

Public (1895) Department.

ORDINARY MS.

G.O., No. 662

DATED 3rd Aug. 1895

[Despatch Abstract.]

BACTERIOLOGIST.

Informing ~~that~~ the Surgeon-General that the question of the appointment of a --- must lie over for the present on financial grounds

BACK PAPERS.

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

FURTHER PAPERS.

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

G. II]
A. 100-5-3-00.

ORDINARY, MS.

Public DEPARTMENT.
G.O., DATED 3-8-95
No. 662

INDEXED.

When given for copying. 5/8

[Despatch Abstract.]

Surf. Gen. ^{Informing the} that the
Question of the appoint-
-ment of a Bacteriologist
must lie over for
the present on financial
grounds.

BACK PAPER, No.

OF 189

FURTHER PAPER, No.

3788-2-990
21255

OF 1895

READ AGAIN ORDER OF GOVERNMENT, DATED
189, No. MISCELLANEOUS.

ENCLOSURES.

CURRENT No.

STATEMENT WITH DITTO.

ORDER OF GOVERNMENT

A A

LETTER OF GOVERNMENT.

STATEMENT WITH DITTO

PAPERS NOT FILED UP, BEING MEANT FOR DESPATCH
IN ORIGINAL (not paged).

N.B.--

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Through the Director of Public Instruction

50

OFFICE OF SURGEON-GENERAL

WITH THE GOVERNMENT OF MADRAS,

No. *Jan*

Encl. *278*

From

Coltiamund 13 June 1895

SURGEON MAJOR-GENERAL C. SIBTHORPE, F.R.C.P.J.,

SURGEON-GENERAL WITH THE

GOVERNMENT OF MADRAS,

Madras

To

THE Honorable the Chief Secretary to Government.
Educational Department.

SIR,

I have the honor to forward for the information of Government the accompanying report of a discussion at a meeting of the South India Branch British Medical Association on the 14th April last. The necessity of the appointment of a trained Bacteriologist and of the establishment of a Bacteriological Laboratory in Southern India are very fully dealt with at length in these papers.

2. There are, however, some points to which I wish to emphasise

(a) That the Medical College at Madras, of which we are all justly proud and which Government has always dealt liberally with, is now seriously behind the time in its want of ability to impart instruction on the subject of Bacteriology to its students.

(b) A trained Bacteriologist would by his work elucidate many of the pressing problems of disease among men and animals and so save the Government a great deal of money.

(c) The need of a Bacteriologist is felt in the Veterinary Medical Department.

(d) Such an official would control a laboratory at which young officers of the Medical and Veterinary Services who had a taste for that class of work would be able to work and keep up or improve their knowledge thus fitting them for independent investigations into the cause of actual outbreaks of disease.

(e) The appointment of a Bacteriologist and the establishment of a properly equipped laboratory would, I am convinced, in a few years save Government more money than the whole scheme would cost.

(f) If such an official was sanctioned his duties should be confined to the study of Bacteriology and the teaching of it in the Medical College. 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.

(g) Several alternatives present themselves in the selection of such an official.

(1) He might be selected by the Right Honorable the Secretary of State on the advice of those Ministry or Collegiate authorities in Great Britain in which Bacteriological Schools have been established under the same conditions of

Presidency College. This would be the quickest but probably the most expensive way of securing his services.

(2) The better plan would be for the Right Honorable the Secretary of State to sanction such an appointment in ~~the~~ List I on the Cadre of the Indian Medical Service, to select an Officer on the advice of the above mentioned authorities, give him a Commission in the Indian Medical Service, grant him pay commencing at Rupees 500/- a month and rising by increments to Rupees 1000/- a month as no doubt his work would be more valuable as his experience matured. Such an appointment would add to the prestige of the Indian Medical Service, would increase the esprit de corps and foster a spirit of scientific investigation amongst the junior members of the service as they would work with the hope of qualifying for either the officiating or permanent appointment. If such an Officer was appointed he should be allowed a long course of study at Netley than the usual four months one could

should be permitted to spend three or four months in some selected laboratory either in England or on the Continent before coming out to India. On arrival in India he should be sent to one of the established laboratories for a short time and should be exempted from the operation of the rule which requires all Medical Officers of the Indian Medical Service to complete two years Military duty before they are available for duties in the Civil Department. He should be permitted to expend a sum not exceeding £100/- in Europe on the equipment necessary for his laboratory and should be granted an extra allowance of baggage to bring it out. On arrival in Madras he should be provided with a room in the Medical College where he should work during the College Winter (cold weather) Session; during the other six months of the year he should be permitted to move his laboratory to one of the Hill Stations (preferably Kotagerry

or Ootacamund).

3. I am convinced that if the proposed plan is carried out it would do much to increase the efficiency of the Sanitary work in the Presidency by raising the standard of knowledge both amongst officers and subordinates.

I have the honor to be
Sir,

Your Most Obedient Servant

C. S. Thompson
Surgeon Major General.
Surgeon General with the Govt. of Madras.

P. No. 8152/95
Educational (1895) DEPARTMENT.

From

SURGN. MAJOR-GENL. C. SIBTHORPE, F.R.C.P.I.,

SURGEON-GENERAL WITH THE

GOVERNMENT OF MADRAS,

Madras,

To

No 6711 8/22nd June '95
Submitted to Govern-
ment with most
cordial support
I Dr. ...
Director of Public Instruction

No. *Four*
278

ENCLOSURES.

Dated *15* } *June* 1895.
Recd }

No.

Subject.

Forwards for information report
of a discussion at a meeting of
the South India Branch British
Medical Association where
the appointment of a trained
Bacteriologist are fully discussed
15th

Public Current 2216

For Orders

a copy attached

The S. G. never considers
ways & means. I have
abundant of papers from
him with suggestions for largely
increased expenditure on
the Sub. Health Staff, which I
hope to find time to go into
soon. When we have seen
what those schemes, & those
for the Genl. Hospital, & those
for the Lunatic Asylum, will cost,
we can take up this question,
cost, I fear, before. It is far
better I think, that we should
set our existing machinery
into good working order, first
than that we should leave it
in its present rather disorganized
state & take up new schemes.
I am certain we can't afford
both.

W.A.
24/7/95

It is a financial question. No
doubt a Bacteriologist will be
a useful addition to our establishment.
But can we afford it? What
very few other agencies have more
about the Gen. Hospital, Nursing
Nursing establishment & more that
a great deal of money will,

In May last Surgeon
Captain Elliot read a paper
at a meeting of the South
Indian Branch of the British
Medical Association on the
need of a Bacteriological
Laboratory for Madras.
It was strongly supported
by Surgeon Major-General Sibthorpe
who had himself started
the idea in 1890 when he
was Acting Principal of
the Medical College.

The Surgeon-General
submits proposals which
have the cordial support
of the Director of Public
Instruction for the appoint-
ment of a trained Bacteri-
ologist and for the
Establishment of a La-
-oratory.

It is not necessary
to remark here on the
extreme advisability
of bringing Medical
knowledge and Education
in this Presidency & as
up to date

It is well known to Govt.
that the want of knowledge
Bacteriology has proved
a serious impediment in
the work of the Civil
Medical and Veterinary
Depts. The want cannot
be supplied without
considerable expenditure,
but if the Govt. can find
funds to maintain a
Quinologist it can hardly
decline to make a special
effort to possess itself of the
services of a Bacteriologist.

