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Telegraphic Address  
"Bacteriology, London."

All letters, &c., to be addressed to the Director.

BRITISH INSTITUTE OF PREVENTIVE MEDICINE.

(With which is amalgamated the College of State Medicine.)

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Chairman of Council:-  
SIR JOSEPH LISTER, Bart., F.R.S.

Hon. Treasurer:-  
SIR HENRY ROSCOE, M.P., F.R.S.

Hon. Secretary and Director:-  
MARC ARMAND RUFFER, M.A., M.D.

Temporary Premises -  
101. Gt. Russell Street,  
L o n d o n,  
W. C.

Office hours:-  
11 a.m. to 3 p.m.

----- D I R E C T O R ' S R E P O R T -----  
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During the last three months, the preparation of horses for the "antitoxic" serum has been proceeded with.

21 horses are now under treatment and all of them, three excepted, are now ready for bleeding. Their serum is of such strength that .0001<sup>cc</sup>. mixed with a quantity of toxine fatal to a guinea-pig in 24 hours will prevent the occurrence of any symptoms.

Dr. B. Hunt has now taken charge of the diphtheria cultures and the preparation of the serum, and the laboratory at the Institute's farm is now ready and in working order.

The greatest difficulty we have had to contend with was the obtaining of an absolutely aseptic serum. During the necessary manipulations it is almost impossible not to expose the serum for a short time to unfiltered air. In order to avoid all risks a special room is now being fitted up at the farm, which will be specially devoted to all the necessary manipulations.

Experiments on the concentration of the curative substance in the serum have been in progress. Mr. Nolan and I have been able to concentrate the serum to perfect dryness without its losing any of its properties. The dried serum can then be

re-dissolved in a very small quantity of distilled and sterilised water. We are also at work on the isolation of this curative substance.

The Metropolitan Asylums Board have been using the serum in the hospitals under their control. The results have been satisfactory.

Thus Dr. Mathews (Fountain Hospital, Grove Road, Lower Tooting) writes:-

1. Cases of diphtheria admitted during October and November 1894 not treated by antitoxin -

No. of cases.	Deaths.	Mortality per cent.
123.	38.	30.8.

2. Cases treated during December-January with antitoxin:

(a) 61 cases <u>clinically diphtheria.</u>	10 deaths	Mortality per cent. 16.3.
(b) 55 cases diphtheria proved by bacteriological examination.	10 deaths.	Mortality per cent. 18.1.

With few exceptions the treatment was applied to children under 10 years of age only.

Dr. MacCombie; at the South-Eastern Hospital states that since November last, when he first began to treat Diphtheria cases by antitoxin serum, 102 cases of diphtheria have been admitted and 15 have died - calculated on admissions and deaths the mortality amounts to 14.7%. From January 1, 194, to Nov. 26, '94, his averagediphtheria mortality was 25.6%. It varied in different months, the highest being 38%, and the lowest 18.7% in August. Dr. MacCombie does not feel justified in expressing an opinion as to the value of the treatment, but he is favourably impressed with its apparently beneficial action in cases in which the treatment begins before the 4th day of illness. He also draws attention to the unpleasant effects which in his opinion occasionally accompany the use of the remedy.

Dr. Gayton, Medical Superintendent at the North-Western Hospital, has treated 43 cases of which 2 died, Mortality 4.6%. I attach little importance to these statistics as Dr. Gayton informs me that out of these 43 cases, 7 only were really severe.

Dr. Caiger, the Medical Superintendent of the S.W. Hospital,  
writes as follows:-

The Metropolitan Asylum District,  
Stockwell Fever Hospital,  
STOCKWELL, S.W.  
Jan. 25, 1895.

Gentlemen,

Owing to the facilities which you have been good enough to provide, I have been enabled to treat all severe cases of Diphtheria admitted into this Hospital with Antitoxin for the past two months.

I am pleased to be able to state my conviction that its use has been attended with most satisfactory results, results which my experience justifies me in asserting could not have been expected with previous methods of treatment.

Not only does the reduction in mortality imply the saving of a considerable number of lives, but the treatment if commenced at a sufficiently early date, is successful in warding off the necessity for tracheotomy, and thus by averting suffocation, effects a reduction of the pain and terrors of a most distressing disease; while the painlessness of the treatment, and the absence of any serious after-effects is to my mind as striking as the success of the remedy itself. Although to ensure a favourable result in grave attacks of the disease, it is of the first importance that the patient should be brought under treatment at an early date, if possible not later than the third day; in a certain number of cases the most marked benefit has followed when the inoculations have not been commenced until two or three days later.

It is my intention, when the number of serum-treated cases has become somewhat larger, to bring the results obtained at this Hospital before the Medical Profession, and I desire to express my indebtedness to the Council, and to Dr. Ruffer, from whom I have received the kindest consideration, for affording me the opportunity of using the serum at such an early date.

I am, Gentlemen,  
Your obedient Servant,  
(Sgd.) FRED FOORD CAIGER,  
Medical Superintendent.

To the Council of the  
BRITISH INSTITUTE OF  
PREVENTIVE MEDICINE.

A large number of medical men have sent specimens of membrane and other specimens to be examined by the Staff of the Institute. I hope that the Council will see their way to extending this important and useful work.

Dr. Plimmer and Mr. Nolan have gone on with their investigations and Mr. Robertson has done valuable work in looking after our horses.

Mr. Lunt has continued his investigations on the bacteriology of water and sewage and has examined several samples of water sent to the laboratory for examination.

Dr. Bruce of the Western Hospital writes as follows:-

Dear Sir,

In reply to your letter of the 24th inst., I send you herewith (1) a table shewing results obtained in 68 cases of Diphtheria admitted to this Hospital from Nov<sup>r</sup>.26th, 1894, and Jan.25th, 1895, and treated with antitoxic serum kindly supplied by you; (2) a table shewing the Diphtheria death-rate at this Hospital during each of the last four years; (3) a table giving the Diphtheria admissions and deaths from Nov.26th, 1893, to Jan.25th, 1894, a period corresponding with that during which the cases treated with antitoxin were admitted.

It is seen that from Jan.1st. to Nov.26th, 1894, 507 cases of Diphtheria were admitted and 176 died, giving a mortality of 34.7 per cent., that from Nov.26th, 1893, to Jan.25th, 1894, 58 cases were admitted and 19 died, giving a mortality of 32.75 per cent. and that from Nov.26th, 1894, to Jan. 25th in the present year, there were treated with antitoxin 68 cases, of which 10 died, giving a mortality of 14.7 per cent.

Four of these cases are, however, still in a critical state.

During this period there were also admitted 28 Diphtheria cases which were not treated with the serum.

With the exception of one which died, all these were cases of a mild or moderately severe type. Thus the total number treated from Nov.26th., 1894, to Jan.25th, 1895, was 96, with 11 deaths, a mortality of 11.4 per cent.

In all the cases which relate to this period, the clinical diagnosis was confirmed bacteriologically, but the diagnosis of the cases referred to in Tables II. & III. rested mainly on clinical evidence, bacteriological examination having been made in only a small number.

The 68 antitoxin treated cases have been classified in Table I. according to their relative severity. The severe cases, 32 in number, were those in which the toxic effects of the disease were present at the time of admission, and in which a doubtful or unfavourable prognosis was given. Of these, 7 required operative interference. Tracheotomy was performed in 3 cases, of which 2 died, one from toxoemia, and the other from asphyxia due to infraction of membrane.

Intubation was performed in 4 cases, of which one, a Haemorrhagic case, died.

I was impressed with the results obtained in the intubation cases, and especially so because of the non-success which had hitherto attended the operation at this Hospital.

Of the 7 remaining deaths, 6 were due to the toxic effects of the disease, 3 cases being of the Haemorrhagic type, and 3 suffering from cardio-gastric crises. One death was due to the combined effects of Diphtheria and General Tuberculosis.

The dose of antitoxin administered has been regulated according to the severity of the case. In a mild case the amount injected has been from 10 to 15 cc. in one or two doses. In a moderately severe case, 20 to 30 cc. in two or more doses, and in a severe case, 40 to 90 cc. in three or more doses, commencing with one of 20 to 30 cc.

In all cases the treatment was commenced immediately after admission, and was supplemented by syringing of the fauces with warm water, or some mild antiseptic. Stimulants, either Brandy or Champagne, were administered in such cases as it was deemed necessary and Digitalis and Strychnia when cardiac failure threatened.

The effects of the remedy observed during the acute stage of the disease have been (1) a more rapid disappearance of membrane than in cases treated without it; (2) a rapid diminution or cessation of nasal discharge; (3) diminished restlessness;

(4) improvement in general condition; (5) in some cases a rapid subsidence of swelling of the neck and cervical glands.

The beneficial effects of the serum have been observed to occur earlier in the mild than in the severe cases. In some, a temporary rise of temperature has followed an injection.

I am at present unable to give information as to the effect of the remedy on the complications of Diphtheria, the majority of the cases being still under treatment. Where paralysis has supervened, it has with one exception been apparently confined to the palate.

Twenty cases developed a rash, in nearly all with transient pyrexia and slight malaise.

Joint pains have been noticed in 4 cases, in 2 of which a rash was present, and in all of which there was pyrexia, in one case, marked pyrexia lasting from the 10th to the 19th day after the treatment was commenced, the temperature reaching 104-6 on one occasion. The quantities injected in these cases were 15 cc, 26 cc, 40 cc, 78 cc.

No other effects have so far been observed which could not be attributed to the disease itself.

The number of cases treated with antitoxin at this Hospital is comparatively small on which to base a conclusion as to the efficacy of the remedy. The results, judged from a clinical standpoint, have, however, so far been extremely favourable, sufficiently so, I think, to justify me in expressing a very high opinion of the value of the remedy in the treatment of Diphtheria. The statistical evidence furnished herewith, points to a like conclusion.

Yours faithfully,

R. M. BRUCE.

ARMAND RUFFER, Esq., M.D.

WESTERN HOSPITAL

CASES OF DIPHTHERIA TREATED WITH ANTITOXIN

T A B L E I.

From November 26th. 1894 to Jan<sup>y</sup> 25th. 1895.

Age	Periods	Admis- sions.	Deaths	Type of Disease			Complications	
				Severe	Moderate	Mild	Rashes	Arthritis
0	- 5 yrs.	40	5	15	18	7	10	1
5	- 10 yrs.	22	5	13	7	2	6	1
10	- 15 yrs.	4	-	2	2	-	3	2
	Upwards	2	-	2	-	-	1	2
TOTAL.....		x68	10	32	27	9	20	4

\* Four of these cases are still in a critical condition.

T A B L E I (A).

DAY OF DISEASE ON ADMISSION (ACCORDING TO STATEMENT OF FRIENDS)

Day of Disease	Number of admissions	Number of Deaths.
1st. Day	5	-
2nd. "	12	1
3rd. "	23	3
4th. "	15	4
5th. "	9	-
Later	3	2
Indefinite	1	-
TOTAL.....	68	10



T A B L E II.

CASE MORTALITY FROM DIPHTHERIA AT WESTERN HOSPITAL

Year.	Admissions	Deaths	Mortality
1891	141	54	38.3%
1892	247	78	31.5
1893	256	94	36.7
1894 (Nov:26th) ( To )	507	176	34.7
Total	1,151	402	Average = 34.9

T A B L E III.

ADMISSIONS &c. from Nov<sup>r</sup>. 26th 1893 to Jan<sup>y</sup>. 25th, 1894.

Age Periods	Admissions	Deaths	Percentage
0 - 5 yrs.	20	12	60
5 - 10 "	21	6	28.57
10 - 15 "	7		
& upwards	10	1	10
Total	58	19	32.85

10 Cases complicated by Laryngitis: with 6 Deaths.  
 Tracheotomy in 5 cases with one recovery.  
 Intubation in one case, which was fatal.



B A C T E R I O L O G I C A L   D E P A R T M E N T .

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Dr. MACFADYEN'S REPORT.

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During the past year (1894) there were twenty-five workers in the Laboratory.

The numbers have increased this year. An Evening Class in Bacteriology has been started, and is attended by twelve students. There are six workers during the day, and two more are about to commence. This will raise the total to twenty students. The number of those engaged in research has also increased. The investigations they are engaged upon are shortly stated, as follows:-

Mr. Barnard is investigating some points connected with the biology of Phosphorescent bacteria.

Dr. Hobson has completed the first stage of his investigation regarding the Croydon Sewage Farm, and has furnished a report upon his results.

Dr. Renner is repeating the experiments of Drs. Ruete and Enoch upon the supposed Toxin, "Vaccinni". He has isolated from Vaccine lymph the diptococcus described by those writers, Voigt and others, and will make some further experiments as to its action.

Dr. Foulerton has, in the course of experiments with the pancreatic ferment, come across some interesting points connected with the production of bile pigments. They have led him to continue the investigation upon the artificial production of bile pigments from blood pigments.

Dr. Hewlett's services as Assistant bacteriologist have

been of great value. Dr. Hewlett is continuing the preparation of the Tetanus Antitoxin, and is assisting Dr. Macfadyen in investigating the nature of the Toxines produced by the Bacillus of Symptomatic Anthrax.

Dr. Macfadyen has, with the assistance of Dr. Hewlett, prepared Mallein and Tuberculin. These substances will be immediately tested on animals, and if the results are satisfactory, there will soon be an adequate supply for general use.

The preparation of the toxines of Erysipelas has also been undertaken. When ready these toxines will be tested in cases of sarcoma.

Dr. Macfadyen's paper on the Ringworm organism will appear in the next number of the Journal of Pathology.

Mr. Colwell has just finished his chemical analyses of various samples of Ice creams. The chemical results and the bacteriological will form the subject of an early report by him and Dr. Macfadyen.

An inquiry is being made for the County Council of Derbyshire with regard to a supposed outbreak of Hydrophobia.

It only remains to add that the following gentlemen are about to commence work in the laboratory. Dr. Thomson, who will investigate the Bacteriology of the nose, and Dr. Russell Wells, who will investigate the bactericidal action of extracts from various organs of the body. Mr. Barnard has undertaken to give instruction in Microphotography to the students in the Laboratory.

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101, Gt. RUSSELL ST.,  
London, W.C.

Office Hours:- 11 A.M. to 3 P.M.

DIRECTOR'S REPORT

presented to the Council

- on -

January 15th, 1896.

Gentlemen,

I beg to report that since December 12th, 1895 I have returned to my duties as Director of the Institute. The report which I herewith present to the Council has reference to the work of others and not to my own, as I have been absent from duty since June 20th, 1895.

Dr. Bullock has been in charge of the Institute's farm at Sudbury and has done the following work:

1. Diphtheria. He has continued the immunisation of the horses for the preparation of anti-diphtheritic serum. He has moreover prepared and bottled the serum and has sent out several thousand bottles. With regard to this, I may mention that the aseptic <sup>bottling</sup> ~~bottling~~ machine designed by Mr. Nolan at my suggestion, is now finished and may be seen in the <sup>next</sup> ~~west~~ room.

It will be described in an early number of the British Medical Journal.

2. Tetanus. <sup>JWV</sup> ~~Five~~ new horses are now being immunised against tetanus.

3. Streptococcus. This work has been continued and 6 horses have been immunised, two of them being now ready for bleeding. The tests have shown that 0.01<sup>cc</sup> of serum injected after a rabbit has been infected intravenously with a virulent culture of Streptococcus is sufficient to save the animal's life - 0.001<sup>cc</sup> prolongs the life for several days.

Two horses are now immune both against the streptococcus and diphtheria.

Dr. Bullock will publish the results of these investigations in an early number of the British Medical Journal.

4. Dr. Bullock has also continued investigations with regard to serum-therapeutics of other diseases.

Mr. Robertson has remained in charge of the stables, horses and inoculations and has done his work with care and diligence.

Dr. Macfadyen and Dr. Hewlett have been fully occupied in teaching and in investigations.

It is satisfactory to see that the classes are increasing. During the last term 23 students attended the classes and of these 8 are now engaged in laboratory work.

A post graduate course "On the diagnosis of disease by bacteriological and chemical examination" has been arranged and will commence on February 1st.

The Council will remember that at the beginning of last year, the staff of the Institute announced that they were prepared to undertake the bacteriological examination of suspected diphtheria cases. The number of medical men who availed themselves of this opportunity was small at first but gradually increased, and about 1,500 diagnoses have been made by Dr.

Hewlett and Mr.Nolan. Several medical officers of health take advantage of the opportunities now offered by the Institute.

Seven diagnoses for rabies have also been undertaken, 5 of which gave positive results.

Mr.Lunt has remained in charge of the water laboratory and at his suggestion a special report is appended to this report.

Mr.Harold Nolan has finished the bottling machine designed by him. He has also concluded his work on modifications of the Hermite system and will shortly publish it. He has also been busy in isolating or at any rate concentrating the diphtheria antitoxin.

Lastly I may be allowed to offer my best thanks to Dr.Macfadyen for so kindly undertaking my duties during my enforced absence.

M.ARMAND RUFFER,  
Director.

ANNUAL GENERAL MEETING  
OF THE  
**British Institute of Preventive Medicine**

(With which is amalgamated the COLLEGE OF STATE MEDICINE).

JUNE 29th, 1897.

**REPORT OF THE COUNCIL.**

The Council have the honour to report that during the year the work of the Institute has continued to be successful, and is expanding.

The new building on the Chelsea Embankment is now nearly completed, and will be, in all respects, well adapted for the purposes of the Institute. The designs for the internal fittings, to which a large amount of time and attention has been devoted, are in the hands of the Architect; and there can be no doubt that the new Laboratories will be in operation early next year.

The Council regret the loss of a most valued member through the decease of Sir Spencer Wells, who represented the Royal College of Surgeons. The College has decided that for the future their President shall represent them on the Council.

Dr. Alfred Salter has been appointed Assistant Bacteriologist at Sudbury in place of Dr. St. Clair Symmers, who has been elected Professor of Bacteriology at Cairo.

Both in research and in teaching the work of the Institute in its various departments has made considerable progress, and there has been an increased number both of original investigators and of students. The Council have decided to publish a volume of transactions recording the principal results of researches conducted in the Institute. This volume is now in the press.

The quality of the Diphtheria Serum has been greatly improved by Dr. Bulloch in the course of the last year, the therapeutic dose of 1,500 units being now contained in 3 instead of 10 cubic centimetres of fluid.

The Anti-Streptococcic Serum has been supplied to the profession in increasing quantities during the last year.

The Anti-Pneumococcic Serum prepared by Dr. Washbourn as the result of his work at Sudbury is now being supplied to medical men who wish to test it clinically.

At the suggestion of the Chairman, a Committee representing the Institute and the Conjoint Laboratories of the Colleges of Physicians and Surgeons, was appointed to inquire into the methods of testing serum. Valuable work has already been done by this Committee, which is likely soon to present a final report.

LISTER,

*Chairman.*



101, GREAT RUSSELL STREET,

LONDON, W.C.

TREASURER'S REPORT.

I beg to report that during the year ending 31st May last the following amounts have been received by the Institute, viz. :—

Donations and Annual Subscriptions	...	...	...	£42	11	0
Interest on Investments	...	...	...	1,515	9	0
Income Tax recovered	...	...	...	133	5	1
Profit on Sales of Investments	...	...	...	1,062	6	0
Students' and other Fees	...	...	...	625	2	0
Sales of Anti-Toxins, Mallein, and Tuberculin	...	...	...	1,268	0	4
TOTAL	...	...	...	<u>£4,646</u>	<u>13</u>	<u>5</u>

At 101, Great Russell Street, the total expenditure for the year charged to Income and Expenditure Account amounts to £2,126 16s. 5d., including £99 4s. 3d. written off for depreciation of Lease, Furniture and Apparatus.

At "The Poplars" Farm, Sudbury, the expenditure for the year has been £2,220 17s. 9d., and the net receipts of Anti-Toxins made there, plus the value of the stock of Serum on hand on 31st May, amount to £1,516 18s. 8d. This shows a considerable improvement over the figures of last year, both in receipts and expenditure.

The New Building is now approaching completion, and during the year £8,930 14s. 0d. has been expended on it. It is estimated that after it is finished and fitted up the amount of liquid assets available will be about £33,680.

The total expenditure for the year in all Departments has been £13,330 0s. 8d., of which £797 18s. 2d. was still owing on June 1st.

The Accounts have been audited by Messrs. Cooper Brothers & Co., Chartered Accountants, and they have certified that the following Balance Sheet and Statements of Accounts are correct.

HENRY E. ROSCOE,

*Hon. Treasurer.*



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BALANCE - SHEET,

1897.

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# The British Institute

(With which is amalgamated

Registered 25th July, 1891, under the Companies Acts,

Dr.

BALANCE SHEET,

	£	s.	d.	£	s.	d.
To CREDITORS ... ..					797	18 2
To WATER LABORATORY FUND—						
Amount received from the Trustees of the late Richard Berridge, for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory ... ..					26,352	13 10
To CAPITAL FUND—						
Balance as per last account, 31st May, 1896 ... ..	46,249	3	8			
Add—						
Balance of Income and Expenditure account for the year ending 31st May, 1897 (folio 3) ... ..	1,320	18	4			
Less Balance of Sudbury Farm Account for the year ending 31st May, 1897 (folio 4) ... ..	703	19	1			
				616	19	3
				46,866	2	11

HENRY E. ROSCOE,  
HON. TREASURER.

