receive.
These proposals involve a large
amount of expenditure, & are referred
to the Secretary of State. They are
therefore not concerned in this
note - even if sanction is
eventually asked for creating such
an appointment - it will be
submitted to him to his & less
ambitious scheme at first.

The question is to the possibility
of appreciating the Presence of Hygiene

of Hospital work depends on the
organization of the Genl Hospital.
The papers on that subject are
in a collection.

As a result of the replies on this point it is submitted that the Professor of Hygiene is the officer best able to make routine bacteriological exam^s, but that as such routine exam^s cannot be of value unless the Examiner is thoroughly familiar with his subject steps should be taken to call the Professor of Hygiene to study the methods of Bacteriological practice in India at Agre, & also to give him time for research & study. This research & study may eventually be combined with teaching.

It is submitted that if this
case is approved the Professor of
Hygiene might be requested to
submit through the Surgeon-General

a detailed working scheme on
their lines, bearing in mind that
the smaller the proposed expenditure
the more prospects there is of the
first survey of the 15th century. The
scheme of survey is being, Del.

with particular as to the one training,
the time he can devote to the subject;
the alloy required in the laboratory, &c.
He may also be asked to do the following:
1. To be self-sufficient in all things, un-
derstand & see through to the main
portion that we must have
a certain amount of...

The professor's present estimate of
cost is only a suggestion & is not
worked out in detail. The chief
dilemma which he suggests is the raising
of the pay of the Professor so as
to put him on the same level as
the Chemical Man; forbidding
private practice. The D.P.C. makes
a suggestion of somewhat the same
nature, as he points out that the
opportunity would have to be a
permanent one.

6 If the "Biological Exam" is this
afforded provision will have to
be made for the training of their
officers to fill the place that he
will leave, or when a vacancy occurs.
Para 6 of the G.O. under reply
referred to this point. The
Surgeon Genl has asked to report
on the course the names of such
officers as could be spared for
training at Agre & Calcutta. The
Surgeon Genl has misunderstood
the question. It is not whether the
says that officers can be trained
as well here in the laboratory of
the Chemical Exam. This may
be true as regards Calcutta, but
it is of course not true as regards

Howe's own men became easily deranged by the occasional training of young officers under him.

Agra. Have at present their
is a admitted little likelihood
that any doctor can be spared
to undergo training when their services
are likely to be required for
plague & famine work. The
Surgeon Genl. might perhaps be
again requested to give his
attention to this matter when an
opportunity is available, it being
pointed out that Agra is at
present the only place where
Bacteriology can be taught.

The Govt of India may perhaps
be informed that this Govt.
has under its consideration a
scheme for electing the Professor
of Hygiene to devote part of his
time to Bacteriological work.
It is recommended that
Bacteriological tests can be
and are applied to water
by the Chemical Exam^r which
for the identifying of ~~some~~ microbes,
as is required by the
Bangalore Sanitary Board.
This Govt can only rely on the
Bacteriological Laboratory
at Agra which was in a condition

Finally offering no answer
before the cold weather which
is now nearly over.

MS
25/2/97

to do work for this Govt
of India. Mr. Hankin is
a likely to remain, the greatest
authority on this subject in
India & it is only after training
& considerable research that
a local Bacteriologist is
likely to be able to do what
his aid.

MS. I submit that as a matter of fact many
18/2/97 decide whether the Professor of Hygiene
is to be the bacteriologist or not - & it
is believed ^{for the purpose} of his hospital work. If the
decision is in the affirmative the question
whether Surgeon Capt. Frank might not
be now sent to Agra for six months
study might be considered. There will
be probably a good deal more writing and
consideration before bacteriological work
becomes in this Presidency a fair accomplishment
and in the mean time if it is decided that
is to be the bacteriologist he can be leaving to
make himself of use. ~~MS~~ There needs
not be very much difficulty in getting a medical
man to take the place of the Professor of Hygiene
(supposing him to be selected) whilst that
Officer is away. In things come to a head as
soon that all medical men are required the
Officer at Agra can easily enough be recalled.