In regard to the se-
lection of such a Specialist
the Surgeon-General offers
the following alternatives:

(a) He might be appointed
under an agreement as
was Professor Bourne vide
G.O. 55 Educational 26th
Jan'y. 1886.

(b) He might be granted a
Commission in the Indian
Medical Service on a
special salary of Rs. 500
rising to Rs. 1000.

(c) It is submitted that
it is not advisable that
the Officer should hold
Commission in the

be wanted before our existing
machinery is put into pro-
per order. This proposal must
lie over for the present.

I am inclined to think
that we do not want a
Quinologist now, but we shall
hear what Dr. King says about
that.

JG
25/7

No doubt this question must be decided
on financial grounds. I only hope it
will be found possible to obtain the
services of a capable Bacteriologist,
as this branch of medical science is
I believe absolutely the most important one
now a days.

Dr. King must advise us about the
Quinologist.

W
29 July

Indian Medical Service.
It would seem far preferable
that as a Specialist he
should be outside the Indian
Medical Dept. but direct
under the orders of the Surgeon-
General. It would be incon-
sistent for an officer who
is never likely to do any
military duty to hold mil-
itary rank, and that rank
might prove a hindrance
in his relations as a Spe-
cialist with the Every day
officer of the Service.

As a lecturer at the
Medical College he would
be under the Director
of Public Instruction but
otherwise it is submitted
he should be completely
independent and directly
under the Surgeon-General.

If the proposals pre-
sented above are ap-
proved it would be pos-
sible and more satisfactory
to obtain the services of
a Specialist in Bacteriology
who has already made
study of, and had some
experience in the subject.
There would then be

is necessity to wait while
he went through a long course
training. He could come
at once fully equipped
and prepared to take up
the investigations which
have for a considerable time
already awaited careful
study.

If this course be
feasible it would be
advisable not to fix
a minimum salary
which might lead to
an inferior article being
obtained, but to request
the Govt. of India to move
the Secretary of State to
inform this Govt. by
wire the price at which
the services of a suitable
specialist ~~on a minimum~~
in bacteriology can
be secured.

The need of a Bacteriological
Laboratory for Madras

[65]
25.
600-7-5-95.

DEPARTMENT.

C. No.

FOR ORDERS.

These authorities are by no means disposed
to allow of any increase in the communi-
cated staff although it is well enough
known that we are very short handed.
Besides under the new regime such
a man would be at the disposal of
the G. of I when any emergency might
arise whereas if he was a specialist
in civil supply they could not lay
hand on him.

If then Govt. decides that a bacteriologist
is a necessity and that one must be
provided it is submitted that the
best course is to procure a specialist.
Such a man will probably be a costly
article and if the S. G.'s plan as
to how he is to work is to be adopted
the cost of creating a laboratory
at both Madras and on the hills
will have to be met. I don't see
though why he should not be per-
manently located on the hills where
are no doubt far better suited as
regards climate for the conduct of
research in this branch of science.
Why he should work in Madras, besides
as a lecturer I do not see. He could
at any rate if his working 144 Rs.
were on the hills require only a
very small accommodation for
the plain.

The Office note suggests that he should
be subordinate to the S. G. Incepting
as a lecturer at the Med. College.

The proposal made appears
to be a very desirable one
to be a very desirable one
17.7.95. but it means a lot of
money and with all deference
to the opinion of such an authority as the
S. G. I am disposed to doubt the
absolute correctness of the opinion ex-
pressed in (1) para 2 of his letter.
It is to be regretted that the S. G.
has not entered into the reasons
for his opinion.

It is unlikely in intention that either
the G. of I or the S. G. would agree
to the proposal to increase the cadre
of the S. in Dept. in order to provide
for the other two. It is to be regretted

I do not understand why he should. It would seem better to place him by himself in the position of the chemical lab. to whose work he would be analogous. However that is a minor detail. I have often thought that the post of Asst. Bacteriologist is nowadays rather a heavy one. I do not know what he does but he cannot have much to do. It seems a question for consideration whether he is any longer required. If he could be done away with there would be found to meet the cost of the bacteriologist or at least to be a great part of it.

23/7/95

FOR ORDERS.

Dr. King, who is now here, will no doubt advise as to this.

By JPS

24/7/95

He has nothing to do now as Bacteriologist except to supervise the distribution of Quinine &c

JPS

No. 2247
Ed. Cor. 2,000-29-3-94.

1895.

Educational Department.

From

THE DIRECTOR OF PUBLIC INSTRUCTION,
Madras,

To

THE HONORABLE THE CHIEF SECRETARY
TO GOVERNMENT,
Fort St. George.



No. 6711

Dated 22nd
Despatched 22nd June/95

Received 24th
Recd in Puke 18th July 95
Clerk 1 No.

ENCLOSURES (1)

Subject.

Submitting to Government letter from the Surgeon General with the Government of Madras, forwarding for information report of a discussion at a meeting of the South India Branch British Medical Association where the appointment of a trained Bacteriologist are

55: 26-1-86 mld
984: 1-9-76 PubLC
for 9: 6-1-65
421 of 1866 sh
Revised 1990-91 221-5-94
1233 24-3-94
1366 5-4-4-94

40. of 3rd August 1895 No 662.

The appointment of a Bacteriologist is no doubt desirable but there are already beforefoot. so many proposals relating to medical requirements which involve extra expenditure that this matter must lie over for the present on financial grounds. (From order)

To The Secy to Govt: Revenue Dept for perusal of JPS' notes.

Sum. 11/2/95

25B
31-7-95

To The Surge Genl.

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

189 .

READ AGAIN G.O., No. _____ DATED _____
189 ,

CURRENT No. _____

ENCLOSURES TO C. No. _____

ORDER OF GOVERNMENT A A A A A A A

LETTER OF GOVERNMENT. _____

STATEMENT WITH DITTO. _____

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

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Vol. VI.]

May 1895

[No. 1

TRANSACTIONS
OF THE
SOUTH INDIAN BRANCH
OF THE
BRITISH MEDICAL ASSOCIATION.

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MADRAS:

PRINTED AT THE LAWRENCE ASYLUM PRESS, MOUNT ROAD.

1895.

Surgeon-Captain Elliot read the following paper.—On the needs of a Bacteriological Laboratory for the Madras Presidency.

The object of this paper is to open—I advisedly use the word 'open'—a discussion on the needs of a Bacteriological Laboratory for the Madras Presidency.

The idea is no new one, for as long ago as 1890 our present Surgeon-General, then Acting Principal of the Medical College, brought it forward in a letter addressed to the Director of Public Instruction. I think I cannot do better than read you an extract from that letter.

I have to thank the Principal of the Medical College for his courtesy in allowing me to make use of this correspondence. The letter, No. 31 of 14th April 1890 so far as it refers to the matter in hand, runs as follows :—

Extract from letter from the Principal, Medical College, to the Director of Public Instruction, No 31, dated 14th April 1890.