£74,016 14 11

We have examined the above Balance Sheet with the Books and Vouchers of the Institute, and, in our State of the Affairs of the Institute. We have also verified the Bankers' Balances and the Investments.

London, 28th June, 1897.

# of Preventive Medicine.

the COLLEGE OF STATE MEDICINE.)

1862 to 1890, as an Association Limited by Guarantee.

31st MAY, 1897.

Cr.

	£	s.	d.	£	s.	d.
<b>By CASH—</b>						
At Bankers ... ..	2,206	13	3			
In hand ... ..	16	7	6			
	<hr/>			2,223	0	9
<b>By INVESTMENTS—</b>						
£6,028-9-3 2½ per cent. Consols ... ..	6,118	17	9			
£1,500 City of Sydney 4 per cent. Bonds ... ..	1,500	0	0			
£2,900 New South Wales 3½ per cent. Stock 1918 ... ..	2,897	16	0			
£1,000 Cape of Good Hope, 3½ per cent. Stock ... ..	1,000	0	0			
£3,800 North Eastern Railway, 4 per cent. Guaranteed Stock ... ..	5,377	12	0			
£1,300 Great Western Railway 5 per cent. Rent Charge Stock ... ..	2,276	5	10			
£2,200 South Eastern Railway, 5 per cent. Perpetual Debenture Stock ... ..	3,962	8	6			
Mortgage on Freehold Property, Liscombe Estate, at 3½ per cent. ... ..	18,500	0	0			
	<hr/>			41,633	0	1
<b>By SUNDRY DEBTORS</b> ... ..				498	1	2
<b>By STOCK OF TUBERCULIN AND MALLEIN</b> ... ..				18	0	0
<b>By FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS, as per last Account, 31st May, 1896</b> ... ..	807	4	10			
<i>Add Additions during the year</i> ... ..	34	17	6			
	<hr/>			842	2	4
<i>Less Written off for Depreciation</i> ... ..	84	4	3			
	<hr/>			757	18	1
<b>By EXPENDITURE ON NEW BUILDING—</b>						
As per last Account, 31st May, 1896 ... ..	18,152	11	6			
<i>Add Expenditure during the year</i> ... ..	8,930	14	0			
	<hr/>			27,083	5	6
<b>By SUDBURY FARM ACCOUNT—</b>						
Stock of Animals and Forage ... ..	222	16	8			
Stock of Anti-Toxins ... ..	300	0	0			
Stable Utensils and Farm Implements ... ..	115	18	3			
Laboratory Apparatus—As per last Account, 31st May, 1896 ... ..	230	6	10			
<i>Add Additions during the year</i> ... ..	16	15	0			
	<hr/>			247	1	10
<i>Less Written off for Depreciation</i> ... ..	24	14	2			
	<hr/>			222	7	8
Furniture—As per last Account, 31st May, 1896 ... ..	83	18	3			
<i>Less Written off for depreciation</i> ... ..	16	15	8			
	<hr/>			67	2	7
Additions and Improvements to Buildings, as per last Account, 31st May, 1896 ... ..	251	4	2			
Unexpired Term of Lease of "The Poplars" Farm, as per last Account, 31st May, 1896 ... ..	697	0	0			
<i>Less Proportion charged to Income and Expenditure Account</i> ... ..	73	0	0			
	<hr/>			624	0	0
	<hr/>			1,803	9	4
	<hr/>			£74,016	14	11

opinion it is a full and fair Balance Sheet, properly drawn up, so as to exhibit a true and correct view of the

COOPER BROTHERS & CO.,

Chartered Accountants,

Auditors.

# The British Institute of

(With which is amalgamated the

Dr.

## INCOME AND EXPENDITURE ACCOUNT

INCOME.		£	s.	d.
To Donations ... ..		34	3	0
To Annual Subscriptions ... ..		8	8	0
To Interest on Investments ... ..		1,515	9	0
To Income Tax deducted from Interest on Investments refunded ... ..		133	5	1
To Profit on Sale of Investments ... ..		1,062	6	0
To Students and Laboratory Fees ... ..		388	10	0
To Diagnosis Fees ... ..		236	12	0
To Sales of Tuberculin and Mallein ... ..		51	1	8
To Stock of Tuberculin and Mallein, 31st May, 1897 ... ..		18	0	0
		<u>£3,447</u>		14 9

Dr.

## SUDBURY FARM INCOME AND EXPENDITURE

INCOME.		£	s.	d.
To Sale of Antitoxins ... ..		1,216	18	8
To Stock of Antitoxins, 31st May, 1897 ... ..		300	0	0
To Balance, being excess of Expenditure over Income deducted from Capital Fund (see Balance Sheet, folio 1) ... ..		703	19	1
		<u>£2,220</u>		17 9



# Preventive Medicine.

COLLEGE OF STATE MEDICINE).

for the Year Ending 31st May, 1897.

Cr.

## EXPENDITURE.

	£	s.	d.
By Rent, Rates, and Taxes	129	19	4
By Salaries, Wages, and Fees to Scientific Staff	1,325	9	8
By Stationery, Printing, Postage, and Advertising	93	3	11
By Office Expenses and Sundries	45	17	5
By Bank Charges	3	19	0
By Travelling Expenses	35	18	6
By Auditors' Fee and Accountants' Charges	26	5	0
By Gas and Water	73	10	4
By Balance of Cost of Lease of 101, Great Russell Street	15	0	0
By Expenses of Patients to Institut Pasteur	27	18	0
By Newcastle-on-Tyne Exhibition Expenses	13	16	5
By Bacteriological Laboratory Expenses	112	15	5
By Water Laboratory Expenses	22	14	3
By Research Laboratory Expenses	27	6	11
By Hygiene Laboratory Expenses	54	18	8
By Repairs of Premises	20	13	4
By Collectors' Commission	13	6	0
By Amount written off for Depreciation on Furniture, Fittings, and Scientific Apparatus and Books	84	4	3
	<u>£2,126</u>	<u>16</u>	<u>5</u>
By Balance, being Excess of Income over Expenditure transferred to Capital Fund, see Balance Sheet, folio 1	1,320	18	4
	<u>£3,447</u>	<u>14</u>	<u>9</u>

ACCOUNT for the Year Ending 31st May, 1897.

Cr.

## EXPENDITURE.

	£	s.	d.
By Rent, Rates, and Taxes	178	3	6
By Salaries and Wages	773	18	6
By Animals—			
Value of Stock 1st June, 1896	101	0	6
Additions during the year	70	10	2
	<u>171</u>	<u>10</u>	<u>8</u>
<i>Deduct</i> —Sales during the year	28	14	0
Value of Stock on 31st May, 1896, carried to Balance Sheet, folio 1	142	16	8
	<u>171</u>	<u>10</u>	<u>8</u>
By Forage	522	10	7
By Stable and other Expenses	92	2	5
By Farm Expenses	51	6	5
By Gas and Water	78	6	0
By Postages and Telegrams	4	10	10
By Amount written off unexpired term of Lease of "The Poplars" Farm	73	0	0
By Repairs and Alterations	69	8	8
By Laboratory Expenses	306	6	8
By Travelling Expenses	19	14	4
By Amount written off for Depreciation on Furniture and Laboratory Apparatus	41	9	10
By Reserve for Bad and Doubtful Debts	10	0	0
	<u>£2,220</u>	<u>17</u>	<u>9</u>

## REPORTS OF THE SCIENTIFIC STAFF.

### I.—DR. MACFADYEN'S REPORT ON THE WORK DONE AT GREAT RUSSELL STREET.

I beg to present the following report upon the year's work at Gt. Russell Street. There have been eleven research workers, viz. :—

- Dr. Louis Jenner—Capsulated and Non-capsulated Organisms of the B. Coli Group.
- Dr. Lack—Membranous Rhinitis.
- Dr. Tew—Diphtheria in Cats.
- Dr. Childs—Mycoproteins and Tissue Nucleins.
- Dr. Lawson—Trachoma.
- Dr. Kirton—Widal's Reaction.
- Dr. Barkly—Excretion of Phosphates in Urine.
- Miss Knight—Pseudo-Diphtheria Bacillus.
- Mr. Barnard—Phosphorescence.
- Dr. Duggan—Malaria.
- Dr. St. Clair Thomson—Bacteriology of Nose and Ear.

A volume of Transactions is going through the Press, and will contain the subjoined papers :—

- "Contribution to the Study of Streptococcus Pyogenes."—Dr. Bulloch.
- "The Gonococcus."—Mr. Foulerton.
- "The Plague Bacillus."—Dr. Hewlett.
- "Pseudo-Diphtheria Bacillus."—Drs. Hewlett and Knight.
- "Sterilisation of Water by Filtration."—Mr. Lunt.
- "A Convenient Method of Preserving Water Bacteria and upon their Multiplication in Water."—Mr. Lunt.
- "A Hitherto Undescribed Phenomenon in Yeasts."—Dr. Symmers.
- "Pasteurisation of Milk."—Drs. Hewlett and Macfadyen.
- "Dust Counting."—Dr. Macfadyen and Mr. Lunt.

The following papers have been published :—

- "The Separation of Proteid and Proteid-like Bodies in Urine."—Mr. Foulerton.
- "Serum Diagnosis."—Mr. Foulerton.
- "Bacteriology of Infantile Diarrhoea."—Dr. Macfadyen.
- "Micro-Organisms in the Healthy Nose."—Drs. Hewlett and Thomson.

Dr. Hewlett's prolonged illness has delayed the progress of his researches on the plague and other subjects. Mr. Foulerton has completed an investigation upon a new pathogenic organism isolated by him from meat. His investigations upon the preparation of a vaccine for Glanders and upon pathogenic yeasts will be resumed as soon as he recovers from his present regrettable illness.

Since last June there have been 80 workers at the Institute, *i.e.*, 60 per cent. more than during the whole of the previous year. We have had as many workers as could comfortably be accommodated in the present premises.

The total number of Chemical, Pathological and Bacteriological Reports sent out is 1,800. The work has been undertaken at the request of Hospitals, Medical Practitioners, and Health Officers.

The demand for Tuberculin and Mallein has doubled during this year.

Four patients have been sent to the Institut Pasteur with the aid of this Institute's funds.

A number of laboratories at home and abroad were visited before the designs for the internal fittings of the Chelsea building were made. Ample provision is being made for purposes of research, and for the training of advanced students.

The general conduct of the affairs of the Institute in its present stage of evolution has compelled me to put research work on one side for the time being.

The work of the Water Laboratory is being carried on by Mr. Lunt, who has conducted the chemical and bacteriological analysis of a number of samples of water sent to the Institute for Examination. Mr. Lunt has contributed two original papers to the volume of Transactions, and has published an account of a new Potato-Bacillus (*B. Mesentericus Niger*).

I have to thank the members of the staff for the indispensable help they have given, and to acknowledge the aid rendered by Mr. Cooper in the business management of the Institute.

ALLAN MACFADYEN.

## II.—DR. BULLOCH'S REPORT ON THE WORK DONE AT SUDBURY.

I beg to report that the following work has been carried out in the Serum Department of the Institute during the past year :—

*Anti-Diphtheria Serum.*—Much time has been spent in determining the conditions under which animals yield the most potent antitoxins, and by the use of new methods, which we have worked out, we have been able to maintain serums of a very high antitoxic value. Through the kindness of Professor Ehrlich, of Berlin, to whom we are indebted for much help and advice, we have been able to work out his method for the standardisation of diphtheria antitoxin, and the Institute has thus been able to supply the profession and the public with serum, the strength of which was accurately known. In June, 1896, the serum sent out contained 80-100 units per cubic centimetre. Towards the end of the year this was increased to 250 units. In March of the present year it was raised to 300 units, in April to 400 units, and in May the serum sent out contained 500 units per c.c., the therapeutic dose of 1,500 units being thus contained in three cubic centimetres of fluid. The serum, therefore, is more than six times as strong as at the corresponding period of last year. Altogether, over 10,000 doses have been sent from the laboratory at Sudbury.

*Anti-Streptococcus Serum.*—Three horses are in active use for the supply of this serum, of which over 4,000 doses have been sent out. On account of the extreme variability of the organism, and of the animals used for experimentation, we have not yet been able to define with accuracy the exact antitoxic value of the serum, as is possible in the case of diphtheria antitoxin. Clinical experience of cases in which the exact bacteriological diagnosis has been made, is, however, strongly in favour of this serum, from the use of which some remarkable results have been obtained in several of the great London hospitals.

*Tetanus.*—From the work done by Dr. Symmers and Mr. Nolan, on the cultivation of the bacillus of this disease, it has been possible to obtain very potent serum against Tetanus, although considerable difficulty has been experienced in obtaining a constant standard test on account of the instability of the toxin. Experiments are still in progress to get a fixed standard.

*Pneumonia.*—The horse which has been immunised by Dr. Washbourn has furnished serum, and it has been distributed gratis for the treatment of cases of pneumococcic infection. The published results lead one to believe that the serum has a very beneficial effect. Dr. Washbourn has worked out a method for testing the strength of this serum.

Continued experiments by Dr. Symmers, Mr. Nolan and Mr. Cheatle on the serum of the horses which were immunised against Typhoid, Cholera, and Staphylococcic infections have shown that, although Widal's reaction occurs in all three, no specific antitoxin appears to be formed.

In addition a number of experiments have been completed on the durability of the passive immunity obtained from the inoculation of Diphtheria Antitoxin and its passage into the secretions.

I have to express my indebtedness to Dr. Symmers and to Mr. Harold Nolan for their valuable assistance throughout the entire work.

WILLIAM BULLOCH.



**British Institute of Preventive  
Medicine.**

(With which is amalgamated the College of  
State Medicine).

**ANNUAL REPORT  
AND  
BALANCE SHEET**

I have to express my indebtedness to Mr. Spence and to Mr. Havelock Nelson for the assistance which they have rendered throughout the entire work.  
In addition a number of experiments have been completed on the handling of the positive culture obtained from the inoculation in Diphtheria Antitoxin and its passage into the serum.  
Which toxin occurs in all these specific cultures appears to be identical.  
Which were furnished against Typhoid, Cholera and Str. Dysenteriae infections have shown that although continued experiments by Dr. Spence, Mr. Nolin and Mr. Conroy on the serum of the horse has been distributed gratis for the treatment of cases of postmorbund infection. The published results lead me to believe that the serum has a very beneficial effect. Dr. Walsh also has worked out a method for testing the strength of this serum.  
The horse which has been immunized by Dr. Washburn has furnished serum in large quantities for the treatment of cases of postmorbund infection. The published results lead me to believe that the serum has a very beneficial effect. Dr. Walsh also has worked out a method for testing the strength of this serum.  
The work done by Dr. Spence and Mr. Nolin on the cultivation of the bacillus of this disease has been of great value in obtaining very potent serum against Typhoid, although considerable difficulty has been experienced in obtaining a constant and abundant amount of the bacillus of the toxin. Experiments are still in progress to get a fixed standard.  
The horse which has been immunized by Dr. Washburn has furnished serum in large quantities for the treatment of cases of postmorbund infection. The published results lead me to believe that the serum has a very beneficial effect. Dr. Walsh also has worked out a method for testing the strength of this serum.

June 29th, 1897.

PRIVATE.

FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE.

# ANNUAL GENERAL MEETING

OF THE

## British Institute of Preventive Medicine

(With which is amalgamated the COLLEGE OF STATE MEDICINE).

JUNE 24th, 1898.

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### REPORT OF THE COUNCIL.

The Council have the honour to report that during the year the work of the Institute has been marked by progression and expansion.

The temporary premises occupied at Great Russell Street during the past four years have been vacated and the work of the Institute transferred to the new building on the Chelsea Embankment.

The internal fittings of the new building are in an advanced state, some departments are already in full operation, and it is confidently anticipated that all will be fully equipped in the early autumn.

The Council much regret the loss of one of its most valued members through the decease of Surgeon-General W. R. Cornish.

Dr. George Dean has been appointed Bacteriologist at Sudbury in place of Dr. Bulloch, who has been elected Lecturer on Bacteriology to the London Hospital.

Mr. A. G. R. Foulerton, F.R.C.S., has been appointed an Assistant Bacteriologist to the Institute.

Dr. Arthur Harden has been elected Chemist to the Institute in place of Mr. Joseph Lunt, B.Sc., now an Assistant to the Astronomer Royal at the Cape.

The Institute has published during the year a volume of "Transactions," which has been favourably received.

The demand for the Diphtheria and the Streptococcus serum has increased, and there has also been an increased demand for Tuberculin and Mallein.

The Institute has rented Laboratory accommodation to the Local Government Board for the purpose of preparing glycerinated calf lymph, and the Board will commence this work at Chelsea at an early date.

The Institute will require a considerable addition to its funds to enable it to carry out adequately the objects for which it was founded.

LISTER,

*Chairman.*



GROSVENOR ROAD,

CHELSEA BRIDGE,

LONDON, S.W.

## TREASURER'S REPORT.

I beg to report that the Accounts of the Institute have been made up to the 31st May, 1898, and show an excess of Expenditure over Income of £209 15s. 3d.

Since the last Audit the following amounts have been received:—

Donations and Annual Subscriptions	...	...	...	...	£251 18 1
Interest on Investments	...	...	...	...	1,285 5 10
Profit on Sale of Investments	...	...	...	...	621 13 5
Students' and other Fees	...	...	...	...	634 1 0
Sales of Antitoxins, Mallein and Tuberculin	...	...	...	...	2,164 2 7
Sale of "Transactions"	...	...	...	...	14 10 0
					£4,971 10 11

At 101, Great Russell Street the total expenditure for the year charged to Income and Expenditure Accounts amounts to £2,936 11s. 7d., including £459 16s. 6d., written off for depreciation of Furniture, Fittings and Apparatus, and a claim of £231 18s. 8d., for dilapidations. The Lease of the Building has now expired and the Furniture and Fittings have been removed to the new Building.

At "The Poplars" Farm at Sudbury the expenditure has been £2,356 14s. 7d. The demand for the Antitoxins prepared there has greatly increased and the receipts from their sale amount to £2,058 10s. 11d.

During the year £7,291 7s. 0d. has been spent on the New Building, which is now nearly complete.

The total expenditure for the year in all departments has been £12,808 7s. 4d., of which £1,035 19s. 2d. was still owing on June 1st.

The accounts have been Audited by Messrs. Cooper Brothers & Co., Chartered Accountants, and they have certified that the following Balance Sheet and Statement of Accounts are correct.

HENRY E. ROSCOE,

*Hon. Treasurer.*

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BALANCE - SHEET,

1898.

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# The British Institute

(With which is amalgamated

Registered 25th July, 1891, under the Companies Acts,

Dr.

## BALANCE SHEET,

	£	s.	d.	£	s.	d.
TO CREDITORS				1,053	19	2
TO WATER LABORATORY FUND—						
Amount received from the Trustees of the late Richard Berridge, for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory				26,352	13	10
TO CAPITAL FUND—						
Balance as per last account, 31st May, 1897	46,866	2	11			
<i>Deduct—</i>						
Balance of Income and Expenditure Account for the year ending 31st May, 1898		11	11	7		
Balance of Sudbury Farm Account for the year ending 31st May, 1898		198	3	8		
				209	15	3
				46,656	7	8

HENRY E. ROSCOE,  
HON. TREASURER.

£74,063 0 8

We have examined the above Balance Sheet with the Books and Vouchers of the Institute, and, in our State of the Affairs of the Institute. We have also verified the Bankers' Balances and the Investments.

London, 22nd June, 1898.

# of Preventive Medicine.

the COLLEGE OF STATE MEDICINE.)

1862 to 1890, as an Association Limited by Guarantee.

31st MAY, 1898.

Cr.

	£	s.	d.	£	s.	d.
<b>BY CASH—</b>						
At Bankers ... ..	764	10	8			
In hand ... ..	14	4	10			
	<hr/>			778	15	6
<b>BY INVESTMENTS—</b>						
£1,500 City of Sydney 4 per cent. Bonds ... ..	1,500	0	0			
£2,900 New South Wales 3½ per cent. Stock 1918 ... ..	2,897	16	0			
£1,000 Cape of Good Hope, 3½ per cent. Stock ... ..	1,000	0	0			
£3,800 North Eastern Railway 4 per cent. Guaranteed Stock ... ..	5,377	12	0			
£1,300 Great Western Railway 5 per cent. Rent Charge Stock	2,276	5	10			
£2,200 South Eastern Railway, 5 per cent. Perpetual Debenture Stock ... ..	3,962	8	6			
Mortgage on Freehold Property, Liscombe Estate, at 3½ per cent.	18,500	0	0			
	<hr/>			35,514	2	4
<b>BY SUNDRY DEBTORS</b> ... ..				967	1	9
<b>BY STOCK OF TUBERCULIN AND MALLEIN</b> ... ..				30	0	0
<b>BY FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS AND BOOKS,</b> as per last Account, 31st May, 1897 ... ..	757	18	1			
Add Additions during the year ... ..	171	18	5			
	<hr/>			929	16	6
Less Written off for Depreciation and for Loss on Fittings on removal from 101, Great Russell Street ... ..	459	16	6			
	<hr/>			470	0	0
<b>BY EXPENDITURE ON NEW BUILDING—</b>						
As per last Account, 31st May, 1897 ... ..	27,083	5	6			
Add Expenditure during the year ... ..	7,291	7	0			
	<hr/>			34,374	12	6
<b>BY SUDBURY FARM ACCOUNT—</b>						
Stock of Animals and Forage ... ..	362	6	8			
Stock of Anti-Toxins ... ..	400	0	0			
Stable Utensils and Farm Implements ... ..	103	17	5			
Laboratory Apparatus—As per last Account, 31st May, 1897 ... ..	222	7	8			
Less Written off for Depreciation ... ..	22	4	9			
	<hr/>			200	2	11
Furniture—As per last Account, 31st May, 1897 ... ..	67	2	7			
Add Additions during the year ... ..	51	15	9			
	<hr/>			118	18	4
Less Written off for depreciation ... ..	17	16	9			
	<hr/>			101	1	7
Additions and Improvements to Buildings, as per last Account, 31st May, 1897 ... ..	251	4	2			
Less written off ... ..	26	4	2			
	<hr/>			225	0	0
Unexpired Term of Lease of "The Poplars" Farm, as per last Account, 31st May, 1897 ... ..	624	0	0			
Deduct Compensation received for Land given up ... ..	15	0	0			
Proportion written off ... ..	73	0	0			
	<hr/>			88	0	0
	<hr/>			536	0	0
	<hr/>			1,928	8	7
	<hr/>			£74,063	0	8

opinion it is a full and fair Balance Sheet, properly drawn up, so as to exhibit a true and correct view of the

COOPER BROTHERS & CO.,

Chartered Accountants,

Auditors.