Vote for ~~the~~ Excellency the Governor

With reference to
~~the~~ Excellency's note of
27-4-97 it is respectfully
submitted that at
(back) the salary of the
Chemical Examiner
and Professor of Chemistry
is shown to be

for a Surgeon under
five years } Rs 700

for a Surgeon above
five & below twelve years } Rs 850

for a Surgeon above
twelve & below twenty years } Rs 1,050

for a Surgeon Major
above twenty years } Rs 1,250

C.W.

25/4/97

26-4-97

BACTERIOLOGICAL INVESTIGATIONS.

Public DEPARTMENT.

[G.]
[14.]
[22-10-96.]

Papers to be read in proceedings:—

Again G.O., dated 189 , No.
Again G.O., dated 189 , No.
Current No. of 189 , dated , from
" " " 189 , " , "
" " " 189 , " , "

ORDER. 12512 5-5-97

H. R. E.

(Draft of letter to India Office
Ran. 10/10/97)

13/4/97.

From the papers read above it is clear that while there is large scope for a bacteriologist in this Presidency it is impossible to provide satisfactorily for the conduct even of routine bacteriological examinations without setting apart for the purpose the services of an officer who can devote himself continuously to the subject. Under present conditions such an officer is not available. The Govt. of India will therefore be addressed on the question of creating a new appointment and providing an additional medical officer for this purpose.

The following letter will be despatched. (From Orders)

6 m. 5
Sanitary Com. 2
Sanitary Board. 1
Chemical & Hygiene 1
Revenue Dept. 6
Public Health Dept. 10
Local & Municipal Dept. 10 (197)

De. 20/5/97

190
results are to be obtained the investigator must be a man who has not only been specially trained in bacteriology, but who has the leisure to devote himself continuously to the study of the science and to the practice of the art of investigation. The Professor of Hygiene has at present teaching as well as Hospital work sufficient to amply occupy his time, and under these conditions no satisfactory results could be expected if bacteriological investigations were added to his other duties, ~~for~~ he most certainly would be unable to devote to them anything but the scantiest attention.

The larger question as to what should be done towards extending the knowledge and utilizing the results of bacteriology has for some time past been engaging the attention of H.E. the Governor in Council. The recent establishment of the Bacteriological Institute at Agra limits to some extent the scope of this Govt's duties ⁱⁿ ~~on~~ the matter but there still remain the questions of educating the students at the local Medical College and of providing for what may be regarded as part of the Bacteriologist's work ~~namely antitoxin~~ ^{antitoxin} treatment and cholera inoculation. As regards the question of education it is only necessary to point out that if the Madras Medical College is to keep abreast of other institutions in Medical training and to

108

to be carried on in this Presidency
 it can be only by an officer who can
 devote his whole time and attention
 to it. I am therefore to submit for
 the consideration of the Govt. of
 India that a new appointment - that
 of Govt. Bacteriologist should be
 created, an addition being for this pur-
 -pose made to the cadre of this Presi-
 -dency. His duties would consist in
 the examination of all samples sent to
 him by local ^{bodies and} the various public de-
 -partments, the teaching of bacteriology
 in the Medical College and the prepa-
 -ration of such antitoxins and ^{Serums} ~~services~~
 as might from time to time be required; to
 this might be added the teaching of
 hygiene which is a kindred subject. It
 is considered that to avoid constant
 changes in the holders of the appoint-
 -ment it would be advisable that the
 salary of the new office should be
 placed on the same footing as that of
 the Chemical Examiner and range from
 Rs. 800 to Rs. 1,250 per mensem ac-
 -cording to rank.

In conclusion I am to
 express the hope that Govt. of India
 will be able to recommend to the
 Right Honourable the Secretary of State
 the creation of the appointment pro-
 -posed and the addition to the number
 of medical officers allotted to this
 Presidency which would thereby become
 necessary.

12
 13/4/97

2,700 - 1,250
 Please see file A2
 These looked at #2, but I am sorry
 to say I could find nothing from it.
 The same person wrote in hand.
 19. 97