* * * * *

10. In order to give* them the opportunity of such a training

* Students for the M.B.,
C.M. and L.S.Sc. Degrees.

and to bring the school on an equality with the best schools at home, I would suggest to Government the advisability of establishing and equipping a Research Laboratory in connection with the College, the Superintendent of which should at first be a young, highly trained and carefully selected Scientist from home and should be well paid. I would suggest these rates should be the same as the Chemical Examiner to Government is paid at present, under G. Os. Nos. 1060, dated 1864 and 1867. This officer should be in the same independent position as the Chemical Examiner is. If he is to do good work he should decide at home what apparatus he would require, a sum of £300 should be allotted for this purpose, all the Laboratories in the College should be at his disposal to work in and he would require only a small special room for his own researches. If such an appointment was made under the Government of Madras and adequately paid no doubt in a few years their own commissioned officers would qualify themselves to take up such interesting and important work.

This officer's duties should include original work in Physiology and Pathology, both human and animal—subjects still untouched

in Southern India. Such is the work that is now carried on in the Pasteur Institution in Paris and which Professor Cunningham carries on in Calcutta in his Biological Laboratory under the Sanitary Commissioner with the Government of India. This officer could also teach Practical Physiology in the College, as suggested by the Professor of Physiology in his letter of the 17th March and Practical Pathology with Bacteriology which latter is required for the degree of Licentiate in Sanitary Science of the Madras University.

(b.) The equipment of his special laboratory would not cost much and his Assistants could be taken from those who will have to be appointed to the College, if the suggestions regarding my second heading are carried out.

If the Madras Government decided on making such an appointment and the officer selected was a good man, it would confer an immense benefit on Scientific training in India and on Science in general without considering the great economic benefits which would probably result from research into the Epizootic diseases of Southern India such as has been the result of Mr. Pasteur's work for the French people and for the world generally.

(True Extract.)

W. PRICE, M.D.,

12th March 1895.

Principal, Medical College.

The establishment of a Bacteriological Laboratory in this Presidency will, of course, mean a considerable expense to Government, and its foundation must therefore be justified by its needs.

I propose in as few words as possible to maintain that the foundation of a Bacteriological Laboratory in Madras is justified.

- (1) From a scientific point of view.
- (2) From a humanitarian point of view.
- (3) From an economical point of view, and lastly
- (4) From the selfish standpoint of the protection of ourselves and our animals.

Before we can properly discuss the subject, we must review briefly the past history of Bacteriology, its present position and its future probabilities.

We shall then be on a footing to narrow the scope of our enquiries to the limits of our own Presidency, and to dispassionately review the facts before us in their bearing, both on the health and life prospects of ourselves and of our animals, and also on that very important factor—the Government Exchequer.

It is no exaggeration to say that in the few years of its existence as a science, Bacteriology has revolutionised our whole conception as to the causation of disease. Our old vagueries are replaced by clear cut precise ideas, which every year serves to define more accurately.

The basis of medically applied Bacteriology has been and is the germ theory of disease. What this theory is we find clearly stated by a well-known writer who says:—"This theory maintains that certain specific diseases are invariably associated with the growth and multiplication in the system of corresponding specific microbes, and that these microbes are the actual contagia or causes of the disease."

The evidence on which this theory is founded is contained in the four well known 'Canons of Koch.'

Should a disease satisfy those canons, its logical connection with its specific germ is as clearly proved as anything can be in the world of science.

In this way the Bacterial origin of Anthrax, Erysipelas, and Tuberculosis in man has been fully established, not to mention the various diseases confined to animals, which have been equally clearly worked out. There are besides many diseases, whose Bacteriological origin, though not capable at present of absolute demonstration, is practically a certainty, *e.g.*, Typhoid, Diphtheria, Leprosy, Pneumonia, Cholera, etc., etc.

The axiom of some of the great continental teachers is said to be that this is the century for investigation, while the next may be the age of treatment.

Such has not been the footing Bacteriology has taken up, or it would not have earned such a strong claim to our gratitude, as it now possesses.

This science has not been content with searching out the causes of disease, but has made immense strides in both prophylaxis and treatment.

The civilised world even now to-day is showering her highest honours on the discoverers of the Diphtheria Antitoxin, on the men by whose efforts one of the most dreaded of infantile diseases has been shorn of most of its terrors. Lister and Antiseptic Surgery, Pasteur and Hydrophobia, Hankin and the Albumose of Anthrax bacillus are household words.

Koch has long been trembling on the verge of the discovery of a tuberculin, which shall check the progress of a disease, which we mention almost with bated breath.

Gentlemen, these are a few of the triumphs which have been the outcome, direct or indirect of the science of Bacteriology.

I may be permitted to pause a moment here to answer the question which would naturally occur to many of us, as we dwell on this subject. Why have I. M. S. men contributed so little to the advance of Bacteriology? The answer is a simple one. Bacteriology is a study which requires an undivided attention. It is essentially a specialist's subject and as our system now stands, very few men have time and money to do good work at such a science. A man comes out to this country well up to date and *au fait* with science, from a student's point of view; but after he has spent 3 years of Military Service in wearisome changes of stations, and often far from civilisation, the first freshness of his knowledge, and keenness of his scientific ardour have too often been lost. He takes easily to a subject in which he is thoroughly grounded such as Surgery, but the extra knowledge of technique that Bacteriology requires is lost and is not easily regained.

Now as to the outlook for the future. I confess that I am one of those who firmly believe that the Bacteriological Theory of disease is the line of all our future progress in Surgery, in Medicine and in Hygiene.

The daily patient toil of devoted men will, I believe, accumulate the facts our knowledge will embrace, till every specific disease is traced to a Bacterial or at least to an organic origin.

As it has been in the past, so will it be in the future, knowledge of the causes will be followed by a rational treatment, till under the combined influences of Hygiene and Antitoxins the terrors of specific diseases will dwindle to the shades of their former selves.

Now, gentlemen, as to the local application of these general principles. Here in India, and especially in Madras, we have a host of our own peculiar diseases; a plenteous harvest indeed, awaiting only the labourer's hand.

What a field for the man, who can revel in material for the elucidation of such problems, as await the student of Leprosy, Elephantiasis, Surra, Malaria, Dysentery, Cholera and a nameless host of other diseases.

What an opening there now seems to be for the discovery of a snake poison antitoxin! What store of gratitude from India's millions may be earned by the man who will open the lines of sound treatment for these many and terrible diseases.

Possibly some one who ill estimates, the immensity of the work before us, may say that Hankin and Lingard are already in the field. It is true that they are, and well have they justified their appointment, but surely so vast a harvest needs, nay! demands more labourers.

Europe on whose diseases, years of toil have been spent, numbers its Bacteriologists by hundreds, while vast dark India, seething with its own peculiar host of germs, is forsooth to have but two.

But very lately a Government circular came round to us at this great educational centre to ask if we knew of any trained native Bacteriologists.