# The British Institute of

(With which is amalgamated the

Dr.

## INCOME AND EXPENDITURE ACCOUNT

		INCOME.		£ s. d.	
To Donations ... ..				237	4 1
To Annual Subscriptions ... ..				14	14 0
To Interest on Investments ... ..				1,285	5 10
To Profit on Sale of Investments ... ..				621	13 5
To Students' Fees ... ..				136	10 0
To Diagnosis Fees ... ..				497	11 0
To Sales of Tuberculin and Mallein ... ..			105 11 8		
<i>Add</i> Stock, 31st May, 1898 ... ..			30 0 0		
			135 11 8		
<i>Deduct</i> Stock, 31st May, 1897 ... ..			18 0 0		
			117 11 8		
To Sale of "Transactions" .. ..				14	10 0
				2925	0 0
To Balance being excess of Expenditure over Income deducted from Capital Fund (see Balance Sheet) ... ..				11	11 7
				£2,936	11 7

Dr.

## SUDBURY FARM INCOME AND EXPENDITURE

		INCOME.		£ s. d.		£ s. d.	
To Sale of Antitoxins ... ..				2,058	10 11		
<i>Add</i> Stock, 31st May, 1898 ... ..				400	0 0		
				2,458	10 11		
<i>Deduct</i> Stock, 31st May, 1897 ... ..				300	0 0		
				2,158	10 11		
To Balance, being excess of Expenditure over Income deducted from Capital Fund (see Balance Sheet) ... ..						198	3 8
				£2,356	14 7		



# Preventive Medicine.

COLLEGE OF STATE MEDICINE).

for the Year Ending 31st May, 1898.

Cr.

## EXPENDITURE.

	£	s.	d.
By Rent, Rates, and Taxes	135	5	9
By Salaries, Wages, and Fees to Scientific Staff	1,515	4	10
By Stationery, Printing, Postage, and Advertising	116	3	7
By Office Expenses and Sundries	57	19	0
By Bank Charges	3	18	11
By Law Charges	18	10	0
By Travelling Expenses	12	1	9
By Auditors' Fee and Accountant's Charges	26	5	0
By Gas and Water	86	2	8
By Expenses of Patients to Institut Pasteur	18	13	8
By Bacteriological Laboratory Expenses	78	4	3
By Water Laboratory Expenses	50	13	7
By Research Laboratory Expenses	4	7	3
By Hygiene Laboratory Expenses	44	9	5
By Repairs and Claim for Dilapidations on expiration of Lease of 101, Great Russell Street	231	18	8
By Cost of Publication of "Transactions"	76	16	9
By Amount written off for Depreciation on Furniture, Fittings, and Scientific Apparatus and Books	459	16	6

£2,936 11 7

ACCOUNT for the Year Ending 31st May, 1898.

Cr.

## EXPENDITURE.

	£	s.	d.
By Rent, Rates, and Taxes	181	19	8
By Salaries and Wages	826	8	0
By Animals—			
Stock 1st June, 1897	142	16	8
Additions during the year	80	11	3
	223	7	11
<i>Deduct</i> —Sales during the year	28	0	0
Stock 31st May, 1898	162	6	8
	190	6	8
By Forage	33	1	3
By Stable and other Expenses	245	3	0
By Farm Expenses	57	7	6
By Gas and Water	67	7	7
By Postages and Telegrams	110	12	1
By Amount written off unexpired term of Lease of "The Poplars" Farm and Additions to Buildings	1	13	10
By Repairs and Alterations	99	4	2
By Laboratory Expenses, including Cost of Bottles, Corks, Chemicals and Glass Apparatus	195	6	3
By Travelling Expenses	482	15	4
By Amount written off for Depreciation on Furniture and Laboratory Apparatus	15	14	5
	40	1	6

£2,356 14 7

## REPORTS OF THE SCIENTIFIC STAFF.

## I.—DIRECTORS' REPORT.

I beg to report that during the year the work of the Institute has been of a satisfactory character.

(1) *Bacteriological Department* :—

The following investigations were published by members of the staff.

"A Contribution to the Study of *Streptococcus Pyogenes*."—Dr. Bulloch.

"The *Gonococcus*."—Mr. Foulerton.

"The Plague Bacillus."—Dr. Hewlett.

"The Pseudo-Diphtheria Bacillus."—Drs. Hewlett and Knight.

"Sterilisation of Water by Filtration."—Mr. Lunt. \*

"A Convenient Method of Preserving Water Bacteria."—Mr. Lunt.

"A Hitherto Undescribed Phenomenon in Yeasts."—Dr. Symmers.

"Pasteurisation of Milk."—Drs. Hewlett and Macfadyen.

"Bacteria and Dust in Air."—Dr. Macfadyen and Mr. Lunt.

The above papers were embodied in a volume of "Transactions," which was issued last autumn by Messrs. Macmillan and Co., on behalf of the Institute. The volume, to which Lord Lister contributed an Introduction, has met with a favourable reception, and its sale has been greater than was anticipated. A number of copies were sent to institutions and individuals at home and abroad, and the volume has served to make the work of the Institute widely known.

A series of fresh investigations have been conducted and completed during the year—some of these are published and others are on the eve of publication. The following are the subjects dealt with :—

"Capsulated and Non-capsulated Organisms of the Coli Group."—Dr. Jenner.

"Widal's Reaction."—Dr. Tew.

"Membranous Rhinitis."—Dr. Lack.

"Etiology of Trachoma."—Dr. Lawson.

"Diphtheria in Cats."—Dr. Tew.

"Widal's Reaction."—Dr. Kirton.

"Bacteriology of the Normal Conjunctiva."—Dr. Lawson.

"A New Septicaemic Organism."—Mr. Foulerton.

"Neisser's Stain for *B. Diphtheriæ*."—Dr. Hewlett.

"Conveyance of Diphtheria by apparently Healthy Individuals."—Dr. Williams and Mr. Foulerton.

"Pathology of some infective Granulomata in Horses and Cattle."—Mr. Foulerton.

"Pathogenic Yeasts" (first communication).—Mr. Foulerton.

There are also other researches at present in progress.

The courses of instruction given by the staff during the year have been well attended.

The demand for Tuberculin and Mallein continues to increase, and a considerable quantity was sent to India and the Colonies.

Three patients have been sent to the Institut Pasteur with the aid of the Institute's funds.

The total number of reports sent out from the Institute is 1,800, and of these 67 were examinations of samples of Waters. The Institute has endeavoured to encourage the periodical examination of water and water supplies, and several Local Authorities during the year have requested the Institute to undertake this systematic examination on their behalf.

Bacteriological work has also been undertaken for several additional sanitary authorities.

Some of the reports sent out dealt with matters of special interest, and an account is being prepared for publication, viz., upon an Anthrax Outbreak, Prodigiosus Infection of Meat, *Streptococci* in Milk, &c.

I am indebted to Mr. Foulerton for the following particulars :—

"At the request of the Maidstone Rural Sanitary Authority, the Institute undertook the examination of the public water supply in connection with the disastrous epidemic of Enteric Fever in that district last autumn. The result of the bacteriological examination afforded distinct evidence of pollution by faecal matter, and thus confirmed the opinion formed on general grounds by the Medical Officer of Health, that a contaminated water supply was the cause of the outbreak. In the case of another apparently water-borne epidemic of Enteric Fever which occurred this year, samples from three separate sources of water supply were submitted to the Institute for bacteriological investigation. And, again, the result of the examination was of material assistance to the Medical Officer of Health, in so far that it showed that whilst two of the sources of supply were of excellent quality from the bacteriological point of view, the sample from the third source contained strong evidence of organic pollution. An attack of Enteric Fever in Gloucestershire early this year was the means of illustrating the value of Widal's blood reaction in relation to Public health work. The examination by this method of the blood of several patients at the commencement of the outbreak revealed the true nature of the epidemic, which had been previously believed to be one of Influenza. An investigation was made last summer in the case of a man who died at Windsor with symptoms typical of Asiatic Cholera. The Institute was, however, able to advise the Medical Officer of Health that the case was not one of true Cholera."

*(2) Chemical Department:—*

Dr. Harden reports as follows on the work done in the Chemical Laboratory since his appointment in October, 1897.

“Water analysis:—38 samples of water have been chemically examined, all of them having been sent for a joint chemical and bacteriological examination.

“Students:—Six students have attended the course in Chemistry and Physics for the Diploma in Public Health. Three of these have presented themselves for the examination and have satisfied the examiners. Two students have attended special courses in water analysis.

“Research work:—In conjunction with Dr. Macfadyen a research has been prosecuted on the products of the fermentation of Glucose by bacilli of the Coli group. A large number of organisms has been examined under varying conditions and some interesting results obtained.

“A. HARDEN.”

On May 2nd the work of the Institute was transferred from Great Russell Street to the Chelsea Building, and the equipment of the new Laboratories is making rapid progress.

On June 15th the Local Government Board took possession of the rooms which have been fitted up by the Institute for the preparation of glycerinated Calf Lymph.

The Home Secretary has granted a licence under the Vivisection Act to the new building.

The constant supervision required of the fitting up of the Laboratories at Chelsea, and the large amount of business detail that had to be overtaken during the past year, left me little time for scientific work.

I have to thank my colleagues, Dr. Hewlett, Mr. Foulerton, and Dr. Harden, for their cordial co-operation in furthering the work of the Institute, and Mr. Cooper, who has been unremitting in his attention to the transaction of business during an exceptionally heavy year.

The present staff is inadequate to carry out the work of the Institute in its various branches. The investigation, for example, of the biological questions connected with water and sewage, which has been made one of the objects of the Institute, alone requires the services of an additional assistant.

The resources of the new building will allow of a prominent position being given to researches dealing with Immunity, and if further financial support were obtained much valuable work could be initiated.

ALLAN MACFADYEN.

## II.—DR. DEAN'S REPORT ON THE WORK DONE AT SUDBURY.

I beg to present the following report on the work that has been carried out in the Serum Department of the Institute during the past year:—

*Anti-Diphtheria Serum.*—Many experiments have been made with the object of increasing the strength of the toxins used in immunising the animals. We have recently, through the kindness of Dr. L. Martin of the Pasteur Institute, obtained a culture, the toxin from which is four to five times as powerful as that hitherto produced in the laboratory at Sudbury. By using these stronger toxins, we hope to still further increase the strength of the antitoxin. Most of the serum sent out recently has contained 1,500 units in 5 c.c. Occasionally it could have been supplied in smaller quantities, but by doing so the great demand on the serum could not have been met.

Much time has been given to the study of Ehrlich's new method of testing the strength of the antitoxin, and the value of all the serum since last June has been estimated by this method. During the year 11,505 doses of Diphtheria antitoxin have been sent out from the department.

*Anti-Streptococcus Serum.*—In view of the opinion held by many authorities, that the serum prepared by immunising with one strain of streptococcus does not afford protection against certain other races of the organism; a horse has been immunised with streptococci obtained from several different sources and of different degrees of virulence.

A number of experiments has been made on various species of animals with the organism and its products, with the object of obtaining a more accurate test of the protective and curative properties of the serum.

Over 5,500 doses of this serum have been sent out.

*Tetanus.*—The serum of the horse immunised to Tetanus shows no diminution in protective power. This is fully in accord with the results obtained at other similar Institutions. Nine hundred and fifty doses have been sent from the laboratory.

*Pneumonia.*—The serum of the horse immunised by Dr. Washbourn, having lost its protective power, a second animal is in process of immunisation by Dr. Salter, under Dr. Washbourn's direction.

Dr. Salter has been engaged on a number of researches.

(1) On the Toxic substances in urine and the possibility of immunising large animals thereto.

(2) On the virulence of different races of the Diphtheria bacillus, and the relation of the pseudo to the genuine organism.

(3) On certain products of the Tetanus bacillus capable of exciting convulsions without the usual incubation period.

(4) On the action of normal serum on the animal economy, and on the carrying out, under certain conditions, of hypodermic alimentation.

I wish to express my thanks to the staff at “The Poplars” for their valuable help in carrying on the work of the department.

GEORGE DEAN.

**British Institute of Preventive  
Medicine.**

**(With which is amalgamated the College of  
State Medicine.)**

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**ANNUAL REPORT**  
**AND**  
**BALANCE SHEET.**

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*June 24th, 1898.*

**PRIVATE.**

FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE.

ANNUAL GENERAL MEETING  
OF THE  
**Jenner Institute of Preventive Medicine**  
(Late BRITISH INSTITUTE OF PREVENTIVE MEDICINE).  
JUNE 23rd, 1899.

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**REPORT OF THE COUNCIL.**

The Council have the honour to report that during the year the work of the Institute has continued to make satisfactory progress.

The internal fittings of the Chelsea building are now completed with the exception of the Museum, and the various departments are fully equipped and at work.

The details of the year's work will be found in the annexed Report of the Director. A second volume of the Transactions of the Institute will appear at an early date.

Dr. Horace T. Brown, F.R.S., has been elected a Member of Council in succession to the late Surgeon-General W. R. Cornish.

A notable addition has been made to the departments of the Institute by the foundation of the Hansen Laboratory for the study of the practical application of Bacteriology to industrial and technical processes. Dr. G. Harris Morris has been placed in charge of this department with the title of Lecturer on Technical Mycology.

Dr. Joseph Priestley has been elected Teacher in Hygiene, and Mr. Sydney Rowland, M.R.C.S., an Assistant-Bacteriologist to the Institute.

The large demand for the antitoxins prepared at Sudbury has placed the finances of this Department on a satisfactory basis.

The Local Government Board has commenced the preparation of Glycerinated Calf Lymph in the Laboratories rented from the Institute at Chelsea.

The Jenner Memorial Committee having decided to transfer the funds in its possession to the Institute, steps were taken to ensure an adequate fulfilment of the laudable object of the fund, viz., to perpetuate the memory of Jenner and his work. With this intention the Members of the Institute, at a Special General Meeting, unanimously resolved that the Institute be in future termed the "Jenner Institute of Preventive Medicine." This change in title was duly effected under a License from the Board of Trade, dated 6th December, 1898.

The Council have next to report an event of far-reaching import as regards the future development of the Institute—namely, the public announcement of Lord Iveagh's intention to devote the sum of £250,000 to the promotion of the objects for which the Institute was founded.

Certain conditions were attached by Lord Iveagh to the above gift. These were carefully considered by the Council and accepted by the Members of the Institute. The new Articles of Association, which are in the hands of the Members of the Institute, give full details of the proposed re-organization.

The Articles provide that the affairs of the Institute shall in future be controlled by a Governing Body consisting of seven Members, one of such Members to be appointed by the Royal Society, three of such Members by the Council of the Institute, and the remaining three Members by Lord Iveagh or his representatives.

The new Articles of Association were accepted at a specially convened General Meeting of the Institute, and it was expected that the consent of the Court to the reconstructed constitution would already have been obtained. The Court, however, decided that certain legal requirements had not been completely fulfilled, and held that fresh meetings of the Institute must be summoned. These meetings have been duly summoned, and the matter will then doubtless reach the final stage.

The Council has elected Sir Henry E. Roscoe, Sir John Burdon Sanderson, and Professor J. Rose Bradford as its first representatives on the new Governing Body. Lord Lister has consented to act as Chairman.

LISTER,

*Chairman.*

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CHELSEA GARDENS,

GROSVENOR ROAD,

LONDON, S.W.

*June 20. 1899.*

## TREASURER'S REPORT.

I beg to report that the Accounts of the Institute have been made up to the 31st May, 1899, and show an excess of Income over Expenditure of £16 5s. 8d.

In August last the "Jenner Memorial Fund" amounting to £5,768 os. 11d., was made over to the Institute and during the year receipts from other sources have been as follows :—

Donations and Annual Subscriptions	...	...	...	...	£120	15	0
Interest on Investments	...	...	...	...	1,311	8	5
Profit on Sale of Investments	...	...	...	...	133	3	7
Students' and other Fees	...	...	...	...	1,152	18	8
Antitoxins, Mallein and Tuberculin	...	...	...	...	3,116	0	7
Rent of Laboratories on the second floor	...	...	...	...	229	3	4
Transactions	...	...	...	...		13	9
					<hr/>		
					£6,064	3	4
					<hr/>		

The Expenditure at Chelsea for the year charged to Income and Expenditure Accounts has been £3,698 14s. 1d., and at the Poplars Farm, Sudbury £2,349 3s. 7d., making £6,047 17s. 8d., in all.

I am glad to be able to state that the Farm at Sudbury is now more than paying its way.

The Expenditure during the same period on Building, Furniture, Fittings and Apparatus, charged to Capital Account has been £5,955 15s. 2d., at Chelsea, and £23 17s. 6d. at Sudbury.

The accounts have been Audited by Messrs. Cooper Brothers & Co., Chartered Accountants, and they have certified that the following Balance Sheet and Statement of Accounts are correct.

HENRY E. ROSCOE,

*Hon. Treasurer.*



# The Jenner Institute

Registered 25th July, 1891, as the British Institute of  
1890, as an Association

Name changed 6th

Dr.

## BALANCE SHEET,

	£	s.	d.	£	s.	d.
To CREDITORS ... ..				3,058	1	4
To WATER LABORATORY FUND—						
Amount received from the Trustees of the late Richard Berridge, for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory ... ..				26,352	13	10
To JENNER MEMORIAL FUND—						
Amount received from the Committee of the Jenner Memorial Fund				5,768	0	11
To CAPITAL FUND—						
Balance as per last account, 31st May, 1898 ... ..	46,656	7	8			
Add—Balance of Sudbury Farm Account, being excess of Income over Expenditure, for the year ending 31st May, 1899 ... ..		598	15	0		
Less—Balance of Income and Expenditure Account, being excess of Expenditure over Income, for the year ending 31st May, 1899 ... ..		582	9	4		
				<u>16</u>	<u>5</u>	<u>8</u>
To DIFFERENCE IN THE BOOKS ... ..				46,672	13	4
					0	10
						6

HENRY E. ROSCOE,

HON. TREASURER,

June 20th, 1899.

£81,851 19 11

We have examined the above Balance Sheet with the Books and Vouchers of the Institute, and, in our State of the Affairs of the Institute. We have also verified the Bankers' Balances and the Investments.

London, 20th June, 1899.

# of Preventive Medicine.

Preventive Medicine, under the Companies Acts, 1862 to Limited by Guarantee.

December, 1898.

31st MAY, 1899.

Cr.

	£	s.	d.	£	s.	d.
BY CASH						
At Bankers—						
Current Account .. .. .	£385	13	8			
Jenner Memorial Fund .. .. .	271	5	11			
				656	19	7
In hand .. .. .				12	13	9
						669 13 4
BY INVESTMENTS—						
£1,500 City of Sydney 4 per cent. Bonds .. .. .	1,500	0	0			
£2,900 New South Wales 3½ per cent. Stock 1918 .. .. .	2,897	16	0			
£1,000 Cape of Good Hope, 3½ per cent. Stock .. .. .	1,000	0	0			
£1,800 North Eastern Railway 4 per cent. Guaranteed Stock .. .. .	2,547	5	9			
£1,760 South Eastern Railway, 5 per cent. Perpetual Debenture Stock .. .. .	3,169	18	10			
Mortgage on Freehold Property, Liscombe Estate, at 3 per cent.	20,000	0	0			
						31,115 0 7
BY INVESTMENTS (JENNER MEMORIAL FUND)—						
£2,650 Southwark and Vauxhall 3 per cent. Debenture Stock ..	2,756	10	0			
£2,660 South Eastern Railway 3 per cent. Preference Stock, 1898	2,740	5	0			
						5,496 15 0
BY SUNDRY DEBTORS .. .. .						1,377 17 5
BY STOCK OF TUBERCULIN AND MALLEIN .. .. .						20 0 0
BY FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS AND BOOKS, as per last Account, 31st May, 1898 .. .. .	470	0	0			
Add Additions during the year .. .. .	913	6	9			
				1,383	6	9
Less Written off for Depreciation .. .. .				138	6	8
						1,245 0 1
BY EXPENDITURE ON NEW BUILDING—						
As per last Account, 31st May, 1898 .. .. .	34,374	12	6			
Add Expenditure during the year .. .. .	5,042	8	5			
						39,417 0 11
BY SUDBURY FARM ACCOUNT—						
Stock of Animals and Forage .. .. .	417	14	0			
Stock of Anti-Toxins .. .. .	855	0	0			
Stable Utensils and Farm Implements .. .. .	108	10	1			
Laboratory Apparatus—As per last Account, 31st May, 1898 .. .. .	200	2	11			
Add Additions during the year .. .. .	23	17	6			
				224	0	5
Less Written off for Depreciation .. .. .				22	8	0
						201 12 5
Furniture—As per last Account, 31st May, 1898 .. .. .	101	1	7			
Less Written off for depreciation .. .. .	15	3	3			
						85 18 4
Additions and Improvements to Buildings, as per last Account, 31st May, 1898 .. .. .	225	0	0			
Less written off .. .. .	30	0	0			
						195 0 0
Unexpired Term of Lease of "The Poplars" Farm, as per last Account, 31st May, 1898 .. .. .	536	0	0			
Less Proportion written off .. .. .	73	0	0			
						463 0 0
						2,326 14 10
BY RATES paid in respect of the Premises at Chelsea pending the decision of the Court as to the liability of the Institute .. .. .						183 17 9
						£81,851 19 11

opinion it is a full and fair Balance Sheet, properly drawn up, so as to exhibit a true and correct view of the

COOPER BROTHERS & CO.

Chartered Accountants,

Auditors.

# The Jenner Institute of

(Formerly the BRITISH INSTITUTE)

Dr.

## INCOME AND EXPENDITURE ACCOUNT

		INCOME.		£ s. d.	
To Donations	...	...	...	106	6 0
To Annual Subscriptions	...	...	...	14	9 0
To Interest and Dividends on Investments	...	...	...	1,311	8 5
To Profit on Sale of Investments	...	...	...	133	3 7
To Students' Fees	...	...	...	495	19 0
To Diagnosis Fees	...	...	...	656	19 8
To Sales of Tuberculin and Mallein	...	...	178 2 0		
<i>Add</i> Stock, 31st May, 1899	...	...	20 0 0		
			198 2 0		
<i>Deduct</i> Stock, 31st May, 1898	...	...	30 0 0		
			168 2 0		
To Sale of "Transactions"	...	...	...	0	13 9
To Rent of Laboratories	...	...	...	229	3 4
				3,116	4 9
To Balance being excess of Expenditure over Income deducted from Capital Fund (see Balance Sheet)	...	...	...	582	9 4

£3,698 14 1

Dr.

## SUDBURY FARM INCOME AND EXPENDITURE

		INCOME.		£ s. d.		£ s. d.	
To Sale of Antitoxins	...	...	...	2,492	18 7		
<i>Add</i> Stock, 31st May, 1899	...	...	...	855	0 0		
				3,347	18 7		
<i>Deduct</i> Stock, 31st May, 1898	...	...	...	400	0 0		
				2,947	18 7		

£2,947 18 7

# Preventive Medicine.

OF PREVENTIVE MEDICINE).

for the Year Ending 31st May, 1899.

Cr.

## EXPENDITURE.

	£	s.	d.
By Rent, Taxes, and Insurance...	101	3	6
By Salaries, Wages, and Fees to Scientific Staff	2,175	16	11
By Stationery, Printing, Postage, and Advertising	158	8	1
By Office Expenses and Sundries, including Window Cleaning and Cost of Removal from Great Russell Street	197	18	9
By Bank Charges	2	18	2
By Law Charges	52	0	0
By Travelling Expenses	12	16	11
By Auditors' Fee and Accountant's Charges	26	5	0
By Gas and Water	112	14	11
By Electric Light and Power	45	18	0
By Fuel	63	4	0
By Bacteriological Laboratory Expenses	228	12	7
By Water Laboratory Expenses	117	5	5
By Hygiene Laboratory Expenses	28	0	11
By Hansen Laboratory Expenses	66	3	5
By Photographic Laboratory Expenses	38	17	6
By Ice	15	8	3
By Culture Media	48	8	6
By Animals	38	19	5
By Animal House Expenses	14	6	3
By Cost of Publication of "Transactions"	15	0	11
By Amount written off for Depreciation on Furniture, Fittings, and Scientific Apparatus and Books	138	6	8
	<u>£3,698</u>	<u>14</u>	<u>1</u>

ACCOUNT for the Year Ending 31st May, 1899

Cr.

## EXPENDITURE.

	£	s.	d.
By Rent, Taxes, and Insurance	178	1	7
By Salaries and Wages	866	2	2
By Animals—			
Stock 31st May, 1898	162	6	8
Additions during the year	80	13	6
	<u>243</u>	<u>0</u>	<u>2</u>
<i>Deduct</i> —Sales during the year	13	17	0
Stock 31st May, 1899	217	14	0
	<u>231</u>	<u>11</u>	<u>0</u>
	11	9	2
By Forage	398	3	9
By Stable and other Expenses	81	10	8
By Farm Expenses	37	19	5
By Gas and Water	79	8	6
By Postages and Telegrams	1	13	2
By Amount written off unexpired term of Lease of "The Poplars" Farm and Additions to Buildings	103	0	0
By Repairs and Alterations	27	9	3
By Laboratory Expenses, including Cost of Bottles, Corks, Chemicals and Glass Apparatus	503	2	1
By Travelling Expenses	13	14	10
By Amount written off for Depreciation on Furniture and Laboratory Apparatus	37	11	3
By Bad Debts	9	17	9
	<u>2,349</u>	<u>3</u>	<u>7</u>
By Balance being excess of Income over Expenditure transferred to Capital Fund (see Balance Sheet 1)	598	15	0
	<u>£2,947</u>	<u>18</u>	<u>7</u>

## REPORTS OF THE SCIENTIFIC STAFF.

### I.—DIRECTORS' REPORT.

I beg to submit the following report upon the work of the Institute during the past year.

The internal fittings of the Chelsea Buildings are practically completed. After the announcement of Lord Iveagh's donation, it was decided to proceed with the equipment of the rooms that had been left unfinished on the second floor of the Institute. This has been done by the Architect on the basis of the plans I had already furnished to him. The original contractor proved so dilatory that I suggested to Mr. Waterhouse that a new man be employed. The contract was accordingly transferred to Mr. Worsley, with great advantage to the progress of the work.

The Electric fittings over the whole building are now completed, the experimental main is in working order and the electric motor to drive the centrifugal and cold storage machines is in position. Through the kindness of Mr. Sterne, of Messrs. Sterne & Co., the Institute has obtained a Cold Storage apparatus at about one-half of the ordinary price. The Photographic Department is fully equipped. The Photo-micrographic apparatus has been specially designed by Mr. Barnard for the work of the Institute, and I have to thank him for the valuable services he has voluntarily rendered in this and other directions. A cabinet of photographic slides is in process of formation, and the necessary illustrations to scientific papers will in future be prepared in this Laboratory. During the year the organisation of work in the main Laboratories of the Institute was completed, and valuable additions made to the stock of scientific apparatus. All waste material from the Laboratories, animal litter, etc., are collected in sacks and destroyed in the Crematorium. The Institute has been placed on the Central Telephone Exchange.

The work of the Vaccine Department of the Local Government Board has increased to such an extent that the present accommodation at the Institute has become inadequate for its requirements. It was deemed advisable by the Executive under these circumstances to grant the Local Government Board the use of an additional room on the second floor at a rent of £50 per annum. A room on the same floor has also been placed at the disposal of the Medical School of St. George's Hospital, in accordance with a resolution of the Council.

The Architect has been instructed, with the approval of the Executive, to proceed with the completion of the foundations of the new wing, in order to save valuable time. The contractor has started work, and has erected a hoarding which will ensure the privacy of the animal house and the adjoining portions of the yard.

The Hansen Laboratory has commenced its work under the superintendence of Dr. G. Harris Morris. A knowledge of the Biology of Fermentation is of great importance to the brewer, the chemist, and agriculturist, and little or no encouragement has hitherto been given to this branch of investigation in this country. In a report to the Council in 1896, I ventured to point out the useful work the Institute might do in this direction, and I feel sure that the Hansen Laboratory will justify its existence.

The Library is now fitted up, and efforts are being made to obtain a good collection of standard works and periodicals. Sir Henry Roscoe, Dr. Dawson Williams and others have sent valuable contributions.

A commencement has also been made with a series of Museum specimens intended to illustrate the work of the Institute.

An effort is being made to obtain remission of the heavy local taxes on the building, and a case has been prepared by Messrs. Hunters & Haynes for submission to the Courts.

Investigation at Great Russell Street was seriously handicapped by a lack of adequate accommodation for experimental work. The new Animal House at Chelsea has enabled the staff to undertake research work that was impossible under the old conditions. It is gratifying to be able to report that at no period has there been a greater body of research work in progress than at the present moment.

Investigations in connection with the production of Immunity to diseases such as Tuberculosis, Enteric Fever, etc., are being prosecuted, in addition to others on Bacterial Toxins and certain fermentative processes. A systematic description of the biological and cultural peculiarities of the most important types of bacteria is likewise in progress, which will it is hoped, be of service to workers generally when completed. Experiments are also being made with the view of introducing uniform methods for the preparation of standard culture media, and data are being collected with a view to establishing if possible a standard method for the bacteriological examination of water.



A number of investigations of public importance have been carried out at the Institute, e.g., upon Ice-creams for Paddington Vestry, the East London Water supply for the Shoreditch Vestry, the Milk Supply of Islington and Hackney, an outbreak of Colitis at Derby Asylum, the Milk and Water supply of Redhill Asylum, the doubtful cases of Typhoid Fever amongst the Guards on their return from Egypt, etc.

The question of a Central Municipal Laboratory for London is solving itself in a simple fashion, judging by our own experience at Chelsea. The Institute is conducting the bacteriological examination of specimens for the following Public Health authorities:—Fulham, Islington, St. Pancras, Marylebone, Holborn, Clerkenwell, Lambeth, Wandsworth, Kensington, Paddington, St. George's, Hanover Square, Poplar, Finchley, Lee, Eltham. Similar arrangements are about to be made for Chelsea, and probably Battersea. About 2,500 reports have been sent out during the year. The bacteriological diagnosis of Tuberculosis has been undertaken at the request of several Sanitary authorities, e.g., Islington, Lambeth, &c.

There is an increasing demand for Tuberculin and Mallein. The Veterinary Officer to the Egyptian Government informs me that the Institute's Mallein is being used with good results in that country, and that it has been decided to use also the Institute's Tuberculin. We have sent large supplies of these substances to India and to the Colonies, including 500 doses of Mallein to Rhodesia. Since last June about 10,700 doses have been sent out by the Institute.

I attended the Sanitary Congress at Birmingham with Sir Joseph Fayrer; the Tuberculosis Conference at Lord Vernon's seat, and the Committee upon Tropical Diseases at the Colonial Office on behalf of the Institute.

Papers embodying work carried out in the Institute's Laboratories have been published by Drs. Hewlett, Harden, Kirton, Foulerton, Jenner, Bulloch, Lawson and Lack. There is also sufficient material for the immediate publication of a second volume of the Transactions of the Institute.

A syllabus of the work of the Institute has been published embodying the recommendations of the Committee appointed by the Council to consider the organisation of Departments at Chelsea. A Meeting of the House Committee was summoned but no member was able to attend.

As regards the Courses of Instruction, which have been well attended, the aim has been to train the advanced student, as is done in foreign laboratories, with a view to subsequent research work.

I have once more to acknowledge the cordial co-operation of the members of the staff in furthering the work of the Institute. The administrative and business work connected with the Institute has been exceptionally heavy this year, and has occupied much of my time. The reports of Doctors Morris, Harden and Dean follow.

ALLAN MACFADYEN.

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## II.—THE HANSEN LABORATORY.

This department of the Institute was opened for work early in December last. Since that time five students have availed themselves of the course of instruction in the Bacteriology of Fermentation and Pure Yeast Culture, and there is every reason to believe that as the existence of the Laboratory becomes more widely known, students who now go to the Continent for instruction will avail themselves of the advantages offered of studying the question under conditions applicable to the English systems of fermentation.

The laboratory is furnished with the requisite apparatus, &c., for instruction and research in Technical Bacteriology, and through the kindness of Mr. S. Briggs, of Burton-on-Trent, will shortly be provided with a working model of the apparatus used in practical operations for the cultivation of pure yeast on an industrial scale.

Investigations are being carried on in the department in connection with the Diastase of Barley, and its variations under different conditions; on the possible application of the Symbiotic Fermentation of Moulds and Yeasts to the determination of starch in cereals; and on the nature of the organisms contained in a preparation used by the natives of India for the production of alcohol, but at present the results are not sufficiently advanced for publication.

G. HARRIS MORRIS.

### III.—THE WATER LABORATORY.

During the past year the classes in Chemistry and Physics applied to Hygiene have been well attended by students, most of whom propose to present themselves for the examination for the Diploma in Public Health.

During the year a number of samples of water, air and milk have been received for analysis.

The research on the Fermentation of Sugars by Bacteria of the Coli group has been continued, and a portion of the results obtained will be published in the forthcoming volume of the Transactions of the Institute. A number of experiments on the reactions and estimation of Formaldehyde have also been carried out. The results of these have been embodied in a paper read by me before the Chemical Society, and will also appear in the Transaction of the Institute.

A. HARDEN.

### IV....THE ANTI-TOXIN DEPARTMENT.

I beg to submit the following statement of the work that has been carried out in the Serum Department of the Institute during the past year :—

*Diphtheria Anti-toxin.*—In last year's report it was stated that we had obtained a race of Diphtheria Bacillus, which enabled us to prepare toxins of four to five times the strength of those previously produced in the laboratory. The hope was expressed that, by using these stronger toxins, anti-toxins of a higher value might be obtained. This hope has been so far fulfilled that we have been enabled to raise the number of units per dose from 1,500 to 2,000, the average dose containing about 5 c.c.

As stated in the Quarterly Report recently submitted by me, the anti-toxin obtained from one animal was found to be of very high value. Professor Ehrlich kindly controlled the testing of this serum and he reported that it was of quite exceptional quality and of a strength which had been hitherto rarely reached.

The serum of only one other animal has during the year come near this high value, but the average strength of the serum of most of the animals has been increased.

During the year 16,195 doses of Diphtheria Antitoxin have been sent out from the Department.

*Anti-Streptococcus Serum.*—During the year two new horses have been immunised against the Streptococcus Pyogenes. No high degree of protective power can be claimed for this serum in spite of the use of highly virulent Streptococci. The experiments on different races of Streptococcus and on the products of the growth of this organism have been continued during the year. 5,498 doses of this serum have been sent out.

*Tetanus Antitoxin.*—The serum of the horse immunised against Tetanus has continued of excellent quality, and the quantity is sufficient to meet the demand, but in view of the risk of depending on a single animal a second horse has been immunised, and by the help in the early stages of the antitoxin from the first animal, has passed safely through the dangerous stages of the process, and now tolerates large injections of highly virulent living cultures. 1,133 doses of Tetanus Antitoxin have been sent out.

*Pneumonia.*—Attempts have been made to immunise two horses against the Pneumococcus, but with negative results. One animal was profoundly affected by the treatment and got into such a bad state of health that it was necessary to slaughter it. The second horse behaved like a naturally immune animal, receiving very large doses of highly virulent living cultures, without marked reaction, but its serum was found, both by Dr. Salter and Dr. Washbourn, to possess no protective power.

In view of the statements of favourable results of other workers, a donkey is now in process of immunisation.

*Coley's Fluid.*—538 Tubes of this substance have been supplied on demand.

We have thus sent out from the department during the year 23,364 doses in all.

*Demonstrations.*—A number of demonstrations have been given to medical men, among others to the Students at the Institute, to the D.P.H. Students at Guy's Hospital, and at University College.

*Research Work.*—In addition to the problems already referred to in this report, Dr. Salter and I have investigated several questions that have arisen in relation to the work of the Department.

Dr. Salter has completed a research on the relation of the Pseudo-diphtheria bacillus to the Klebs Löffler Bacillus.

I have investigated a new Streptothrix obtained from the horse. Both these researches are in course of publication in the new volume of the Transactions of the Institute.

A convenient method for easily obtaining large quantities of Tetanus Toxin has occupied my attention for some time.

I have also been conducting a number of experiments on the duration of active immunity and anti-toxin production in the case of animals immuned by Diphtheria Toxin. Dr. Salter has been occupied with the same problem in relation to Tetanus.

The present operating room is, owing to its small size and construction, of no use for that purpose, and all the work connected with the horses has to be carried out, summer and winter, in the open yard. We have in stock at present antitoxins of the value of at least £1,000, and owing to the defective condition of storage this valuable material is depreciating to a great extent more rapidly than would be the case under better conditions. Storage of more material with the present accommodation is practically impossible. The present room for the preparation of culture media is little more than a cupboard, and the limited space adds greatly to the difficulty of keeping up the necessary supply of media for the routine work of the Department.

As most of the processes involved in the work have to be carried out in one room an additional Laboratory for undisturbed research work seems to me to be highly desirable.

These are a few of the most obvious needs of the Antitoxin Department, but a number of other improvements are necessary to bring the department into a well equipped condition.

I desire to express my thanks to the Staff at the "Poplars" for their continued help in carrying out the work of this department.

GEORGE DEAN.

Jenner Institute of Preventive  
Medicine.

(Late British Institute of Preventive Medicine.)

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ANNUAL REPORT

AND

BALANCE SHEET.

---

June 23rd, 1899.

**PRIVATE.**

**FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE.**

# ANNUAL GENERAL MEETING

OF THE

## Jenner Institute of Preventive Medicine

(Late BRITISH INSTITUTE OF PREVENTIVE MEDICINE).

JUNE 29th, 1900.

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### REPORT OF THE GOVERNING BODY.

The Governing Body have to report that during the year the work of the Institute has continued to afford valuable results.

The transference of Lord Iveagh's gift for the promotion of the objects for which the Institute was founded has been effected.

The finances of the Institute are now placed on a satisfactory basis, and the expansion of its influence and usefulness assured.

The new Articles of Association received, after some delay, the consent of the Court. Copies of the approved Articles have been sent to the Members of the Institute.

The Governing Body, which will in future control the affairs of the Institute, has been constituted, and held its first Meeting in November. The three representatives of the Council on the Governing Body are subject to annual election. The present representatives were re-elected for a further term of office in December, 1899.

The Governing Body is engaged in the consideration of the steps to be taken for extending the work of the Institute.

An account of the Scientific and other work of the Institute will be found in the annexed reports. A second volume of the Transactions was published in the autumn.

The Institute has lost a valued supporter through the death of His Grace the Duke of Westminster.

LISTER,  
*Chairman.*



CHELSEA GARDENS,

GROSVENOR ROAD,

LONDON, S.W.

*June 25th, 1900.*

### TREASURER'S REPORT.

I beg to report that the Accounts of the Institute have been made up to the 31st May, 1900, and show an excess of Income over Expenditure of £1,645 14s. 2d.

The Capital Account has been increased during the year by Lord Iveagh's gift of £250,000.

The receipts from other sources during the same period have been as follows:—

Interest on Investments	...	...	...	...	£4,962 5 8
Annual Subscriptions	...	...	..	12 7 0	
Students' and other Fees	...	...	...	830 14 6	
Sales of Antitoxins, Mallein and Tuberculin	...	...	...	3,385 12 0	
Rent of Laboratories on second floor	...	...	...	295 16 8	
Sale of Transactions	...	...	...	2 8 5	
				<hr/>	4,526 18 7
					<hr/> <hr/>
					£9,489 4 3

The Expenditure at Chelsea for the year charged to Income and Expenditure Account has been £5,039 5s. od., and at "The Poplars" Farm, Sudbury £2,804 5s. 1d., making a total Expenditure of £7,843 10s. 1d., towards which amount £4,526 18s. 7d. has been earned from Fees, Sales of Antitoxins, &c.

The amount spent during the year on Building, Furniture, Fittings and Apparatus at Chelsea charged to Capital Account has been £4,056 18s. 3d., and at Sudbury, £26 11s. 11d.

The accounts have been Audited by Messrs. Cooper Brothers & Co., Chartered Accountants, and they have certified that the following Balance Sheet and Statements of Accounts are correct.

HENRY E. ROSCOE,

*Hon. Treasurer.*

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BALANCE SHEET.

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# The Jenner Institute

Registered 25th July, 1891, as the British Institute of  
1890, as an Association

Dr.

## BALANCE SHEET,

	£	s.	d.	£	s.	d.
To CREDITORS ... ..				872	7	5
To WATER LABORATORY FUND—						
Amount received from the Trustees of the late Richard Berridge, for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory ... ..				26,352	13	10
To JENNER MEMORIAL FUND—						
Amount received from the Committee of the Jenner Memorial Fund				5,768	0	11
To CAPITAL FUND—						
Balance as per last account, 31st May, 1899 ...	46,672	13	4			
DONATION RECEIVED FROM LORD IVEAGH ...	250,000	0	0			
				296,672	13	4
<i>Add</i> —Balance of Income and Expenditure Account, being excess of Income over Expenditure, for the year ending 31st May, 1900 ... ..	1,213	6	9			
Balance of Sudbury Farm Account, being excess of Income over Expendi- ture, for the year ending 31st May, 1900 ... ..	432	7	5			
				1,645	14	2
				298,318	7	6

HENRY E. ROSCOE,  
HON. TREASURER,  
June 25th, 1900.