Madras has none such because it has no European trainer of Bacteriologists. It is surely absurd that this large and important Presidency with its highly-developed educational scheme should be dependent on Bombay or Bengal for its native Bacteriologists, that it should be obliged to acknowledge that in the science which is

leading the van in the arts of healing, Madras is giving no training worthy the name to her student-children. Such a condition of things, Gentlemen, is a disgrace to us. It is a disgrace that we in 1895 are turning out our students, educated as Medical men, on the same footing as if the century were 20 years younger. As well might we rest content to send them forth ignorant of the use of the Clinical Thermometer, the Stethoscope, the Laryngoscope and the Ophthalmoscope.

The student educated in the last decade of the 19th century has a right to demand of his alma mater that she should equip him fully with the scientific armour of to-day's latest pattern. If she fails to do so, she fails in her duty.

Nor is it alone the student who is the sufferer. The Officer of Public Health, and the Veterinary Officer are keenly feeling the loss of a Bacteriological Laboratory to which they can send their difficulties.

In the course of his letter to me Professor Haukin uses these forcible and sensible words:—"At the present time," he says, "it is not possible to ask Government to encourage scientific work of purely academic interest. It would, therefore, be advisable merely in the first instance to do work that is, directly and immediately useful. For instance, to carry out tests for the presence of cholera or typhoid microbes in water or other suspected substances. Often epidemics, whose nature would otherwise remain obscure, can be explained by means of a little Bacteriological help, and explaining an epidemic is the best means of ensuring that it will not happen again."

The Hygienist may suspect a water, his tests may lead him to incline to reject it, but his mind is uncertain. The Bacteriologist's eye falls on the specimen, and an answer can often at once be given, which in its certainty and assurance may have a vast influence on the health of a big community such as ours. But recently cholera broke out in Madras. Specimens of the water suspected were sent to Professor Hankin. The journey was a long one, delay was necessarily encountered, and steps had to be taken one way or the other in the absence of a confirmative opinion.

Need one point out how much more assuredly and promptly responsible officials would have been in a position to act, had a

decisive opinion as to the presence or otherwise of the cholera bacillus in that water been given. Dr. Nield Cook tells me that he is constantly at a severe loss for want of skilled Bacteriological examination of water.

In times of epidemics, whether among animals or men, it is often essential that at a very early stage an absolute diagnosis should be made. This is often possible only by Bacteriological means.

There is a touch of grim humour in the fact that Government is calling on the Veterinary Officers to help it at the present moment in a Bacteriological Survey of Indian cattle diseases.

The strongest comment I can make on the absurdity of such a call, is to read you a letter I lately received from an Officer well known to you all, who is at present superintending the Civil Veterinary Department in Madras:—

OFFICE OF THE SUPERINTENDENT,
CIVIL VETERINARY DEPARTMENT,
Chepauk, Madras. 18th March 1895.

From

THE SUPERINTENDENT,
CIVIL VETERINARY DEPARTMENT,
MADRAS PRESIDENCY.

To

SURGEON-CAPTAIN R. H. ELLIOT,
I. M. S.

MY DEAR ELLIOT,

With reference to our conversation of a short time back, regarding the establishment of a Bacteriological Laboratory in Madras, such an institution would be invaluable to myself.

The Madras Government are undertaking a Bacteriological Survey of the Presidency with reference to the diseases of cattle, and it is part of my duty to make microscopical examinations of diseased tissues from time to time, and also to prepare specimens for the Imperial Bacteriologist.

At present apparatus to carry out this work is not at hand and I fail to see how real scientific work is to be carried out under this circumstance. As you are aware more is required, than a microscope and a few staining agents. I hope your efforts to establish a laboratory in Madras will succeed, as it will, as far as my department is concerned, save much time, labour and expense. Look to me to move my department in assisting you in your work.

Yours sincerely,

C. B. M. HARRIS,

VETERINARY LIEUT.,

Supt., Civil Veterinary Department.

Were a Bacteriological Specialist appointed in this important centre, much valuable work could be done, but at present Government is demanding bricks and giving no straw.

Not very long ago a Veterinary Officer here sent me a specimen of blood from a case in which he suspected anthrax. He had no appliances to hand and I was able in a few minutes to put him in the position to take decisive action. This is no doubt a very simple case, but the principle involved, admits of almost indefinite extension.

The immense loss of life and money, that may accrue to both Government and private individuals, for want of prompt action is a very strong argument in favour of local action in this matter.

"A stitch in time saves nine" is an old adage, which if true anywhere is doubly so in the Prophylactic branches of Medical and Veterinary Science.

Take, for instance, the large consignment of Australian and other horses that are annually shipped into Madras and consider the important results of the introduction by this means of any undiagnosed epidemic disease amongst us.

Again in the Chin Hill Expedition of 1892 and 1893, it was my good fortune to help Veterinary-Lieutenant Eassie in the investigation of what appears to be a hitherto unknown form of epidemic among sheep.

This is not the place to treat this matter in detail, but it suffices to say that out of flocks of a thousand sheep sent up to Fort White, scarcely 200 would arrive there.

In the absence of certain knowledge, Mr. Eassie felt himself bound to forbid the issue of the meat. I need not point out how heavily Government were the losers, nor need I emphasize the evils of the loss of meat to our men, who were unable to get any efficient food-substitute and that too while doing work of the most severe kind. Such causes of disease would most probably be threshed out by a Bacteriologist, and Government would, in this one detail alone, fully recoup themselves for the whole expense of the establishment of a laboratory in Madras.

One more instance I would bring forward: an immense reward has been offered for the discovery of a remedy for snake-bite. This is not the way to work with men of science. It may do with commercial men, but the triumphs of science have been won by those, who toiled for very love of their work.

Take away the reward and put a man, whose soul is in it, free to work at this subject, and the many kindred ones, and I believe that ere long we would know, whether or not there is a Cobra Antitoxin.

If there is no such thing, our snake-bites must at present continue to be treated by local means alone; but sanguine as some of you may think me, I am not without grounds, for hoping, that an 'anticobrin' is a triumph of the near future.

Gentlemen, if we are to have a Bacteriologist, he must be a *Bacteriologist*. It is useless to expect the Port Surgeon, Jail Surgeon and Professor of two or three other Sciences to be also the Bacteriologist. There is a full field for any man, and if he is to do good work, he must be left free to work.

If we are to have a Bacteriologist, I would urge that he should be one of ourselves. In the I. M. S. we have many young men, who have proved themselves able and hard workers. The past record of our service is one to be proud of. A man picked from among us will be one, who is known to be able to stand the climate, who has already a business-working idea of India and her diseases, and lastly a man, who unlike the pure civilian knows what discipline is. Of course he must be sent home to get a year's special training. Should it not be thought advisable to choose one of ourselves, I would advocate a trained man being given a commission rank, etc., in the I. M. S., but kept exclusively to the work in view.

Such an experiment has been made before and I think the Government of India has had little cause to repent the experiment it made in the appointment of Dr. D. D. Cunningham now an F. R. S.

The allowance of an I. M. S. officer, if so appointed, should be liberal to compensate for the many risks his work will inevitably entail. Should a special man be brought out, he would of course have to be liberally paid, or he would not come.

Whatever arrangement is eventually made, I agree thoroughly with Mr. Hankin in recommending that the head of the Laboratory should be as independent as possible. His opinion, if it is to be a good one, and his work, if it is to be valuable must run in no official grooves.