£331,311 9 8

We have examined the above Balance Sheet with the Books and Vouchers of the Institute, and, in our State of the Affairs of the Institute. We have also verified the Bankers' Balances and the Investments.

London, 26th June, 1900.

# of Preventive Medicine.

Preventive Medicine, under the Companies Acts, 1862 to Limited by Guarantee.

31st MAY, 1900.

Cr.

	£	s.	d.	£	s.	d.
BY CASH—						
At Bankers, Current Account ... ..	£1,785	9	9			
Jenner Memorial Fund ... ..	271	3	11			
				2,056	13	8
In hand ... ..				13	10	4
BY INVESTMENTS—						2,070 4 0
£2,900 New South Wales 3½ per cent. Stock 1918 ...				2,897	16	0
£1,000 Cape of Good Hope, 3½ per cent. Stock ...				1,000	0	0
£1,500 City of Sydney 4 per cent. Bonds ...				1,500	0	0
£353 North Eastern Railway 4 per cent. Guaranteed Stock...				499	11	0
Mortgage on Freehold Property, Liscombe Estate, at 3 per cent.				20,000	0	0
BY INVESTMENTS (LORD IVEAGH'S DONATION)—						25,897 7 0
£25,000 New Zealand Government 3 per cent. Inscribed Stock 1945 ... ..				24,112	10	0
£25,000 Victorian Government 3 per cent. Inscribed Stock 1929 - 1949 ... ..				23,875	0	0
£25,000 Natal 3 per cent. Inscribed Stock 1929 - 1949 ...				24,484	7	6
£25,000 New South Wales Government 3 per cent. Inscribed Stock 1935 ... ..				24,937	10	0
£26,100 South Australian 3 per cent. Inscribed Stock 1916				24,860	5	0
£25,000 Cape of Good Hope 3 per cent. Inscribed Stock 1933 - 1943 ... ..				23,850	0	0
£25,000 London and South Western Railway 4 per cent. Preferred Converted Ordinary Stock ... ..				32,000	0	0
£25,000 Great Northern Railway 3 per cent. Preference Stock				26,000	0	0
£25,000 Midland Railway 2½ per cent. Preferred Converted Ordinary Stock ... ..				20,375	0	0
£25,000 East Indian Railway 3 per cent. New Debenture Stock				25,500	0	0
Cash at Bank ... ..				5	7	6
BY INVESTMENTS (JENNER MEMORIAL FUND)—						250,000 0 0
£2,650 Southwark and Vauxhall Water Co. 3 per cent. Debenture Stock "B" ... ..				2,756	10	0
£2,660 South Eastern Railway 3 per cent. Preference Stock 1898				2,740	5	0
						5,496 15 0
BY SUNDRY DEBTORS ... ..						947 7 11
BY STOCK OF TUBERCULIN AND MALLEIN ... ..						10 0 0
BY FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS AND BOOKS, as per last Account, 31st May, 1899 ... ..				1,245	0	1
Add Additions during the year ... ..				506	13	6
				1,751	13	7
Less Written off for Depreciation ... ..				175	3	4
BY EXPENDITURE ON NEW BUILDING—						1,576 10 3
As per last Account, 31st May, 1899 ... ..				39,417	0	11
Add Expenditure during the year ... ..				3,550	4	9
BY SUDBURY FARM ACCOUNT—						42,967 5 8
Stock of Animals and Forage ... ..				455	13	0
Stock of Anti-Toxins ... ..				960	0	0
Stable Utensils and Farm Implements ... ..				97	13	1
Laboratory Apparatus—As per last Account, 31st May, 1899 ... ..	201	12	5			
Add Additions during the year ... ..	11	17	6			
	213	9	11			
Less Written off for Depreciation ... ..	21	7	0			
				192	2	11
Furniture—As per last Account, 31st May, 1899 ... ..	85	18	4			
Add Additions during the year ... ..	14	14	5			
	100	12	9			
Less Written off for depreciation ... ..	15	1	11			
Additions and Improvements to Buildings, as per last Account, 31st May, 1899 ... ..	195	0	0	85	10	10
Less written off ... ..	30	0	0			
Unexpired Term of Lease of "The Poplars" Farm, as per last Account, 31st May, 1899... ..	463	0	0	165	0	0
Less Proportion written off ... ..	73	0	0			
				390	0	0
						2,345 19 10
						£331,311 9 8

opinion it is a full and fair Balance Sheet, properly drawn up, so as to exhibit a true and correct view of the

COOPER BROTHERS & CO.,  
Chartered Accountants, } Auditors.

# The Jenner Institute of

(Formerly the BRITISH INSTITUTE)

Dr.

## INCOME AND EXPENDITURE ACCOUNT

		INCOME.					£ s. d.		
To Annual Subscriptions	...	...	...	...	...	...	12	7	0
To Interest and Dividends on Investments	...	...	...	...	...	...	4,962	5	8
To Students' Fees	...	...	...	...	...	...	122	3	0
To Diagnosis Fees	...	...	...	...	...	...	708	11	6
To Sales of Tuberculin and Mallein	...	...	...	...	158	19	6		
<i>Add</i> Stock, 31st May, 1900	...	...	...	...	10	0	0		
						168	19	6	
<i>Deduct</i> Stock, 31st May, 1899	...	...	...	...	20	0	0		
							148	19	6
To Sale of "Transactions"	...	...	...	...	...	...	2	8	5
To Rent of Laboratories	...	...	...	...	...	...	295	16	8

£6,252 11 9

Dr.

## SUDBURY FARM INCOME AND EXPENDITURE

		INCOME.					£ s. d.			£ s. d.		
To Sale of Antitoxins	...	...	...	...	...	3,131	12	6				
<i>Add</i> Stock, 31st May, 1900	...	...	...	...	...	960	0	0				
						4,091	12	6				
<i>Deduct</i> Stock, 31st May, 1899	...	...	...	...	...	855	0	0				

3,236 12 6

£3,236 12 6



# Preventive Medicine.

OF PREVENTIVE MEDICINE).

for the Year Ending 31st May, 1900.

Cr.

EXPENDITURE.							£	s.	d.
By Rent, Taxes, and Insurance, including Rates paid for the year ending 31st May, 1899	...	...	...	...	...	...	516	5	5
By Salaries, Wages, and Fees to Scientific Staff	...	...	...	...	...	...	2,219	5	11
By Stationery, Printing, Postage, and Advertising	...	...	...	...	...	...	146	4	8
By Office Expenses and Sundries, including Window Cleaning	...	...	...	...	...	...	152	12	6
By Bank Charges	...	...	...	...	...	...	3	18	1
By Law Charges including the Cost relating to the Alteration of the Memorandum and Articles of Association	...	...	...	...	...	...	684	14	11
By Travelling Expenses	...	...	...	...	...	...	10	11	3
By Auditors' Fee and Accountant's Charges	...	...	...	...	...	...	31	10	0
By Gas and Water	...	...	...	...	...	...	177	14	9
By Electric Light and Power	...	...	...	...	...	...	98	2	9
By Fuel	...	...	...	...	...	...	84	3	0
By Bacteriological Laboratory Expenses	...	...	...	...	...	...	124	19	2
By Water Laboratory Expenses	...	...	...	...	...	...	45	1	6
By Hygiene Laboratory Expenses	...	...	...	...	...	...	9	2	3
By Hansen Laboratory Expenses	...	...	...	...	...	...	98	6	6
By Photographic Laboratory Expenses	...	...	...	...	...	...	1	19	1
By Physiological Laboratory Expenses	...	...	...	...	...	...	8	10	6
By Ice, Rent of Cold Storage Machinery, and Expenses	...	...	...	...	...	...	31	12	5
By Culture Media	...	...	...	...	...	...	66	19	5
By Animals	...	...	...	...	...	...	46	6	1
By Animal House Expenses	...	...	...	...	...	...	60	11	9
By Cost of Publication of "Transactions"	...	...	...	...	...	...	183	8	0
By Repairs	...	...	...	...	...	...	30	17	2
By Amount written off for Depreciation on Furniture, Fittings, and Scientific Apparatus and Books	...	...	...	...	...	...	175	3	4
By Loss on Sale of Investments	...	...	...	...	...	...	31	4	7
							5,039	5	0
By Balance being Excess of Income over Expenditure Transferred to Capital Fund (see Balance Sheet)	...	...	...	...	...	...	1,213	6	9
							£6,252	11	9

ACCOUNT for the Year Ending 31st May, 1900.

Cr.

EXPENDITURE.							£	s.	d.
By Rent, Taxes, and Insurance	...	...	...	...	...	...	196	16	4
By Salaries and Wages	...	...	...	...	...	...	914	1	6
By Animals—									
Stock 31st May, 1899	...	...	...	...	217	14	0		
Purchased during the year	...	...	...	...	128	14	5		
					346	8	5		
<i>Deduct</i> —Sales during the year	...	...	9	12	6				
Stock 31st May, 1900	...	...	235	13	0				
					245	5	6		
							101	2	11
By Forage	...	...	...	...	...	...	494	2	0
By Stable and other Expenses	...	...	...	...	...	...	116	7	7
By Farm Expenses	...	...	...	...	...	...	58	3	0
By Gas and Water	...	...	...	...	...	...	90	3	9
By Postages and Telegrams	...	...	...	...	...	...	2	9	4
By Amount written off unexpired term of Lease of "The Poplars" Farm and Additions to Buildings	...	...	...	...	...	...	103	0	0
By Repairs and Alterations	...	...	...	...	...	...	20	8	9
By Laboratory Expenses, including Cost of Bottles, Corks, Chemicals and Glass Apparatus	...	...	...	...	...	...	647	18	1
By Travelling Expenses	...	...	...	...	...	...	15	10	7
By Amount written off for Depreciation on Furniture and Laboratory Apparatus	...	...	...	...	...	...	36	8	11
By Bad Debts	...	...	...	...	...	...	7	12	4
							2,804	5	1
By Balance being excess of Income over Expenditure transferred to Capital Fund (see Balance Sheet)	...	...	...	...	...	...	432	7	5
							£3,236	12	6

CONFIDENTIAL.

# JENNER INSTITUTE OF PREVENTIVE MEDICINE.

## DIRECTOR'S ANNUAL REPORT

*For the Year ending May 31st, 1900.*

### I.—GENERAL.

I have the honour to report that during the past year the work of the various departments of the Institute has continued to be of a satisfactory character. There have been no changes in or additions to the personnel of the scientific staff. I regret that during a period of three months I was unable to perform any duties at the Institute. The fitting up of the Chelsea Building, which has occupied a great deal of my time during the past three years, is now completed with the exception of the Museum. A certain number of Museum specimens have in the meanwhile been prepared, and it would be of advantage to know, before going further, whether this is to be regarded as a permanent feature of the Institute. The foundations and footings on the vacant portion of the building site have been laid down, and this will facilitate building operations in the event of its being decided to proceed with the erection of the new wing. Messrs. A. Waterhouse & Son, the Architects, have concluded their duties, and the Clerk of the Works has been released. Amongst new features added during the year may be mentioned: (1) a room fitted up for purposes of physiological experiment, (2) a room for incubating purposes, which has proved of great convenience, (3) a laundry, in which all washing operations are now conducted, (4) a workshop, with a complete set of tools—the engagement of a handy man has lessened expenses in connection with the minor repairs of the Institute—(5) a Cold Storage Room, which has proved a success and has lessened the ice bill.

Mr. Briggs has been good enough to present to the Institute a small Hansen apparatus for pure yeast culture, and it will prove of service in researches at present in progress.

Considerable additions have been made to the Library, including complete sets of important periodicals, as well as donations from Sir Henry Roscoe, Dr. Dawson Williams, and others.

The first Laboratory Meeting of the Pathological Society was held at the Institute. I have been asked to join the Tuberculosis Congress, and to take part in the Malaria Conference as a representative of the Institute. The Society of Chemical Industry will visit the Institute in July, and a suitable demonstration has been arranged for the Members.

During the year I have visited the Laboratories of Professors Behring and Ehrlich and those of Meister Lucius and Brunig at Höchst, and received every facility for observing the methods of work. In the course of the visit to Professor Ehrlich an arrangement was made whereby the Institute will obtain in future a regular supply of Diphtheria test serum.

The business affairs of the Institute have claimed a large amount of my time, as well as general inquiries addressed to the Institute upon matters of Public Health interest.

The Rating Appeal has been decided against the Institute. The Government officials state that the present Laboratory accommodation is inadequate for the growing requirements of the Lymph Department. The Institute has not been recognised as a teaching body by the new London University.

### II.—INSTRUCTION.

The number of students has decreased, as no effort was made during the year to attract students to the Institute. The workers were mainly senior men who wished to utilise the resources of the Institute to advance their knowledge. Their presence has not, therefore, interfered with the research of the staff, as the duties in this respect were mainly of an advisory character. There has been no requirement for the services of the Teacher of Hygiene. It would, no doubt, be advisable to inform the Teacher now whether his services are required in the future or not.

## III.—RESEARCH.

In the course of the year a second series of the Institute's Transactions was published. The volume contained nineteen contributions and included a paper by Professor Ehrlich. The volume otherwise consisted of researches from the Institute's Laboratories. The volume is in the hands of the Members of the Governing Body and Council, and copies have been sent to the leading foreign Institutes. It has been the means of receiving valuable exchanges. A German abstract of the papers has been prepared for the "Bacteriologische Centralblatt." It may be of interest to give an excerpt from a letter received from Professor Welch of the John Hopkins University:—"I congratulate you upon the excellence of the scientific work recorded. Every paper is a genuine contribution of real value, and the whole impression made by the volume is of good clean scientific research. The Institute is a splendid success, and all English-speaking physicians have reason to be proud of it."

With regard to current research work, I have devoted my energies to the development of research in the various departments. Three papers have been communicated to the Royal Society upon the influence of the temperature of liquid air and hydrogen upon bacterial life. The experiments were conducted with the kind co-operation of Professor Dewar, and the remarkable results have led us to contemplate a further series of experiments upon life at low temperatures. In conjunction with Drs. Morris and Rowland, a paper has been sent to the Royal Society on "Expressed Yeastcell Plasma" (Buchner's "Zymase"). The subject presented so many features not only of special but of general biological interest that we were led to its investigation. The investigation had the further advantage (and this was one of the special reasons for carrying it out) that it enabled us to test on the larger yeast cell the best methods to be employed for triturating disease organisms for the purpose of experiments now in progress. The research has been the means of giving us an entirely new and practical method. It was gratifying to find that Professor Ehrlich considered that a promising line of research had thereby been opened out with regard to certain infectious diseases. We are working in the first instance at enteric fever, with the view of possibly obtaining immunising bodies. The results, whatever their character, may have a bearing on the methods of treatment employed in cholera and plague. Tubercle bacilli are being treated in the same way. The method devised for obtaining fresh cell juices has enabled us to commence a series of experiments on the Etiology of Cancer. These researches must necessarily be of a prolonged character. The elaboration of methods meant many failures, as well as consumption of time. I have to thank Dr. Hewlett and Mr. Rowland for their co-operation in the work. To Mr. Rowland I am greatly indebted, as without his experimental skill it would have been difficult to have reached the present stage.

Amongst other researches in progress, mention may be made of one upon the Cellulose Fermentation in the soil and Digestive Tract. The chemical side of this question is being studied by Dr. Harden.

Various investigations of minor importance, though of scientific interest, have been published or are in progress, e.g. the following have appeared:—"Diphtheria-like Organisms in Pigeons" (Macfadyen and Hewlett); "A new Method for the Widal Test" (Hewlett and Rowland); "The Indal Reaction" (Hewlett), etc.—whilst investigations upon "Distemper," the "Thermal Death Point of the Tubercle Bacillus," etc., are in progress.

A pleasant feature has been the the cordial co-operation of the Staff in furthering researches, which it would have been impossible for any one individual to carry out fully. In this respect, Dr. Harden's chemical knowledge has been of considerable assistance.

I am anxious to set on foot at the Institute a systematic inquiry into the nature and origin of Food Poisons, and I venture to lay the matter before the Governing Body as the subject could not be adequately investigated with the present resources at one's command.

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 IV.—RESEARCH WORKERS.

The following workers have utilised the Laboratories for research purposes:—(1) Dr. Moore: The Detection of the Typhoid Bacillus. (2) Dr. Peters: Function of the Suprarenals in Disease. (3) Dr. Bokenham: The Action of Liver on Toxins. (4) Dr. Fremlin: Nitrifying Organisms. (5) Dr. Barton: Digestive Tract of the Salmon. (6) Dr. Copeman: Vaccinia. (7) Dr. Latham: Tuberculosis. (8) Dr. Renner: Vaccine Lymph. (9) Dr. Lack: Malignant Diseases. (10) Dr. Barton: Standard Culture Media.

## V.—CLINICAL AND SANITARY INVESTIGATIONS.

The number of bacterial diagnoses made during the year was 3,424, being an increase of about 900 over the previous year. This work, therefore, continues to form a valuable asset in the finances of the Institute.

Special investigations were carried out for Islington, Hackney, Fulham, Wandsworth, and Paddington (Tubercle in Milk); Newport (Glanders); Derbyshire and Worcestershire (Anthrax); Victoria Hospital for Children (Water Supply), etc.

## VI.—PHOTOGRAPHIC DEPARTMENT.

The illustrations for the *Transactions* were prepared by Mr. Barnard in this laboratory, and a cabinet of reference slides is at present being formed. At the request of the Editor, a paper has been prepared for "Nature" upon the types of micro-organisms, with illustrative photographs.

The reports of Drs. Dean, Harden and Morris follow.

In closing this, my Fifth Annual Report, the last that I shall have the honour to present under the organisation hitherto existing, I may be allowed to take the opportunity of offering my thanks to those colleagues who have helped to further the work of the Institute during a somewhat trying and responsible period in the history of its affairs.

June, 1900.

ALLAN MACFADYEN, *Director*.

## DR. HARDEN'S REPORT.

No classes for instruction have been held during the past year. The samples of milk and water received for analysis were about equal in number to those received during the preceding year.

The research on the Fermentation of Sugar by Bacteria of the coli group, a portion of the results of which appeared in the last volume of the *Transactions* of the Institute, has been continued and has yielded results of considerable interest which I hope to publish early in the autumn. The experiments have been extended to certain important pathogenic organisms such as Typhoid and Yellow Fever.

ARTHUR HARDEN.

## THE HANSEN LABORATORY.

The number of students who have attended the Hansen Laboratory during the past year has been less than during the preceding Session, but some interesting work has nevertheless been done.

A chemist connected with the sugar and rum manufacture in Demerara attended a course of instruction in pure yeast culture and commenced an investigation of yeasts connected with the rum fermentation. It is hoped that the results of the preliminary work will be published and the research will be followed up at the seat of the industry.

An investigation respecting mould infection on the malting floors was commenced in the laboratory and had made considerable progress when the student who had charge of the work went to South Africa.

The greater part of the chemical work connected with an examination of the expressed yeast—cell plasma—the zymase of E. Buchner—was carried out in the Hansen Laboratory. The results of this work which are of considerable importance have been communicated to the Royal Society.

Other investigations on matters connected with the secondary yeasts of English beers, the diastases of Barley and Malt, &c., are at present in progress.

The working model of the Hansen apparatus, for the cultivation of pure yeast cultures on a large scale, presented to the Institute by Mr. S. Briggs, has been fitted up and is now in working order. It should prove of great use in many directions.

G. HARRIS MORRIS.

## REPORT OF THE WORK IN THE ANTITOXIN DEPARTMENT.

I beg to submit the following statement of the work that has been carried out in the Serum Department of the Institute during the past year:—

*Diphtheria Antitoxin*.—In connection with this subject many experiments have been made with the view of ascertaining the best conditions for obtaining powerful toxins and antitoxins and in testing the

results claimed for the methods of other workers. The improvement in the strength of the toxins and in the method of immunising the animals has resulted in a higher average of antitoxic value being reached, so that the increased demand for this antitoxin has been successfully met.

The most powerful antitoxin obtained during the year had a value of 1,000 units per C.C., the highest we have yet obtained as tested by Ehrlich's newer method.

Such questions as the rapidity, extent and nature of the depreciation in the value of antitoxins which occurs on keeping, have been studied.

During the year 21,096 doses, each containing 2,000 units of Diphtheria Antitoxin, have been sent out from the Department.

*Anti-Streptococcic Serum.*—Several races of *Streptococcus Pyogenes* have been used in immunising the horses with the view of obtaining a polyvalent serum. We now possess two races exalted by passage to a very high degree of virulence. Attempts to obtain from those powerful toxins have not succeeded.

As stated in last year's report no high degree of protective power can be claimed for this serum. Reports of the clinical results are, however, in many cases favourable. 5,582 doses of this serum have been sent out.

*Tetanus Antitoxin.*—This antitoxin continues of good quality. The War Office and several of the Consulting Surgeons who have gone to S. Africa have been supplied with this and other antitoxins, a fact which accounts for the increase in the demand for this substance. 2,004 doses of this antitoxin have been sent out.

*Pneumococcus.*—Dr. Salter has continued his work on this subject by attempting to obtain on the line of Pane's work a protective serum from the donkey. The results have so far been negative.

*Staphylococcus.*—Attempts made by me on similar lines to obtain an anti-staphylococcic serum have been unsuccessful.

*Coley's Fluid.*—367 doses of this substance have been supplied on demand.

We have thus sent out from the department during this year 29,049 doses in all, as compared with 23,364 doses during last year, the bulk of the increase being in Diphtheria Antitoxin.

*Demonstrations.*—During the year a number of demonstrations on the methods employed in the department have been given to medical men, among others to students from the Institute at Chelsea, to the D.P.H. Students from Guy's Hospital, University and King's Colleges, and to the Students of the School of Tropical Medicine.

*Research.*—Many of the questions dealt with under the subjects already mentioned might come under this heading.

Dr. Salter and I have conjointly carried out some work on the hæmolytic action of bacterial toxins. The work on the duration of diphtheria immunity and antitoxin production has been continued and I have published some of the results obtained. Some work has been begun on certain ferments and their antibodies which promises to give interesting results.

During the year the following papers have been published from the department.

The Pathogenicity of the Pseudo-Diphtheria Bacillus and its Relation to the Klebs-Loeffler Organism: A. Salter, Transactions, Jenner Institute.

On a new Pathogenic Streptothrix. G. Dean. Transactions of Jenner Institute.

Problems of Diphtheria Immunity. Transactions Path. Society, London. G. Dean.

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#### REQUIREMENTS OF THE DEPARTMENT.

For the requirements of the Antitoxin Department I beg to refer to last year's report.

As the work has further increased during the year, the need of greater accommodation has been more than ever felt.

I desire to express my thanks to the Staff at the Poplars for their continued help in carrying out the work of the Department.

GEORGE DEAN.



**Jenner Institute of Preventive  
Medicine.**

(Late British Institute of Preventive Medicine.)

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**ANNUAL REPORT**  
AND  
**BALANCE SHEET.**

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*June 29th, 1900.*

**PRIVATE.**

**FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE.**

ANNUAL GENERAL MEETING  
OF THE  
**Jenner Institute of Preventive Medicine**

(Late BRITISH INSTITUTE OF PREVENTIVE MEDICINE)

JUNE 28th, 1901.

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**REPORT OF THE GOVERNING BODY.**

During the past year certain changes have been made in the organization of the Institute.

The department for the study of Bacteriology in relation to industrial and technical processes has been suspended.

The courses of Laboratory instruction hitherto given in Bacteriology and Hygiene have been terminated.

It has been decided to dispense with the office of Director, the head of each department being made directly responsible to the Governing Body, whilst the head of the Bacteriological department will, in the capacity of Secretary, exercise supervision and control over the administrative work of the Institute.

A new department of Pathological Chemistry has been established. The charge of this department was offered to and accepted by Dr. S. G. Hedin, of the University of Lund, Sweden.

Three Studentships of the value of £150 per annum have been instituted, and the first appointments made.

The Government Lymph department continues to occupy the Laboratories rented from the Institute.

The Great Central Railway having given notice to acquire the premises at Sudbury, inquiries are being made with a view to finding another suitable site for the Antitoxin department. Arrangements have been agreed to for the transfer of this property on favourable terms.

An account of the scientific work of the Institute will be found in the appended reports.

LISTER,

*Chairman.*

CHELSEA GARDENS,

GROSVENOR ROAD,

LONDON, S.W.

June 28 1901

### HON. TREASURERS' REPORT.

We beg to report that the Accounts of the Institute have been made up to the 31st May, 1901, and show an excess of Income over Expenditure of £2,971 4s. 2d.

The receipts during the year have been as follows :—

Interest on Investments	...	...	...	...	...	£8,614 12 4
Annual Subscriptions	...	...	...	£7	7 0	
Students' and Diagnosis Fees	...	...	...	896	16 0	
Sales of Antitoxins, Mallein and Tuberculin	...	...	...	3,590	13 11	
Rent of Laboratories on second floor	...	...	...	615	10 8	
Sale of Transactions	...	...	...	4	2 11	
						<hr/>
						5,114 10 6
						<hr/>
						£13,729 2 10
						<hr/>

The Expenditure at Chelsea for the year charged to Income and Expenditure Account has been £7,387 13s. 2d. and at "The Poplars" Farm, Sudbury, £3,370 5s. 6d., making a total Expenditure of £10,757 18s. 8d., towards which amount £5,114 10s. 6d. has been earned from Fees, Sales of Antitoxins, &c.

The amount spent during the year on Furniture, Fittings and Apparatus at Chelsea charged to Capital Account has been £457 os. 9d., and on apparatus at Sudbury, £29 12s. 11d.

The Accounts have been Audited by Messrs. Cooper Brothers & Co., Chartered Accountants, and they have certified that the following Balance Sheet and Statements of Accounts are correct.

HENRY E. ROSCOE,

J. L. PATTISSON,

*Hon. Treasurers.*

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BALANCE SHEET.

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# The Jenner Institute

Registered 25th July, 1891, as the British Institute of  
1890, as an Association

Dr.

## BALANCE SHEET,

	£	s.	d.	£	s.	d.
To CREDITORS				536	5	4
To WATER LABORATORY FUND—						
Amount received from the Trustees of the late Richard Berridge, for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory				26,352	13	10
To JENNER MEMORIAL FUND—						
Amount received from the Committee of the Jenner Memorial Fund				5,768	0	11
To SINKING FUND					185	0
To CAPITAL FUND—						
Balance as per last account, 31st May, 1900	298,318	7	6			
Add—Balance of Income and Expenditure Account, being excess of Income over Expenditure, for the year ending 31st May, 1901	2,979	19	3			
Less—Balance of Sudbury Farm Account, being excess of Expenditure over Income, for the year ending 31st May, 1901		8	15	1		
				2,971	4	2
				301,289	11	8

HENRY E. ROSCOE,  
J. L. PATTISSON,

HON. TREASURERS.

June 25th, 1901.

£334,131 11 9

In accordance with the provisions of the Companies Act, 1900, we certify that all our requirements as Sheet, and, in our opinion such Balance Sheet is full and fair and properly drawn up, so as to exhibit a true and

London, 25th June, 1901.



# of Preventive Medicine.

Preventive Medicine, under the Companies Acts, 1862 to Limited by Guarantee.

31st MAY, 1901.

Cr.

	£	s.	d.	£	s.	d.
BY CASH—						
At Bankers, Current Account ... ..	£3,800	9	4			
Jenner Memorial Fund ... ..	271	3	11			
				4,071	13	3
In hand ... ..				34	18	10
BY INVESTMENTS—						4,106 12 1
£2,900 New South Wales 3½ per cent. Stock 1918 ... ..	2,897	16	0			
£1,000 Cape of Good Hope, 3½ per cent. Stock ... ..	1,000	0	0			
£1,500 City of Sydney 4 per cent. Bonds ... ..	1,500	0	0			
Mortgage on Freehold Property, Liscombe Estate, at 3 per cent.	20,000	0	0			
£353 North Eastern Railway 4 per cent. Guaranteed Stock...	499	11	0			
BY INVESTMENTS (LORD IVEAGH'S DONATION)—						25,897 7 0
£25,000 New Zealand Government 3 per cent. Inscribed Stock 1945 ... ..	24,112	10	0			
£25,000 Victorian Government 3 per cent. Inscribed Stock 1929 - 1949 ... ..	23,875	0	0			
£25,000 Natal 3 per cent. Inscribed Stock 1929 - 1949 ... ..	24,484	7	6			
£25,000 New South Wales Government 3 per cent. Inscribed Stock 1935 ... ..	24,937	10	0			
£26,100 South Australian 3 per cent. Inscribed Stock 1916	24,860	5	0			
£25,000 Cape of Good Hope 3 per cent. Inscribed Stock 1933 - 1943 ... ..	23,850	0	0			
£25,000 London and South Western Railway 4 per cent. Preferred Converted Ordinary Stock ... ..	32,000	0	0			
£25,000 Great Northern Railway 3 per cent. Preference Stock	26,000	0	0			
£25,000 Midland Railway 2½ per cent. Preferred Converted Ordinary Stock ... ..	20,375	0	0			
£25,000 East Indian Railway 3 per cent. Debenture Stock	25,500	0	0			
Cash at Bank ... ..	5	7	6			
BY INVESTMENTS (JENNER MEMORIAL FUND)—						250,000 0 0
£2,650 Southwark and Vauxhall Water Co. 3 per cent. Debenture Stock "B" ... ..	2,756	10	0			
£2,660 South Eastern Railway 3 per cent. Preference Stock 1898	2,740	5	0			
						5,496 15 0
BY DEBTORS ... ..						1,450 17 5
BY STOCK OF TUBERCULIN AND MALLEIN ... ..						11 0 0
BY FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS AND BOOKS, as per last Account, 31st May, 1900 ... ..	1,576	10	3			
Additions during the year ... ..	457	0	9			
				2,033	11	0
Less Written off for Depreciation ... ..				203	7	1
BY EXPENDITURE ON INSTITUTE BUILDING AT CHELSEA—						1,830 3 11
As per last Account, 31st May, 1900, including purchase of freehold site, £6,000 ... ..						42,967 5 8
BY SUDBURY FARM ACCOUNT—						
Stock of Animals and Forage ... ..	369	5	2			
Stock of Anti-Toxins, Bottles and Corks ... ..	1,087	1	3			
Stable Utensils and Farm Implements ... ..	87	17	9			
Laboratory Apparatus—As per last Account, 31st May, 1900 ... ..	192	2	11			
Additions during the year ... ..	29	12	11			
				221	15	10
Less Written off for Depreciation ... ..				22	3	7
				199	12	3
Furniture—As per last Account, 31st May, 1900 ... ..	85	10	10			
Less Written off for depreciation ... ..	12	16	7			
Additions and Improvements to Buildings, as per last Account, 31st May, 1900 ... ..				72	14	3
				165	0	0
Unexpired Term of Lease of "The Poplars" Farm, as per last Account, 31st May, 1900 (to be taken over by the Great Central Railway Company for £1,500) ... ..	390	0	0			
						2,371 10 8
						£334,131 11 9

Auditors have been complied with, and we report to the Members that we have audited the above Balance correct view of the state of affairs of the Institute as shown by the Books of the Institute.

COOPER BROTHERS & CO.,  
Chartered Accountants,

Auditors.

# The Jenner Institute of

(Formerly the BRITISH INSTITUTE)

## Dr. INCOME AND EXPENDITURE ACCOUNT

		INCOME.				£ s. d.		
To Annual Subscriptions	...	...	...	...	...	7	7	0
To Interest and Dividends on Investments	...	...	...	...	...	8,614	12	4
To Students' Fees	...	...	...	...	...	35	17	6
To Diagnosis Fees	...	...	...	...	...	860	18	6
To Sales of Tuberculin and Mallein	...	...	...	228	3	6		
<i>Add</i> Stock, 31st May, 1901	...	...	...	11	0	0		
				239 3 6				
<i>Deduct</i> Stock, 31st May, 1900	...	...	...	10	0	0		
				229 3 6				
To Sale of "Transactions"	...	...	...	...	...	4	2	11
To Rent of Laboratories	...	...	...	...	...	615	10	8
						£10,367 12 5		

## Dr. SUDBURY FARM INCOME AND EXPENDITURE

		INCOME.				£ s. d.			£ s. d.		
To Sale of Antitoxins	...	...	...	...	3,258	7	11				
<i>Add</i> Stock, 31st May, 1901	...	...	...	...	1,063	2	6				
					4,321 10 5						
<i>Deduct</i> Stock, 31st May, 1900	...	...	...	...	960	0	0				
					3,361 10 5						
To Balance, being excess of Expenditure over Income transferred to Capital Fund (see Balance Sheet)	...	...	...	...	...	...	...	8	15	1	
								£3,370 5 6			

# Preventive Medicine.

OF PREVENTIVE MEDICINE).

for the Year Ending 31st May, 1901.

Cr.

## EXPENDITURE.

	£	s.	d.
By Rates, Taxes, and Insurance ... ..	344	10	7
By Salaries, Wages, and Fees to Scientific Staff ... ..	4,304	5	7
By Stationery, Printing, Postage, and Advertising ... ..	151	0	6
By Office Expenses and Sundries ... ..	139	4	6
By Bank Charges ... ..	5	6	5
By Law Charges ... ..	344	10	4
By Travelling Expenses ... ..	28	6	10
By Auditors' Fee and Accountant's Charges ... ..	31	10	0
By Gas and Water ... ..	240	5	9
By Electric Light and Power ... ..	116	16	0
By Fuel ... ..	83	17	0
By Bacteriological Laboratory Expenses ... ..	175	12	8
By Water Laboratory Expenses ... ..	68	19	3
By Hansen Laboratory Expenses ... ..	37	14	4
By Photographic Laboratory Expenses ... ..	12	3	5
By Pathological Chemistry Department Expenses ... ..	207	3	8
By Culture Media ... ..	76	17	3
By Animals ... ..	80	4	3
By Animal House Expenses ... ..	78	12	2
By Repairs and Alterations to Building ... ..	472	5	7
By Amount written off for Depreciation of Furniture, Fittings, and Scientific Apparatus and Books ... ..	203	7	1
By Sinking Fund ( $\frac{1}{2}$ % on Cost of Building) ... ..	185	0	0
	<hr/>		
By Balance, being Excess of Income over Expenditure Transferred to Capital Fund (see Balance Sheet) ... ..	7,387	13	2
	<hr/>		
	2,979	19	3
	<hr/>		
	£10,367	12	5

ACCOUNT for the Year Ending 31st May, 1901.

Cr.

## EXPENDITURE.

	£	s.	d.
By Rent, Taxes, and Insurance ... ..	194	2	11
By Salaries and Wages ... ..	1,421	15	6
By Animals—			
Stock 31st May, 1900 ... ..	235	13	0
Purchased during the year ... ..	141	13	2
	<hr/>		
	377	6	2
<i>Deduct</i> —Sales during the year ... ..		11	17
Stock 31st May, 1901 ... ..		249	5
		<hr/>	
		261	2
		<hr/>	
		116	3
		<hr/>	
By Forage ... ..	578	18	6
By Stable and other Expenses ... ..	80	10	3
By Farm Expenses and Fuel ... ..	77	18	5
By Gas and Water ... ..	117	9	8
By Postages and Telegrams ... ..	2	19	7
By Repairs and Alterations ... ..	35	9	9
By Laboratory Expenses, including Cost of Bottles, Corks, Chemicals and Glass Apparatus ... ..	688	5	3
By Travelling Expenses ... ..	15	8	7
By Amount written off for Depreciation on Furniture and Laboratory Apparatus ... ..	35	0	2
By Bad Debts ... ..	6	3	5
	<hr/>		
	£3,370	5	6

# JENNER INSTITUTE OF PREVENTIVE MEDICINE.

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## ANNUAL REPORTS OF SCIENTIFIC STAFF

*For the Year ending May 31st, 1901.*

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### I.—BACTERIOLOGICAL DEPARTMENT.

I regret my enforced absence through illness during a considerable portion of the past year.

Dr. Hewlett was good enough to take charge of the Department, and to undertake the Secretarial duties of the Institute during my absence.

The paramount line of research work of the Department consists in the study of the causation and the possible means of prevention and cure of important infective diseases, and in this connection Enteric Fever and Tuberculosis have formed the main subjects of investigation. The research already published in the proceedings of the Royal Society Vol. 67, upon Buchner's "Zymase" was undertaken not only to control his important work, but also to gain experience in methods of cell disintegration with a view to the closer study of intracellular products in their bearing on Immunity and Disease. The elaboration of the methods for this purpose is being carried out by Mr. Rowland. Preliminary experiments on the Typhoid Bacillus have been carried out. My absence has unfortunately delayed the progress of these and cognate investigations, but they are now being actively prosecuted.

A number of experiments have been carried out by Dr. Hewlett with the view to obtaining a suitable soil for the cultivation of large quantities of virulent Tubercle Bacilli. This preliminary work has taken considerable time, but it was essential for the proper study of this organism, and is now completed.

Dr. Hewlett has likewise conducted the following investigations :—(1) The presence of diphtheria bacilli in the healthy throat ; (2) Achalme's bacillus of acute rheumatism ; (3) The value of the Danysz Rat Virus ; (4) Distemper.

*Research Students.*—(1) Dr. Moore commenced work on January 1st. Dr. Moore has been engaged in devising a method for the isolation of the Typhoid Bacillus, and is now engaged in a research upon some of the factors in immunity to disease. (2) Dr. Petrie commenced work in February, and is carrying out an investigation upon the Bacteriolytic enzymes and their relation to Immunity in Infectious Diseases.

The following workers have used the Laboratories for purposes of research : Dr. Lack, Dr. Peters, Dr. Blaikie.

The Department has continued to carry out the Diagnosis work on behalf of the Institute, as well as the preparation of Mallein and Tuberculin ; the number of bacterial diagnoses made during the year was 3,882 being an increase of about 450 over the previous year ; the number of water analysis was 64.

I have once more to acknowledge the assistance rendered by Mr. Cooper in the business affairs of the Institute.

ALLAN MACFADYEN.

## II.—PATHOLOGICAL CHEMISTRY DEPARTMENT.

I beg to submit the following report :—

From October to January I worked on the juice pressed from yeast cells by Mr. Rowland. I found that this contained a nucleoproteid which had not previously been observed. This work, however, I have not yet finished, because in January I started other investigations, on proteolytic enzymes in the juice pressed from various organs, the results of which seemed to be of more importance, and the prosecution of which has taken my whole time since then.

For these investigations Mr. Rowland has prepared the juice pressed from the various organs, and this juice I have submitted to chemical examination for the detection of enzymes. Up to the present time I have found strong proteolytic enzymes in the spleen, lymphatic glands and kidneys, weaker ones however also in heart, muscle, and mammary gland. In every case the enzyme acted most strongly in acid solution, though there was apparently some action also if the reaction was neutral or even alkaline. This I have found to apply also to the proteolytic enzyme obtained previously by Salkowski and Jacoby from liver cells.

In the skeletal muscles I have obtained evidence that the enzyme which is there to be found acts equally in alkaline and acid fluids, though in neither case is the action a strong one.

Dr. Leathes, on his appointment in January, was engaged in the examination of the urine from a case of acute yellow atrophy of the liver, in which, though, from scantiness of the material, the proof could not be made complete, some evidence was found of the presence of hexone bases. Since then he has undertaken the examination of the products of the digestive action of the spleen juice on fibrin. Several pounds of fibrin have been submitted to the prolonged action of this juice, and the resulting fluid is being investigated. Although the work is not yet complete it is clear that Proteids are broken up under the action of this ferment as completely as in tryptic digestion, many of the substances found being common to both processes.

For four or five weeks in December and January Dr. Thunberg, of Upsala, was working in the laboratory on the permeability of the shell membrane of hens' eggs. His experiments showed that the statements that this membrane possesses different degrees of permeability in the different directions is not correct. This point may have an important bearing on the permeability of membranes generally in the animal body.

S. G. HEDIN.

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## III.—CHEMICAL DEPARTMENT.

### CHEMICAL AND WATER LABORATORY.

1. *Analytical Work.*—During this period 47 samples of water and one of milk have been analysed and reported on, the number during the corresponding period in 1899-1900 being 29 samples of water and 4 of milk.

2. *Research Work.*—(1). The research on the Fermentative Action of *B. Coli Communis* and allied organisms, some of the preliminary results of which were described in the Transactions of the Institute published at the close of 1899, has been continued, the experiments having been extended to several allied organisms, including *B. Typhosus*, *B. Icteroides* and several abnormal varieties of *B. Coli Communis*. The results so far obtained have formed the subject of two papers (1) The products of fermentation of glucose by *B. Icteroides*, read before the Pathological Society on March 5th; and (2) The chemical action of *B. Coli Communis* and similar organisms on the Carbo-hydrates and allied Compounds, read before the Chemical Society on March 21st and published in the Journal of the Society for May.

Since that date the experiments have been continued and further extended to the action of these organisms on the proteids and to the study of the general type of fermentation characteristic of various lactic acid producing organisms, such as *B. Acidi Latici* and *V. Cholerae*.

(2) In January of this year experiments were commenced in conjunction with Mr. Rowland on the phenomena accompanying the Autoplasmolysis of Yeast. A number of interesting results were obtained and are now being embodied in a paper on this subject.

(3). In February, Mr. W. J. Young, B.Sc., was appointed assistant in the Chemical Department, and commenced work on the 18th. Experiments were then begun on the extraction of glycogen from yeast, and the examination of its properties. A convenient method has already been found for the preparation and purification of this substance and the investigation of its properties commenced.

(4). Experiments have also been started (a) In conjunction with Mr. Rowland, on the functions of glycogen in the fermentation produced both by living yeast and expressed yeast juice; (b) In conjunction with Dr. Macfadyen and Mr. Rowland, in continuance of the work previously published by Messrs. Macfadyen, Morris and Rowland, on expressed yeast juice, with special reference to the criticisms of Buchner on this work.

(5). On February 7th, Dr. A. McKenzie, who had been appointed as Grocers' Company's Research Student of the Jenner Institute, commenced work on the subject which he had suggested to the Governors in his application: The resolution of Hydroxybutyric Acid into its optically active constituents. The preliminary experiments on this subject have yielded favourable results and quantitative experiments are being commenced. Dr. McKenzie has also commenced, in conjunction with myself, a research on the general question of the resolution of racemic acids into their optically active constituents by microscopic organisms (moulds and bacteria), which it is hoped will yield interesting results as to the biological and chemical relations of such organisms to optically asymmetric substances.

ARTHUR HARDEN.

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#### IV.—ANTITOXIN DEPARTMENT, SUDBURY.