It would be of invaluable service to a beginner in this Presidency, if, after coming out from England, he were allowed to study for three months in one of the already-established laboratories, where he would pick up many little hints, that would be very useful to him in working a laboratory in a hot climate.

He would in fact learn the idiosyncrasis of Indian Bacteriology in a minimum of time and with a maximum benefit to his employers.

Finally, I would add a few words as to the practical working of such a laboratory. Professor Hankin, in reply to my inquiries, tells me that he estimates "the cost of all really necessary apparatus" at about £100.

Good work in research lines could not be done in Madras on account of the damp heat, but enough could be done to give a grounding in the subject to those students who wished to take it up.

I should propose three or four months work in the year being done in Madras, mainly for teaching purposes, while the remaining months were spent in a climate suitable for such work, *e.g.*, that of Ooty or possibly better still Kotagheri.

All experts seem to be agreed that Bacteriological work cannot be effectively done in a steamy climate like that in which we revel down here.

Three or four months would be amply sufficient for the student's course. It is in fact the length of the Netlay curriculum in this subject. On the other hand, I think that as much of the expert's time as possible should be devoted to the immense mass of useful and original work, which will crowd in upon him.

It would not be difficult to allow a few keen and promising Bacteriological students to spend eight months with the Professor in the Hills, and indeed such an arrangement would no doubt be a valuable development, as it would in time enable a good laboratory staff to be selected.

As to the buildings required, these are by no means elaborate. A small bungalow, or a couple of rooms in the hill station with gas and water laid on, would suffice; while down here in Madras for teaching purposes, a room in the Medical College could probably be easily provided.

It would, one would think, be by no means difficult to make some arrangement with the Professors of the laboratories already in existence. I refer to those of the Professors of Chemistry and Hygiene.

Remarks by the President.

Gentlemen,—Surgeon-Captain Elliot deserves all our thanks for the trouble he has taken in bringing this subject before us and I hope it will be fully discussed. You have already heard my views which I placed on record when acting as Principal of the Medical College in 1890. I need hardly say that further experience of the great strides, such investigations have made since 1890 have only confirmed the views then experienced.

I will now read you a letter from Mr. Ernest Hart which he addressed to the Government of India.

It is not necessary for me to enlarge on the great general experience this gentleman has had in our profession and the requirements necessary to keep it up with advancing scientific knowledge and I only read the letter as it is possible that some of you may not have seen it, and as I thoroughly coincide in his views.

BACTERIOLOGICAL INVESTIGATION IN INDIA.

The following letter was addressed to the Government of India by Mr. Ernest Hart before he left India :—

To Sir A. MacDonald, K.C.S.I., &c., Secretary to the Home Department, Calcutta.

DEAR SIR,—Since I had the advantage of an interview with you in Calcutta, in connection with the deputation appointed by the First Indian Medical Congress to bring to the notice of the Government of India certain resolutions adopted by the Congress, I have visited various parts of the Indian Empire, and have taken the opportunity of investigating the provision made for the carrying out of bacteriological investigation and teaching, and of the extent to which some further provision is necessary.

In relation to the resolution urging the Government to provide such places of investigation and teaching in the chief centres of the different Presidencies, you will, perhaps, permit me to mention some of the facts observed in Burma, in the Madras Presidency, in the North-West Provinces, and elsewhere. In Burma which is the first place visited by me after leaving Calcutta, I found, both at Rangoon and at Mandalay, conditions existing which urgently called for skilled and continuous bacteriological study, in the largest and most elementary interests of public health, and this is true in respect both to the troops and prisoners under the immediate charge of Government and of the general population. At Mandalay there have of late years been more than one severe outbreak of cholera in the jail, and there is a great deal of typhoid fever among all the classes of population, both official and unofficial. The main water supply is from the moat or ditch surrounding the old palace. Every one is agreed that this main source of the water supply as well as accessory sources are unfit for drinking, and evidently liable to specific contamination. At Rangoon and at Bhamo similar conditions prevailed in a less exaggerated degree. But at neither place, nor indeed in the whole of Burma, could I hear that there was any single person equipped with the apparatus or the knowledge, or having the duty of even elementary examination of the water supply, such as could alone determine what were

the sources of contamination, what were the nature of the organisms present in the water, and whether its impurities were animal or vegetable. This incredible scientific destitution over so vast an area needs no comment from me, and points its own moral. Under these circumstances, it is not humanly possible satisfactorily to trace the origin of any epidemic, general or local. Means of course can be adopted, and have been adopted, by the hurried removal of prisoners or troops, the evacuation of barracks, the boiling of water, to limit the extent of the outbreaks and to tide over the period during which the microbe preserves its virulence. But the return to the old quarters means a recurrent liability to infection from an undetected and unremoved source of danger. In both places plans of a more or less ill-digested character, and without the necessary highly skilled advice, have been partially carried out, or are in contemplation, and much expense has been incurred in the preparation of such plans, of the efficiency of which grave doubts are, however, entertained.

In Madras, not very dissimilar state of things exist. The water supply of the city is admittedly inadequate in quantity and quality. But here, again, there are no certain data derived from bacteriological examinations, whether of the general supply, and the sources from which it is taken, or of local supplies. Although Madras has the advantage of being the headquarters of an important medical staff, and of being a medical centre, many of the arrangements of which show a high degree of efficiency, yet there is no provision there, either for bacteriological examinations of food and water, or for the more recondite but highly necessary bacteriological studies and examinations which are now a daily necessity of intelligent and fruitful study and treatment of disease.

In the North-West Provinces I have found a bacteriological laboratory at Agra under the direction of Professor Hankin. It is a simple but effective building rented at the moderate rental of a hundred rupees a month; perhaps somewhat inadequately provided with scientific apparatus with working expenses (apart from salaries) amounting to a total of not more than three thousand rupees per annum, including the expenses of the whole of the toxicological work of the Provinces. I found here that Professor Hankin's bacteriological work is performed in virtue of his office as Chemical Examiner

and Toxicologist. Fortunately the chemical and toxicological work in these Provinces does not appear to be so heavy as in other Presidencies, with which I have become acquainted, where it fully occupies the whole time of the incumbent of the office. But even here together, it is increasing rapidly from year to year, and if this rate of increase continues, it is doubtful whether time can be found for bacteriological work. Meantime, however, the results achieved here have been such as to demonstrate the high value to the public health of investigation of this nature, and I may refer to it as affording an example and testimony of the need for increasing and multiplying the facilities here afforded. Among the different lines of work that I saw in progress in Agra, I was particularly struck with the far reaching importance of the numerous investigations which were being carried on concerning the causation of cholera arising out of the local contamination of wells at various religious fairs at Allahabad and other places. Investigations such as these not only furnish valuable and definite information as to the places and manner of origin of epidemic outbreaks at great popular gatherings, but in explaining the natural history of the growth and intensity of the cholera virus, have a far wider application throughout the Empire, and furnish knowledge of permanent utility to sanitarians throughout the world. The report furnished to the Medical Congress at Calcutta of the investigation and discovery at this laboratory of the precise causation of the typhoid epidemics in Agra and Lucknow, and of cholera epidemics in Cawnpore, furnish examples so clear and striking of the invaluable application of skilled bacteriological research to the every day occurrence of Indian sickness and mortality, that I need not dwell upon them in detail. The lessons which they have taught as to circuitous methods of causation of the poisoning of food and water supplies, and the definite precautions necessary to stop these avenues of disease, are such as are obviously applicable not only to the particular cases investigated, but to all Cantonments, Barracks, and Jails, and hardly less so to villages and towns. The observations of Professor Hankin on the remarkable power of self-purification, possessed by the rivers of the North-West Provinces, owing to the influence of strong sunlight, have furnished valuable information and given fresh confidence to those concerned with municipal water supplies. The studies concerning the methods of

disinfecting wells are likely, in my opinion, to be not less fruitful of good results.