I beg to submit the following report of the work carried out in the Serum Department of the Institute during the past year.

*Diphtheria Antitoxin*.—We have now worked out in the department accurate and certain methods of preparing powerful toxins, and of safely and rapidly immunising the horses, thus enabling us to obtain antitoxins of excellent quality. The increase in the number of doses sent out is maintained. 23,927 doses have been sent out as compared with 19,678 last year. The increase in the last six months has been especially large, from 11,274 last year to 14,543 this year.

*Antistreptococcic Serum*.—Doses sent out this year, 4,400; last year, 5,221.

*Tetanus Antitoxin*.—Doses sent out this year, 926; last year, 1,668.

The unusual number of doses required in November and December, 1899, and January, 1900, at the outbreak of the war probably partly accounts for the apparent decrease in the demand for these substances. At the same time the general experience is that Tetanus Antitoxin, although almost perfect in its preventive action is, owing to the late diagnosis of the disease, much less satisfactory than diphtheria antitoxin as a curative agent.

*Coley's Fluid*.—369 doses of this substance have been supplied on demand.

We have thus sent out from the department 29,622 doses of antitoxins of all kinds.



*Demonstrations* have been given to a number of medical men, medical officers of health, and among others to classes from the School of Tropical Medicine, from the London Hospital, from Guy's Hospital, and University College.

Acting on instructions from the Governing Body, Dr. Hewlett and I paid a visit to the Pasteur Institutes at Paris and Lille to enquire into and report on the question of Anti-Plague Serum with special reference to its value and the methods of preparation.

*Research Work.*—In all the main subjects of routine work of the department research work is being carried on.

A number of experiments have been performed to elucidate the question as to whether the alexin of the blood serum plays any part in the defence of the organism in diphtheria infection and intoxication.

The curative power of Diphtheria Antitoxins obtained under different conditions of immunity has been compared with the neutralising or preventive power, as tested by Ehrlich's method. Interesting observations have been made on the relation of the different pathogenic cocci to the red blood-corpuscles in vitro. The antitryptic property of the normal sera of different animals has been investigated, and the possibility of obtaining by immunisation an increase of this action has been demonstrated. Starting from Metchnikoff's Work on cell Toxins, toxic sera have been obtained by injections with the liver and pancreas cells of other species. Dr. Todd has carried out some work on Hæmolysins. He has begun a research on the Typhoid Bacillus with special reference to its toxins. He has also done some preliminary work on the pathology of Scarlet Fever.

I desire to express my thanks to the Staff at The Poplars for their help in carrying out the work of the department.

GEORGE DEAN.

**Jenner Institute of Preventive  
Medicine.**

(Late British Institute of Preventive Medicine.)

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**ANNUAL REPORT**

AND

**BALANCE SHEET.**

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*June 28th, 1901.*

JUNE, 1902.

# The Jenner Institute of Preventive Medicine

(Late BRITISH INSTITUTE OF PREVENTIVE MEDICINE)

CHELSEA GARDENS, GROSVENOR ROAD

LONDON, S.W.

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## THE GOVERNING BODY.

THE LORD LISTER, F.R.S., *Chairman.*

THE LORD IVEAGH, K.P.

SIR HENRY E. ROSCOE, F.R.S. } *Hon.*

SIR JOHN BURDON-SANDERSON, BART., F.R.S.

J. LUARD PATTISSON, C.B. } *Treasurers.*

SIR MICHAEL FOSTER, K.C.B., M.P., F.R.S.

J. ROSE BRADFORD, M.D., F.R.S.

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DR. ALLAN MACFADYEN, B.Sc., *Secretary.*

MR. GEORGE COOPER, *Assist. Secretary and Accountant.*

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## THE SCIENTIFIC STAFF.

### Chelsea :—

**Bacteriological Department :—**ALLAN MACFADYEN, M.D., B.Sc.

*Assistants :—*SYDNEY ROWLAND, M.R.C.S., L.R.C.P.

A. MACCONKEY, M.B., B.Ch.

*Research Students :—*G. PETRIE, M.B.

J. O. WAKELIN BARRATT, M.D.

**Pathological Chemistry Department :—**S. G. HEDIN, M.D.

*Assistant :—*J. B. LEATHES, M.B., B.Ch.

*Research Student :—*L. JENNER, M.B., B.Ch.

**Chemical Department :—**A. HARDEN, M.Sc., Ph.D.

*Assistant :—*W. J. YOUNG, B.Sc.

*Grocers' Research Student :—*A. MCKENZIE, D.Sc., Ph.D.

**Photographic Laboratory :—**J. E. BARNARD, F.R.M.S.

### Sudbury :—

**Antitoxin Department :—**GEORGE DEAN, M.B.

*Assistant :—*C. TODD, M.B.

**PRIVATE.**

**FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE.**

## ANNUAL GENERAL MEETING

OF THE

# Jenner Institute of Preventive Medicine

(Late BRITISH INSTITUTE OF PREVENTIVE MEDICINE)

JUNE 30th, 1902.

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### REPORT OF THE GOVERNING BODY.

The Governing Body are glad to be able to report favourably of the work that has been carried on during the year, both at the Institute at Chelsea and also at "The Poplars," Sudbury.

Sir Michael Foster, K.C.B., M.P., F.R.S., has been nominated by Lord Iveagh, a member of the Governing Body, in succession to Lord Rayleigh, resigned.

As mentioned in the Report of last year, the Governing Body were compelled to look about for new premises to take the place of the Farm at Sudbury, which had been compulsorily acquired by the Great Central Railway Company. They have succeeded in acquiring at Aldenham, in Herts, a Freehold property known as "Queensberry Lodge," including about 28 acres of land. The excellent buildings already on the property include two good residences, a foreman's house, another cottage for stablemen, and several fine ranges of loose boxes and stabling of the best modern construction. The Governing Body have set apart the principal residence as the headquarters of the establishment, and the second has been assigned to Dr. Dean, the Chief of the Department. They have further built from the plans of Mr. Paul Waterhouse several new and detached laboratories which will render the establishment very complete, not only for the purposes of preparation of Antitoxins but also for the research work undertaken by the Institute. The new buildings will be open in August next, when the establishment from Sudbury will be transferred to them, and "The Poplar's" Farm will be finally surrendered on 29th September.

At Chelsea additions have been made to the mechanical plant in the Basement, and the facilities for research greatly increased by the additional power and new machinery now available.

The Library has been augmented by the purchase of a number of standard works of reference, and transferred to the top rooms of the building. This has provided additional Laboratory accommodation on the Third Floor, and the vacated rooms are being equipped for research purposes.

The Governing Body offered an appointment to Major Ronald Ross, F.R.S., as Head of a Department in the Institute, but regret to state that though Major Ross had at first accepted, he finally decided to withdraw from the appointment

The Government Vaccine Lymph Department, owing to an unexpected increase in work, applied for, and have been granted, the temporary use of two additional rooms in the Institute at Chelsea. They at present occupy the whole of the second floor, but their tenancy will expire on 31st December, 1903, when the rooms will be available for the purposes of the Institute.

A Fourth Studentship has been instituted in connection with the Department of Pathological Chemistry.

The finances of the Institute, as will be seen from the Report of the Hon. Treasurers and the Balance Sheet attached, are on a satisfactory basis.

An account of the Scientific work of the Institute is contained in the appended Reports.

LISTER,

*Chairman.*

CHELSEA GARDENS,

LONDON, S.W.

### HON. TREASURERS' REPORT.

We beg to report that the Accounts of the Institute have been made up to the 31st May, 1902, the Income and Expenditure Account showing a credit balance of £3,532 14s. 10d., exclusive of £905 12s. 0d. received on the Sale of the Lease of the Sudbury Farm, and of £134 17s. 3d. expenses incurred at Queensberry Lodge.

The receipts during the year have been as follows :—

Interest on Investments	...	...	...	...	£8,627 18 2
Annual Subscriptions	...	...	...	£2 2 0	
Diagnosis Fees	...	...	...	859 17 0	
Sales of Antitoxins, Mallein and Tuberculin	...	...	...	4,696 16 3	
Rent of Laboratories let to Local Government Board	...	...	...	691 10 10	
Sale of Transactions	...	...	...	2 0 9	
Sale of Lease of "The Poplars" Farm after writing off the Balance of cost of Lease and additions to Buildings and Expenses of Sale	...	...	...	905 12 0	7,157 18 10
					<u>£15,785 17 0</u>

The Expenditure at Chelsea for the year charged to Income and Expenditure Account has been £7,799 12s. 0d.; at "The Poplars" Farm, Sudbury, £3,547 18s. 2d., and at "Queensberry Lodge" Aldenham, £134 17s. 3d., making a total Expenditure of £11,482 7s. 5d., towards which amount £7,157 18s. 10d. has been earned from Fees, Sales of Antitoxins and Sale of Lease of "The Poplars."

The amount spent during the year on Furniture, Fittings and Apparatus at Chelsea charged to Capital Account has been £950 14s. 8d., including £459 for New Machinery in the Basement, and £294 for Standard Works of Reference for the Library; and at Sudbury, £30 16s. 0d.

The purchase price of the "Queensberry Lodge," Aldenham Freehold Estate, including costs, was £8,234. The new Laboratories, Alterations, &c., have cost to date £2,957. With the exception of £2,500 temporarily borrowed from the Bankers of the Institute these amounts will have been met out of savings of income. There is, however, a further estimated expenditure to be incurred in completion of the new Laboratories, &c., of about £1,500.

The sum of £185 has been added to the Sinking Fund Investment, which now stands at £373 17s. 6d.

The Accounts have been audited by Messrs. Cooper Brothers & Co., Chartered Accountants, and they have certified that the following Balance Sheet and Statements of Accounts are correct.

HENRY E. ROSCOE,

J. L. PATTISSON,

*Hon. Treasurers.*



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BALANCE SHEET.

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# The Jenner Institute

Registered 25th July, 1891, as the British Institute of  
1890, as an Association

Dr.

## BALANCE SHEET,

	£	s.	d.	£	s.	d.
To CREDITORS ... ..				2,045	19	2
To LOAN FROM BANKERS AGAINST SECURITIES PER CONTRA...				2,500	0	0
To WATER LABORATORY FUND—						
Amount received from the Trustees of the late Richard Berridge, for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory ... ..				26,352	13	10
To JENNER MEMORIAL FUND—						
Amount received from the Committee of the Jenner Memorial Fund				5,768	0	11
To SINKING FUND ... ..				373	17	6
To CAPITAL FUND—						
Balance as per last account, 31st May, 1901 ... ..	301,289	11	8			
Add—						
Balance of Chelsea Gardens Institute Income and Expenditure Account, being excess of Income over Expenditure, for the year ending 31st May, 1902 ... ..	2,587	14	5			
Balance of Sudbury Farm Income and Expen- diture Account, being excess of Income over Expenditure for the year ending 31st May, 1902 ... ..	945	0	5			
Sale of Lease of "The Poplars" Farm ... ..	1500	0	0			
Less—Balance of Cost of Lease, Additions and Improve- ments to Buildings and Expenses of Sale .. ..	594	8	0			
				905	12	0
				4,438	6	10
Less—Expenditure at Queensberry Lodge Farm to the 31st May, 1902 :—						
Rates, Taxes and Insurance	33	15	5			
Wages ... ..	60	0	0			
Sundry Expenses	41	1	10			
				134	17	3
				4,303	9	7
				305,593	1	3
				£342,633	12	8

HENRY E. ROSCOE,  
J. L. PATTISSON,

HON. TREASURERS.

June 24th, 1902.

In accordance with the provisions of the Companies Act, 1900, we certify that all our requirements as Sheet, and, in our opinion such Balance Sheet is full and fair and properly drawn up, so as to exhibit a true and

London, 24th June, 1902.

# of Preventive Medicine.

Preventive Medicine, under the Companies Acts, 1862 to Limited by Guarantee.

31st MAY, 1902.

Cr.

	£	s.	d.	£	s.	d.
BY CASH—						
At Bankers, Current Account ...	1,392	19	5			
In hand ...		10	19			
BY INVESTMENTS—						1,403 19 2
£2,900 New South Wales 3½ per cent. Stock 1918 ...	2,897	16	0			
£1,000 Cape of Good Hope, 3½ per cent. Stock ...	1,000	0	0			
£1,500 City of Sydney 4 per cent. Bonds ...	1,500	0	0			
Mortgage on Freehold Property, Liscombe Estate, at 3 per cent.	20,000	0	0			
£353 North Eastern Railway 4 per cent. Guaranteed Stock...	499	11	0			
BY INVESTMENTS (LORD IVEAGH'S DONATION)—						25,897 7 0
£25,000 New Zealand Government 3 per cent. Inscribed Stock 1945 ...	24,112	10	0			
£25,000 Victorian Government 3 per cent. Inscribed Stock 1929 - 1949 ...	23,875	0	0			
£25,000 Natal 3 per cent. Inscribed Stock 1929 - 1949 ...	24,484	7	6			
£25,000 New South Wales Government 3 per cent. Inscribed Stock 1935 ...	24,937	10	0			
£26,100 South Australian 3 per cent. Inscribed Stock 1916	24,860	5	0			
£25,000 Cape of Good Hope 3 per cent. Inscribed Stock 1933 - 1943 ...	23,850	0	0			
£25,000 London and South Western Railway 4 per cent. Preferred Converted Ordinary Stock ...	32,000	0	0			
£25,000 Great Northern Railway 3 per cent. Preference Stock	26,000	0	0			
£25,000 Midland Railway 2½ per cent. Preferred Converted Ordinary Stock ...	20,375	0	0			
£25,000 East Indian Railway 3 per cent. Debenture Stock	25,500	0	0			
Cash at Bank ...	5	7	6			
BY INVESTMENTS (JENNER MEMORIAL FUND)—						250,000 0 0
£2,650 Southwark and Vauxhall Water Co. 3 per cent. Debenture Stock "B" ...	2,756	10	0			
£2,660 South Eastern Railway 3 per cent. Preference Stock 1898	2,740	5	0			
						5,496 15 0
BY INVESTMENT (SINKING FUND)—						
£393 4s. 5d. 2½ per cent. Consols ...						373 17 6
BY DEBTORS ...						927 4 1
BY STOCK OF TUBERCULIN AND MALLEIN ...						50 0 0
BY FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS AND BOOKS, as per last Account, 31st May, 1901 ...	1,830	3	11			
Additions during the year ...	950	14	8			
	2,780	18	7			
Less Written off for Depreciation ...	278	1	10			
BY EXPENDITURE ON INSTITUTE BUILDING AT CHELSEA—						2,502 16 9
As per last Account, 31st May, 1901, including purchase of freehold site, £6,000 ...						42,967 5 8
BY QUEENSBERRY LODGE FARM, ALDENHAM—						
Purchase of freehold land and buildings ...	8,234	8	3			
Expenditure on new buildings ...	2,957	0	0			
	11,191	8	3			
Furniture ...	84	0	11			
						11,275 9 2
BY SUDBURY FARM ACCOUNT—						
Stock of Animals ...	342	4	8			
Stock of Anti-Toxins, Bottles and Corks ...	1,014	5	6			
Stable Utensils, Farm Implements and Sheds ...	109	11	11			
Laboratory Apparatus—As per last Account, 31st May, 1901 ...	199	12	3			
Additions during the year ...	30	16	0			
	230	8	3			
Less Written off for Depreciation ...	23	0	10			
	207	7	5			
Furniture—As per last Account, 31st May, 1901 ...	72	14	3			
Less Written off for depreciation ...	7	5	5			
	65	8	10			
						1,738 18 4
						£342,633 12 8

Auditors have been complied with, and we report to the Members that we have audited the above Balance correct view of the state of the Company's affairs as shown by the Books of the Company.

COOPER BROTHERS & CO.,

Chartered Accountants,

Auditors.

# The Jenner Institute of

(Formerly the BRITISH INSTITUTE)

## Dr. CHELSEA GARDENS INSTITUTE INCOME AND

		INCOME.					£ s. d.		
To Annual Subscriptions	...	...	...	...	...	...	2	2	0
To Interest and Dividends on Investments	...	...	...	...	...	8,627	18	2	
To Diagnosis Fees	...	...	...	...	...	859	17	0	
To Sales of Tuberculin and Mallein	...	...	...	164	17	8			
<i>Add</i> Stock, 31st May, 1902	...	...	...	50	0	0			
				<hr/>		214	17	8	
<i>Deduct</i> Stock, 31st May, 1901	...	...	...	11	0	0			
				<hr/>			203	17	8
To Sale of "Transactions"	...	...	...	...	...	2	0	9	
To Rent of Laboratories received from the Local Government Board						691	10	10	
						<hr/>			
						£10,387	6	5	

## Dr. SUDBURY FARM INCOME AND EXPENDITURE

		INCOME.					£ s. d.			£ s. d.			
To Sale of Antitoxins	...	...	...	...	...	4,562	6	1					
<i>Add</i> Stock, 31st May, 1902	...	...	...	...	...	993	15	0					
						<hr/>		5,556	1	1			
<i>Deduct</i> Stock, 31st May, 1901	...	...	...	...	...	1,063	2	6					
						<hr/>			4,492	18	7		
						<hr/>					£4,492	18	7

# Preventive Medicine.

OF PREVENTIVE MEDICINE).

## EXPENDITURE ACCOUNT for the Year Ending 31st May, 1902. Cr.

EXPENDITURE.							£	s.	d.
By Rates, Taxes, and Insurance	...	...	...	...	...	366	7	9	
By Salaries, and Wages of Staff	...	...	...	...	...	4,605	1	6	
By Stationery, Printing, Postage, and Advertising	...	...	...	...	...	126	15	11	
By Office Expenses and Sundries	...	...	...	...	...	144	1	8	
By Interest on Loan from Bankers	...	...	...	...	...	68	14	9	
By Bank Charges	...	...	...	...	...	3	15	3	
By Law Charges	...	...	...	...	...	11	11	0	
By Travelling Expenses	...	...	...	...	...	12	6	10	
By Auditors' Fee and Accountant's Charges	...	...	...	...	...	42	0	0	
By Gas and Water	...	...	...	...	...	263	18	11	
By Electric Light and Power	...	...	...	...	...	163	12	4	
By Fuel	...	...	...	...	...	67	5	0	
By Bacteriological Laboratory Current Expenses	...	...	...	...	...	150	8	0	
By Water Laboratory Current Expenses	...	...	...	...	...	89	7	3	
By Photographic Laboratory Current Expenses	...	...	...	...	...	13	12	8	
By Pathological Chemistry Department Current Expenses	...	...	...	...	...	249	12	6	
By Culture Media	...	...	...	...	...	77	0	10	
By Animals	...	...	...	...	...	120	11	6	
By Animal House Expenses	...	...	...	...	...	82	4	11	
By Repairs and Alterations to Buildings and Apparatus	...	...	...	...	...	678	1	7	
By Amount written off for Depreciation of Furniture, Fittings, and Scientific Apparatus and Books	...	...	...	...	...	278	1	10	
By Sinking Fund ( $\frac{1}{2}$ % on Cost of Building)	...	...	...	...	...	185	0	0	
							7,799	12	0
By Balance, being Excess of Income over Expenditure Transferred to Capital Fund (see Balance Sheet)	...	...	...	...	...	2,587	14	5	
							£10,387	6	5

## ACCOUNT for the Year Ending 31st May, 1902. Cr.

EXPENDITURE.							£	s.	d.
By Rent, Taxes, and Insurance	...	...	...	...	...	144	15	7	
By Salaries and Wages	...	...	...	...	...	1,374	15	2	
By Animals—									
Stock 31st May, 1901	...	...	...	...	249	5	2		
Purchased during the year	...	...	...	...	304	0	7		
							553	5	9
Deduct—Sales during the year	...	...	8	5	0				
Stock 31st May, 1902	...	...	342	4	8				
							350	9	8
By Forage	...	...	...	...	...	202	16	1	
By Stable and other Expenses	...	...	...	...	...	778	15	10	
By Farm Expenses and Fuel	...	...	...	...	...	37	1	10	
By Gas and Water	...	...	...	...	...	43	18	3	
By Postages and Telegrams	...	...	...	...	...	113	4	9	
By Repairs and Alterations	...	...	...	...	...	3	13	5	
By Laboratory Expenses, including Cost of Bottles, Corks, Chemicals and Glass Apparatus	...	...	...	...	...	10	10	2	
By Tubercle Experiment Expenses	...	...	...	...	...	702	19	9	
By Travelling Expenses	...	...	...	...	...	87	3	6	
By Amount written off for Depreciation on Furniture and Laboratory Apparatus	...	...	...	...	...	11	0	3	
By Bad Debts	...	...	...	...	...	30	6	3	
							6	17	4
							3,547	18	2
By Balance being Excess of Income over Expenditure transferred to Capital Fund (see Balance Sheet)	...	...	...	...	...	945	0	5	
							£4,449		

# JENNER INSTITUTE OF PREVENTIVE MEDICINE.

## ANNUAL REPORTS OF SCIENTIFIC STAFF

*For the Year ending May 31st, 1902.*

### I.—BACTERIOLOGICAL DEPARTMENT.

I beg to submit the following report :—

A communication on the Intracellular constituents of the typhoid bacillus has been published by myself in conjunction with Mr. Rowland (Bacteriologisches Centralblatt, Vol. XXX.) The research is being continued. I have published a note on Yeast agglutination in the above journal. A series of experiments on Tuberculosis are approaching completion. The experiments on Zymase are being continued in conjunction with the Chemical Department, and on Phosphorescence, &c., with Mr. Barnard. The observations on life at low temperatures have been extended, and some experiments on malignant disease have been initiated.