I may be permitted to observe that it may not always be possible to find for such posts men possessing the original power and genius for investigation which Professor Hankin has shown himself to possess. But by application to the proper authorities in England, and by careful selection, it would undoubtedly be possible to obtain for the direction of bacteriological laboratories in India men of like qualifications and enthusiasm and of high aptitude, seeing that there is now an increasing number of able bacteriologists in Great Britain trained in the laboratories of Oxford, Cambridge, and Edinburgh, and of the Colleges of Physicians and Surgeons in London, for whom the virgin soil of Indian bacteriological research would offer special opportunities.

To the above statements I would beg permission to add one or two other remarks. To make these bacteriological stations fulfil their full measure of utility they should obviously be centres for teaching in their own department, as well as for practical and scientific investigation and research. To them should come in suitable batches (proportionate to the size and resources of the station) military and civil medical officers. These would necessarily for the most part be men of junior standing, but they should have recurrent opportunities of strengthening and extending their knowledge, and of bringing their methods and results under review; and special leave should at all times be granted for this purpose, the time being counted as actual service on full pay. In any state of things that could with satisfaction be contemplated, it ought not to be possible to point to any town or cantonment unprovided with men capable of making on the spot the necessary bacteriological observations, to determine the origin, methods of diffusion, and means of prevention of any local outbreaks of cholera, typhoid, or other epizootic diseases of man or animals. This result might be obtained by the methods I have ventured to suggest, with great certainty and in the end with great economy of life and money. Nothing is more costly to the public service than the frequency of endemic and epidemic preventible disease, with their frequent expensive accompaniments of evacuation of barracks, displacement of stores, &c., towards the prevention of which

bacteriological investigation and research can alone supply the necessary arms.

It may not be out of place to remark that the combination of the offices and duties of Chemical and Toxicological Examiner with those of District Bacteriologist does not commend itself as being one which is likely to be generally efficient or often possible. The two kinds of duties require very different kinds of knowledge which would seldom be found combined in the same person, and which if exacted would dangerously limit the sphere of choice and frequently end in neither kind of work being efficiently performed. For the limited number of higher posts of superintendent, teacher, and investigator, of which I am now speaking, special aptitudes and continuous application are necessary.

There can be no doubt that bacteriological work of the highest kind (although every way practicable) is conducted in India under special difficulties of climate and temperature, and in some cases it might be necessary to change the locality of the laboratory at different seasons of the year. The question will necessarily arise, whether the persons to be appointed as superintendents of such laboratories should be selected from the Army Medical Services or from civil life. The disadvantages attending the adoption of the former alternative are so numerous as in my opinion to completely preclude its adoption. In the first place the specialisation of studies is now so great, and the fields of work and course of training in each so highly developed, that the training and experience required to fit a man for medical practice in the Army would render it impossible that he should simultaneously become sufficiently skilled and experienced in bacteriological work to fill the post in question. Moreover, the questions of seniority and juniority of rank, promotion by gradation, and the whole theory of official life in the British and Indian services are entirely adverse to the conditions of scientific research, and the mobility of arrangement essential for the efficiency of the laboratories. Officers of all ranks and positions might be expected to avail themselves of the facilities of such a laboratory, and official disparities of rank would in this relation be very inconvenient. The position and duties of the superintendent should be essentially professional and unfettered by hierarchical considerations. Moreover, as I have before intimated, it would, very rarely be possible to find a

man of the highest technical qualifications and preliminary achievement in biological work in the ranks of the services, and seeing that it is an essential condition that the biological superintendent should be wholly devoted to his work, and not liable to be ordered or diverted to other occupations, there would be no advantage in his being on the strength of the Army or Indian Medical Service.

In selecting the bacteriological superintendent and investigator from civil life, the choice would be fettered by any other considerations than those of his proved achievement and personal suitability. I do not anticipate that for the present any large number of such appointments need be made. One in each Presidency would be sufficient. In reference to the question of cost, the necessity for the erection of buildings would rarely arise. The example of Agra shows that a roomy bungalow can be well adapted to the purpose at a very moderate rental. Dr. Simpson, of Calcutta, who is carrying on such excellent bacteriological work, and Professor Hankin at Agra, both inform me that native assistants can be successfully employed at little cost, while the working expenses of such laboratory are relatively insignificant when once they have been provided with an adequate outfit. The salary of a superintendent, equivalent to a thousand pounds annually, would be but a nominal incident in the expenditure of each Presidency.

The advantages derivable from such an institution in each Presidency are, on the other hand, incalculable, and the present need for them so obvious and so urgent that they need no further argument to press them upon your attention. Apart from the direct and immediate benefit resulting from the work done in the laboratory itself, they would send out annually an army of officers trained there, in succession for all primary and elementary bacteriological work, whose capacities would be immediately available, as they are now urgently required in every hospital, cantonment and district appointment throughout the Indian Empire. It must always be remembered that the village and the household, the hospital ward, the individual tank, the local well, are the units of sanitation, and that the first cases of parasitic diseases are the fountain and origin of spreading infection. Great works, costly buildings, large arrangements are constantly rendered inefficient, useless, and even dangerous by reason of small defects, and of the

inability of those on the spot to recognise, trace, and remedy the elementary sources of danger.

I have referred above mainly to certain aspects of that science and art of preventive medicine, the importance of which is most popularly recognised and widely known. There are others, however, covering the whole range of malarial fevers, pernicious anaemia, beri-beri, anchylostomiasis, filaria, leprosy, etc., which are of high importance, and which cause great loss of life, but as to which comparatively little progress has been made in India owing to the deficiencies, for which I am now venturing to suggest a remedy.

I am encouraged to do so first by the unanimity with which the Indian Medical Congress at Calcutta welcomed and supported the observations which I there made on this matter, and further by the sympathetic reception which you gave to the resolution on that subject, which I had the honour, as a member of the deputation from the Congress, of laying before you; and further, by the well-known solicitude of the Government of India for the health and welfare of the troops and for the general body of the population under their charge. Of this solicitude ample evidence has been given, as you reminded me, by the large expenditure which has been made by the ready adoption of those recommendations and proposals of medical and sanitary experts which have resulted in the reduction within the last few decades of the mortality of the troops from 69 to 15 per mille, thus practically adding to the strength of the army another army corps of like dimensions.

The proposals which I have here made, in further development of the observations which I had the honour of addressing to you on behalf of the deputation in Calcutta, are unambitious and of no costly character, but there is reason to believe that their adoption would be beneficent and attended with far-reaching results.

I have the honour to be,

Sir,

Your most obedient servant,

ERNEST HART, D.C.L.

Hon. Editor, the British Medical Journal,
Chairman of the Parliamentary Committee of the
British Medical Association, and Chairman
of the National Health Society.

BOMBAY, 9th March, 1895.

Note.—As showing the growing and widespread sense of the necessity for such work in each Presidency, as is being done in Agra, I may mention that during the few days that I spent there, I found that applications had come for cholera vaccine matter for 6,000 coolies from Assam, which was being supplied; application for the investigation of the products of incinerators in Bombay had recently arrived, requests for the examination of substances connected with cholera outbreaks in Madras, and typhoid outbreaks in Lucknow, sewage disposal in Naini Tal, and water filtration in Jubbulpore were under consideration.—*Madras Mail*, March 23, 1895.

I am fully aware of the many charges Government has to meet and of its financial difficulties, but I am convinced that until we are in a position to carry out such investigations in Southern India and to instruct our Medical students in the more advanced methods of research that our Medical education and practice will continue to be behind the requirements of the age.

Surgeon-Major G. F. Poynder, remarked that he was sure all present had listened with much pleasure to the able paper that Surgeon-Captain Elliot had just read, and which clenched (if that were necessary) the arguments brought forward by Mr. Ernest Hart to show that a bacteriologist was urgently required for this presidency;—he hoped however that the author of the paper would not demur if he took exception to the proposition that the bacteriologist should be chosen from amongst the members of the I. M. S., as he felt sure that any suggestions for reform would come with much more force from an outsider than from one who was in any way connected with the service. There was undoubtedly a certain amount of 'animus' against us in the combatant ranks and though many were striving to remove that feeling, still while it existed, it would be well, for the present at any rate, that a man be chosen from outside, rather than from the ranks of the Medical Service.

Remarks by Surgeon-Lieutenant-Colonel W. G. King. (Law's Corner)

MR. PRESIDENT,

I trust I shall not be understood as wishing to undervalue the importance of bacteriological enquiry, if I draw attention to the tendency both in Surgeon-Captain Elliot's paper, and in that read

by the President (written by Mr. Hart) to illegitimately and unnecessarily magnify the importance of bacteriology. Mr. Hart has pointed to the mortality amongst prisoners and troops from cholera and typhoid, respectively, in Mandalay. He then proceeds to make us understand that absence of laboratory facilities for the identification of the typhoid bacillus has led to gross ignorance of Medical officers, and the withholding of the most simple sanitary precautions. There seems to me here to exist a confusion between the rôle of the bacteriologist and the sanitarian. The Sanitarian must always remain to the bacteriologist just as he is to the geologist, chemist, physicist, meteorologist, engineer, and the man of medicine, indebted for the theories and facts upon which he bases his deductions; but it is not true, as implied by Mr. Hart, that sanitary action need wait upon the footsteps of the bacteriologist—not in 99 cases out of 100 would this be necessary. It surely would not require the acumen of the bacteriologist to assure the responsible authorities that the Fort Ditch of Mandalay is open to contamination, and that wells sunk in the midst of subsoil laden with human excreta, owing to the peculiar custom of the Burmese in the matter of privies, must secure the prevalence of water-borne diseases. Indeed, I can state from personal experience that Mr. Hart has placed the saddle on the wrong horse. It is not the fault of Medical Officers that the water of Mandalay is still open to pollution. When I was stationed there lately, both in my capacity of Acting Civil Surgeon and in charge of the Headquarters Military Staff, I called the attention of the authorities concerned to the conditions which existed. In the case of my report to the Military side, the General Officer Commanding went beyond the usual red tape routine, and thanked me for it. I have no doubt that this was but one of a dozen reports to the same effect furnished by other Medical Officers. But we who have toiled at sanitation in this country know too well that drawing attention to the most glaring sanitary effects, does not necessarily mean that they will be remedied. Government have other claims upon the public purse, and although we may chafe at the bit, financial facts must be tolerated. The position of the sanitarian would be easy, indeed, if all he had to do was to point out sanitary defects and how they should be remedied; in official life, he has to acquire the rare virtue of possessing himself in patience.

As a second instance, Surgeon-Captain Elliot has suggested that had a bacteriologist been present in Madras when the Cholera outbreak occurred in the Lunatic Asylum, the officers concerned would have known how to act; that is, if the first case had been bacteriologically examined, it would have resulted in the early identification of cholera. This case was diagnosed at the General Hospital as one of ptomaine poisoning. I maintain that the presence of the bacteriologist would not have altered the course of events in the slightest degree. Taking the most rapid method of examining that is, by simple microscopical examination of a flake from the intestinal discharges, it does not follow that comma microbes would have been discovered. Such negative cases have time after time occurred, and this is especially so at the commencement of an epidemic. An examination by solution of peptone would not have been in order under eight hours, whilst by plate cultivation twenty-four hours would have elapsed before an opinion—still possibly indefinite—or the diagnosis of a "microbe indistinguishable from cholera", after the cautious phraseology adopted by the Local Government Board, would have been available. I need not say that had the lapse not of hours but of a few minutes occurred before identification of the case as one of cholera, no good could have resulted in actual sanitary practice. The opportunity for segregation, and destruction of the microbe would long have been lost for ever, and their wide distribution, as actually occurred in the present case, would have resulted. Such, indeed, was the experience also at the opening of the epidemic of Hamburg, where the German bacteriologists allowed several days to pass before they would state definitely whether they dealt with true cholera or not.

The Asylum epidemic, therefore, does not teach me anything new as to the value of bacteriology in preventing epidemics; nor would I accept it as an instance of a disaster preventable by aid of bacteriology. The occasion obviously demanded that all concerned should suspect that the *first case* was one of cholera. We are assured that no such suspicion was felt, till several deaths had occurred. In judging by actual symptoms, it would be a clever man indeed who would diagnose positively between a case of ptomaine poisoning and cholera *unless he held this suspicion*. In short, this is not a case with which to illustrate the value of the bacteriologist, but the results of error of judgment in common-

place sanitary practice. Had the officer in charge been aware that cholera threatened the neighbourhood, he ought, as a matter of every day precaution, to have segregated carefully all cases of "suspicious" diarrhoea; his next resort, and not his first, would have been to the bacteriologist; and had there been twenty of these experts available, had no suspicion of the correctness of his diagnosis occurred, it is obvious he would not have invoked their aid. That it is evident the value of simple sanitary precautions is liable not to be much appreciated, whilst our thoughts turn to the learned endeavours of the bacteriologist, I may state that on my offering the Superintendent of the Asylum to see that in future he obtained a statement of the whereabouts of cholera direct from my office, it was point blank refused as a useless procedure.

Now, to trace this matter further; would the presence of the bacteriologist have prevented spread of the disease after diagnosis. I see no reason to believe so. When in company with the President (after my return from Calcutta, when the disease had prevailed for some time) we together investigated this outbreak, there existed no difficulty by making a sanitary survey, in ascertaining that a certain water cistern had been at intervals, and possibly, daily, contaminated with cholera matter by careless sanitary methods: nor was there any difficulty in our advising as to the requisite sanitary steps to be taken. In suggesting (in the absence of any apparatus at disposal in this Presidency) that the water of the cistern—amongst other matters likely to complete the chain of evidence—should be sent to Mr. Hankin for the favour of examination, I did so with the object not of clearing doubt as to sanitary precautions necessary, but of securing a confirmation of facts brought to light by a sanitary survey, and this, at the time of my making this recommendation, I specifically stated. Mr. Hankin, without fee, undertook the troublesome task we had indented upon his courtesy to secure, with the result that a microbe indistinguishable from that of cholera was duly found in the water of this cistern. This bacteriological examination, therefore, did not serve to remove doubt and thus pave the way for sanitary precautions, as suggested by Surgeon-Captain Elliot, but simply confirmed the value of a sanitary survey already accomplished.

What I would try to impress upon those present therefore is, that the contention that sanitary effort must usually wait upon

bacteriology is a mistake, and not in accordance with facts. For example, a true appreciation of the sanitary science of the day demands that neither the verdict of the chemist nor of the bacteriologist as to the safety of a water-supply can be accepted, if negative; the assurance these sciences offer can only be finally confirmed by a survey conducted by a sanitary expert. Neither then in Hamburg, in Mandalay, nor in the Lunatic Asylum of Madras need there have been any hesitation as to the adoption of sanitary measures, because bacteriology had not pronounced its verdict in the first place, and to quote these instances as evidence if the importance of bacteriology is to give that science a fictitious value.

I have been told by one of the speakers that "without bacteriology there would be no sanitation," and that "bacteriology is the foundation of sanitation." The necessity for making these statements can only have arisen from my inability to make my meaning clear to you, and not I trust that I share one whit less than the most enthusiastic amongst you a full belief in the importance and real value of bacteriology. This science has contributed enormously to the advance of the theory and practice of sanitation, and so have and continue so to do the half dozen other sciences to which hygiene looks for its information; but, in my humble opinion, the speaker exhibits an absence of a true appreciation of the area of the foundation of hygiene, if he considers its length and breadth to be limited by the young science of bacteriology.

I need hardly say that I fully agree with the main point at issue brought to our notice in Surgeon-Captain Elliot's eloquent and able paper. Granting without discussion, therefore, that the appointment of a bacteriologist for this Presidency is a matter to be earnestly desired, I would direct attention to certain details on which I would differ with the opinion Surgeon-Captain Elliot has expressed. Firstly, as to the candidate being chosen from our service; I consider it would be of little use searching for a suitable man in the senior ranks. We have all necessarily as part of our work a knowledge of bacteriology, but to be of public utility its practice must be distinctly in the hands of a specialist, that is to say, of a man who has devoted the best years of his life to the study of this science; to choose, on the other hand, a young man

would imply the necessity of taking him when his experience (acquired in the interval between his college career and his appearance for the service) could not warrant his being regarded as an expert. It is necessary to remember that the man who understands the mechanical part of bacteriology and who identifies well known microbes, is not the type required. We should rather look for men who have run the guantlet of those great discoveries which usually follow the young bacteriologist's first efforts, which have been duly exploded by older hands. Surgeon-Captain Elliot has specially pleaded against obtaining a man with stereotyped ideas gained from practice in Europe. I do not see that this objection well applies to the case before us. It is impossible to assert that the methods of investigation to be employed in this country would differ materially from those followed in England. I do not, for example, consider it is the rôle of bacteriologist to search for himself in the field for new microbes—the clue must ordinarily be given him by the trained sanitarian, and it would be for the bacteriologist to work out the truth of the evidence for or against the opinions of this expert. If this be so, it is needless to demand that he shall have prolonged Indian experience. Dirt is writ sufficiently large in India, for the bacteriologist not to require any vast amount of local knowledge.

[* The services of the bacteriologist certainly should not be connected with the Educational, nor Medical Department. The correct position would be that of an independent expert attached to the Sanitary Board, if he brought his experience ready acquired. If funds were not available for this class of man, and the choice fell upon a junior in the service he ought to be attached as an extra Deputy to the Sanitary Commissioner, in which post the field of labour offered would be sufficient to satisfy the most ambitious. There are several well trained junior officers available, and the lapse of a short time will add others who have gone Home to work at this speciality. As to the climate question in Bacteriology, I think the practical fact that Haffkine and Simpson have during both the hot and cold weather of Calcutta conducted uninterruptedly bacteriological investigations of a very high class, should prove conclusively that whilst a cool climate would be desirable it is certainly not essential; and, indeed, this is the opinion held by

*These views were not expressed at the discussion.—W. G. K.

Dr. Simpson, as the result of experience. My view of the matter is that the combination of a Bacteriological laboratory with a Vaccine Institute at Bangalore—capable of supplying the country with correctly cultivated and preserved vaccine lymph would afford at once the required description of stationary appointment practically independent, and afford excellent facilities for experimenting upon animals, which should always form a prominent part of bacteriological work].

Mr. J. Neild Cook, agreed entirely with the opinion expressed in the paper that the services of a Bacteriologist were very much required in Madras and gave several instances in which he would have been glad of the assistance of such an officer.

Surgeon-Captain Elliot in reply said several of the speakers have differed from me in minor details; such as the relative position of bacteriology and general sanitary science. It seems unnecessary to dwell any further on such details but I take it to be *all important* that the feeling of the meeting is unanimously in favour of a Bacteriologist for this Presidency.

NOTICE.

The attention of members is invited to the following by-law of the Branch and circulars issued by the Surgeon-General with the Government of Madras.

BY-LAW XII.

Members absent from Madras are invited to send papers of professional interest to the Secretary, by whom they will be read at the Meetings of the Society, and all matters of general or special value will be printed and circulated.

CIRCULAR No. 29.

As pathological specimens are greatly required for the Medical College Museum, the Surgeon-General with the Government of Madras, requests that Medical Officers and subordinates having opportunities of so doing will contribute towards it. The specimens most needed are those illustrating injuries to bone and their repair, and tumours of all varieties. A short history of the case should accompany each specimen, which should be sent to the Curator of the Museum. All expenses incurred in packing and forwarding specimens will be repaid by the Principal, Medical College.

By order,

(Signed) A. J. STURMER.

OFFICE OF SURGEON-GENERAL }
WITH THE GOVERNMENT OF MADRAS, }
Fort St. George, 14th July 1880. } Secy., Surgeon-General
with the Government of Madras.

CIRCULAR No. 26.

The attention of District Medical Officers is directed to Circular No. 29 of the 14th July 1880 from this office.

The Surgeon-General considers that a very large field for the collection of pathological specimens illustrative of the diseases of this Presidency, is open to Medical Officers in charge of up-country stations, and he hopes that in future they will more fully avail themselves than they have hitherto done, of the opportunities which may occur in the course of their professional duties, of collecting pathological specimens and forwarding them for record in the Medical College Museum.

By order,

(Signed) C. M. THOMPSON, M.B.

OFFICE OF SURGEON-GENERAL }
WITH THE GOVERNMENT OF MADRAS, }
Fort St. George, 23rd Sept 1887. } Secy., Surgeon-General
with the Government of Madras.

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