The following investigations have been completed by other workers in the Department :—

Dr. A. Moore, Research Student :—“The Isolation of the Typhoid Bacillus,” *Brit. Med. Journal*, March 22nd, 1902.

Dr. G. Petrie, Research Student :—“Methods of conducting Hæmolytic experiments,” *Lancet*, February 15th, 1902 ; “Bacteriolytic enzymes” (in course of publication).

Professor L. Aschoff :— “The Source of Albumen in Urine.”

Dr. A. Castellani “On Hæmolysins,” *Lancet*, February 15th, 1902 ; “The Precipitins” (in course of publication).

Professor R. T. Hewlett, “On a Common Source of Diphtheria Infection,” (with Dr. Montague Murray), *British Medical Journal*, 1901 ; “Achalmes Bacillus of Acute Rheumatism,” *Trans. Path. Socy.*, vol. 52 ; “The Indol-like reactions of the Diphtheria and Pseudo-Diphtheria Bacillus,” *Trans. Path. Socy.* vol. 52.

The following gentlemen are likewise working in the Department :—Dr. Brickdale on the Therapeutic Action of Antiseptics ; Dr. Lambert Lack on Malignant Disease ; Mr. C. Leaf on Carcinoma ; Dr. Monckton Copeman on Vaccinia, and Dr. H. Morgan on the Influence of Light on Bacteria.

The diagnosis work and the preparation of Tuberculin and Mallein continue to be carried out. I have to thank Mr. Rowland and Dr. MacConkey for their assistance in the conduct of the above work.

ALLAN MACFADYEN.



## II.—PATHOLOGICAL CHEMISTRY DEPARTMENT.

Since my last report was produced, I have continued my investigations on proteolytic enzymes in the spleen and other organs of oxen. I have been able to isolate from the spleen and from other organs substances which under certain conditions precipitate the organ enzymes from their solution in water. Thus I have found in the spleen two different substances which precipitate enzymes acting in an acid medium. The precipitates thus obtained seem to be a sort of zymogen and contain both the precipitating substance and the enzyme. Part of these zymogens can be split up by the action of weak acetic acid at blood heat, the enzymes being dissolved and the precipitating substances remaining undissolved. By aid of sodium chloride in case of the one, and of sodium carbonate in the case of the other the precipitating substances can be dissolved, and once in solution they are able again to precipitate the enzymes from their solutions.

Such precipitating substances are present in the kidneys, lymphatic glands, and in the liver as well as in the spleen.

In addition to the enzyme or enzymes acting in an acid medium, the spleen in some cases contains another enzyme, which acts most strongly in alkaline solution.

The work on the products of the activity of the proteolytic enzyme or enzymes of the spleen, carried out by Dr. Leathes, has shown that, just as is the case when the ferments act on fibrin, so too when they act merely on the other cell contents, *i.e.*, the spleen-juice itself, the bases Lysin, Arginin, and Histidin are produced, as well as the monoamido acids, Leucin, Amino-Valerianic Acid, Tyrosin and Aspartic Acid. As products of the autolysis of the spleen cells, these substances then have interest as possibly indicating lines along which splenic metabolism runs, and consequently, too, Dr. Leathes has spent some time in the search for other products which might be peculiar to the specific action of the spleen. Certain preparations from the autolysed spleen juice which are now being investigated or analysed, the exact nature of which has not yet been determined, may prove to be of this kind. The methods of Emil Fischer for isolating amino acids has been tried but has failed to give any new products of enzyme action with the exception of amino-valerianic acid mentioned above.

Dr. Jenner, who started work in this Department in January, has been engaged in investigating the proteolytic enzyme produced by *Bacillus Pyocyaneus*, of which he has obtained considerable quantities by saturating the filtered culture medium with ammonium sulphate. He is now testing the action of this enzyme on Bacteria of various kinds.

He has also made experiments, which are not yet completed, to determine whether the splenic enzymes have any bactericidal action or not.

S. G. HEDIN.

## III.—CHEMICAL DEPARTMENT.

## CHEMICAL AND WATER LABORATORY.

I beg to submit the following summary of the work carried out in the Chemical Department of the Institute during the past year :—

1. *Analytical Work.*—38 samples of water and two of milk have been examined. During the previous year 45 samples of water and one of milk were examined.

2. *Research Work.*—The various branches of work referred to in my last yearly report and enumerated below have been continued, and it is hoped that one or more papers will be ready for publication before the end of July.

In November a paper on the Autofermentation and Liquefaction of Yeast, by Mr. Rowland and myself, embodying results obtained earlier in the year, was published in the Journal of the Chemical Society.

The investigation on the chemical action of bacteria of the colon, typhoid and lactic acid groups on various substances, a paper on which was published in the Journal of the Chemical Society last May, has been continued and extended.

A number of organisms found in sewage and polluted waters are at present being examined, and it is hoped that the results will be of value for the identification and detection of those organisms.

In conjunction with the Bacteriological Department, experiments have been carried out on the properties of zymase and of the serum of animals inoculated with zymase. This work has been much delayed by the lack of motive power, but is now being pushed on more vigorously. In connection with this work an investigation on the glycogen of yeast and its function in fermentation has been commenced; the portion of the work dealing with the extraction, purification and properties of the glycogen is now complete, and the results are being prepared for publication. The diastatic ferment obtainable from yeast juice is now being examined.

In conjunction with Mr. Barnard a short series of experiments has been made on the influence of different media on the light production of photogenic bacteria; a short account of the results has been communicated to the Pathological Society and a more extended account will shortly be published.

Dr. McKenzie, Grocers' Company Research Student, has continued his work on "The Hydroxybutyric Acid of Urine" and has published a preliminary account of his results. The research is now almost complete and a full account of it will shortly be ready for publication.

The experiments on the Resolution of Acids by moulds, to which reference was made in the last report, have been continued and have been extended to a large number of acids, but the work is not yet sufficiently advanced for publication.

ARTHUR HARDEN.

#### IV.—PHOTOGRAPHIC LABORATORY.

During the year this department has been removed from the basement to a room on the third floor. The arrangements are now complete and convenient in every way.

The work carried out has been the production of photographic records to assist various researches being carried on in the Institute.

Considerable progress has been made with the collection of lantern slides, both pathological and bacteriological.

The experimental work undertaken has been as follows :—

1. *Action of Light on Bacteria.*—Some considerable progress has been made with this work. The object has been to determine the particular radiations that are most actively bactericidal. The method adopted has been to spectroscopically split up the rays emanating from any suitable light source and test the action of each region of the spectrum so obtained.

2. *Luminous Bacteria.*—The further investigation of these organisms has been proceeded with.

3. An investigation on the use of isotonic solution in culture media has been completed in conjunction with Dr. Harden, and will shortly be published.

The above work has been carried out with the co-operation of the Bacteriological Department, and under the personal direction of Dr. Macfadyen.

J. E. BARNARD.

#### V.—ANTITOXIN DEPARTMENT, SUDBURY.

I beg to submit the following report of the work done in the Serum Department during the year ending May, 1902.

*Diphtheria Antitoxin, &c.*—27,202 bottles, each containing 2,000 units, have been sent out, the average strength being 500 units per c.cm. There have also been sent out of Antistreptococcic Serum, 4844 doses ; Tetanus Antitoxin, 1171 doses ; Coley's Fluid, 472 doses, in all 33,689 doses, as compared with 31,374 last year.

*Demonstrations.*—As usual a number of demonstrations have been given.

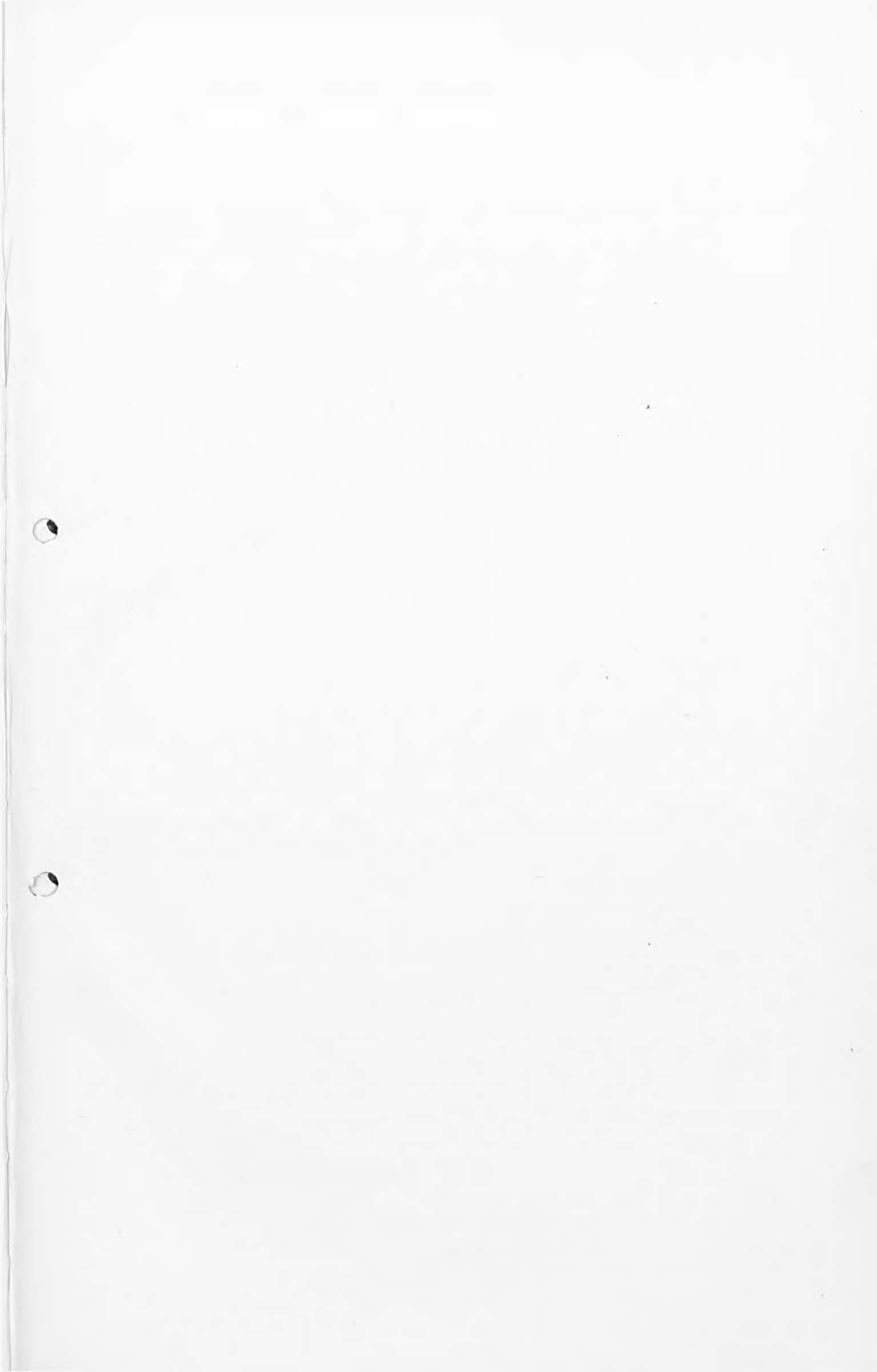
*Research Work.*—A series of experiments on Tuberculosis has been carried on at the suggestion of Lord Lister, and the results are approaching completion.

Dr. Todd has continued his experiments on Immunity in relation to the Typhoid Bacillus and its products, and on a Haemolytic Toxin obtained from *B. Megatherium*. On the latter subject he contributed papers to *The Lancet*, Dec. 14, 1901, "On experimental Hæmoglobinuria from Bacterial Toxin," and to the *Pathological Society Trans.*, vol. 53, p. 12. Conjointly we published the result of our "Experiments on the Relation of the Cow to Milk-Diphtheria," in the *Journal of Hygiene*, vol. 2, No. 2. I contributed papers to the Medical Research Club "On the action of Diphtheria Antitoxin on Diphtheria Toxone," and on "Intracerebral Injection of Diphtheric Toxone."

*Queensberry Lodge, Aldenham.*—The work connected with the purchase by the Institute of Queensberry Lodge and the supervision of the new laboratory buildings there, have occupied a considerable portion of my time, and have entailed the paying of one or two visits a week. The work is progressing satisfactorily, and I have now taken up residence there, as it is hoped that the Sudbury establishment may soon be transferred.

I wish to express my thanks to the staff at "The Poplars," and especially to Dr. Todd for the ever ready assistance afforded me.

GEORGE DEAN.



**Jenner Institute of Preventive  
Medicine.**

**Late British Institute of Preventive Medicine.**

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**ANNUAL REPORT**

**AND**

**BALANCE SHEET.**

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*June 30th, 1902.*



PRIVATE.

FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE.

MAY, 1903.

# The Jenner Institute of Preventive Medicine

(Late BRITISH INSTITUTE OF PREVENTIVE MEDICINE)

CHELSEA GARDENS, CHELSEA BRIDGE ROAD,  
LONDON, S.W.

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## THE GOVERNING BODY.

THE LORD LISTER P.C., O.M., F.R.S., *Chairman.*

THE LORD IVEAGH, K.P.

SIR HENRY E. ROSCOE, F.R.S.

SIR JOHN BURDON-SANDERSON, BART., F.R.S.

J. LUARD PATTISSON, C.B.

SIR MICHAEL FOSTER, K.C.B., M.P., F.R.S.

J. ROSE BRADFORD, M.D., F.R.S.

} *Hon.  
Treasurers.*

---

DR. ALLAN MACFADYEN, B.Sc., *Secretary.*

MR. GEORGE COOPER, *Assist. Secretary and Accountant.*

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## THE SCIENTIFIC STAFF.

### Chelsea:—

**Bacteriological Department:**—ALLAN MACFADYEN, M.D., B.Sc.

*Assistants:*—SYDNEY ROWLAND, M.R.C.S., L.R.C.P.

A. MACCONKEY, M.B., B.Ch.

*Research Student:*—J. O. WAKELIN BARRATT, M.D.

**Pathological Chemistry Department:**—S. G. HEDIN, M.D.

*Assistant:*—J. B. LEATHES, M.B., B.Ch.

*Research Student:*—LOUIS JENNER, M.B., B.Ch.

**Chemical Department:**—A. HARDEN, D.Sc., Ph.D.

*Assistant:*—W. J. YOUNG, M.Sc.

*Grocers' Research Student:*—R. H. ADERS PLIMMER, D.Sc.

**Cancer Laboratory:**—H. G. PLIMMER, M.R.C.S.

*Assistant:*—A. PAINE, M.B., B.S.

**Photographic Laboratory:**—J. E. BARNARD, F.R.M.S.

### Aldenham:—

**Antitoxin Department:**—GEORGE DEAN, M.B.

*Assistants:*—C. TODD, M.B.

G. PETRIE, M.B.

ANNUAL GENERAL MEETING  
OF  
**The Jenner Institute of Preventive Medicine**

MAY 21ST. 1908.

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**REPORT OF THE GOVERNING BODY.**

In presenting their Annual Report the Governing Body call attention to the fact that the period to which the Report and Statement of Accounts refer is for the seven months ending 31st December, 1902, instead of for a complete year ending at 31st May as hitherto.

The reason for this departure from previous practice is, that under the Articles of Incorporation, the Annual General Meeting of the Institute must be held within the months of April, May, or June. While the annual accounts were closed on the 31st May, but one month was left in which to call in outstanding claims, close the books, make out the Balance Sheet, complete the Audit, and prepare, print, and issue the Report before the Annual Meeting. In view of the growing general development of the Institute and of the financial business involved, it was found impossible to satisfactorily accomplish the necessary work preparatory to the Annual Meeting in this short time. The Governing Body therefore, with the advice and concurrence of the Solicitors and Auditors of the Institute, decided that, in future, the accounts should be annually closed at the more usual commercial date of the 31st December. Future statements will cover the full year commencing on the 1st January and ending on 31st December.

The Governing Body are able to report satisfactorily as to the general progress of the Institute in both its branches. But, consequent upon the same development and the increasing usefulness of the Institute, a corresponding increase in administrative work has arisen, and the Governing Body feel that the time has now

come for adding to their present staff a gentleman of scientific eminence, who shall have the title of Director of the Institute. An advertisement inviting applications for this post has therefore been issued.

A new laboratory has been set apart at Chelsea for special research into Cancer, the expenses being borne partly by the funds of the Institute and partly by a generous benefaction for the purpose, for which the Governing Body have to express their cordial thanks to Lord Iveagh. The Governing Body have felt themselves fortunate in being able to place this laboratory under the charge of Mr. H. G. Plimmer, M.R.C.S., and they have appointed Dr. A. Paine as his assistant in this important research.

At the request of H.M. Government, coupled with an assurance of a reasonable contribution towards the expenses, the Governing Body have undertaken to prepare and keep in readiness Yersin's Serum and Haffkine's Prophylactic Fluid, both as a precautionary measure against any accidental introduction of Bubonic Plague into the United Kingdom, and also to aid the Governments of those Colonies where the disease has obtained a foothold. This undertaking has involved considerable additions to the Institute's new laboratories and stables, &c., at Queensberry Lodge, Aldenham, Herts.

These premises, as explained in the last Annual Report, were acquired by the Governing Body to replace those at the Poplars, Sudbury, which had been compulsorily bought up by the Great Central Railway Company. The Poplars establishment was closed on the 29th September last, and Dr. Dean, the Bacteriologist in charge, and his staff were transferred to Aldenham.

The Governing Body feel that in these new premises they have an establishment worthy of their Institute, and they hope that members interested in the scientific work in progress will find an opportunity during the summer of paying a visit to Aldenham to inspect them.

To cope with the additional work thrown upon Dr. Dean, the Governing Body have promoted Mr. G. F. Petrie, M.B., one of the Research Students at Chelsea, to be an additional Assistant Bacteriologist at Aldenham.

The Local Government Board continue to occupy, under agreement, several of the laboratories of the Institute at Chelsea. The Governing Body are anxious to resume as soon as possible these rooms for their own work, but they have felt compelled in the recent emergency caused by the outbreak of Small Pox in London to temporarily extend to the Government the occupation of most of these rooms until the new premises of the Government Lymph Department are completed.

The accounts for the seven months have been duly audited and certified. They are set forth in the accompanying Balance Sheet and Statements of Income and Expenditure.

The normal Income from Investments, &c., has remained the same; but, owing partly to the interruption caused by the transfer last autumn of the Serum Department from Sudbury to Aldenham, and partly to other causes, the returns from sales of Antitoxin, &c., are less satisfactory than in the previous year, when they were also temporarily increased by an urgent order of an exceptional character.

Steps, however, are being taken to make the preparations of the Institute better known among medical men and chemists, and it is hoped that in the future the new establishment, with its increased capabilities, though involving increased current expenditure, will add considerably to the general income available for research.

The capital expenditure at Aldenham has been rather larger than anticipated in the last report, and is not yet closed. This is owing to the new buildings necessary for the Yersin preparation. On the other hand, the contributions from the Government towards these particular expenses have only begun to take effect, and but one amount on this account was received during the period in question.

The expenditure at Chelsea during the period charged to Capital Account was small, and included the cost of fitting up the new Cancer Laboratories.

The ordinary expenditure at Chelsea increases with the development of the Institute, but is still well within the limits of income.

An account of the Scientific Work of the Institute is contained in the appended Reports.

LISTER,  
*Chairman of the Governing Body.*

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BALANCE SHEET.

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# The Jenner Institute

Registered 25th July, 1891, as the British Institute of  
as an Association

Dr.

## BALANCE SHEET,

	£	s.	d.	£	s.	d.
To CREDITORS ... ..				3,038	17	0
To LOAN FROM BANKERS AGAINST SECURITIES PER CONTRA ...				2,500	0	0
To WATER LABORATORY FUND—						
Amount received from the Trustees of the late Richard Berridge, for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory ... ..				26,352	13	10
To JENNER MEMORIAL FUND—						
Amount received from the Committee of the Jenner Memorial Fund				5,768	0	11
To Amount received in respect of the YERSIN LABORATORY... ..				333	6	8
To SINKING FUND ... ..				486	17	7
To CAPITAL FUND—						
Balance as per last account, 31st May, 1902 ... ..	305,593	1	3			
<i>Add—</i>						
Balance of Chelsea Gardens Department Income and Expenditure Account, being excess of Income over Expenditure, for the seven months ending 31st December, 1902... ..				842	11	6
				306,435	12	9
<i>Deduct—</i>						
Balance of Aldenham Department Income and Expenditure Account, being excess of Expenditure over Income for the seven months ending 31st December, 1902, including Sudbury Farm to the 30th September, 1902 ... ..				750	19	4
				305,684	13	5

HENRY E. ROSCOE,  
J. LUARD PATTISSON,  
*HON. TREASURERS.*

£344,164 9 5

In accordance with the provisions of the Companies Act, 1900, we certify that all our requirements as Sheet, and, in our opinion such Balance Sheet is full and fair and properly drawn up, so as to exhibit a true

London, May 4th, 1903.

# of Preventive Medicine.

Preventive Medicine, under the Companies Acts, 1862 to 1890,  
Limited by Guarantee.

31st DECEMBER, 1902.

Cr.

	£	s.	d.	£	s.	d.
BY CASH—						
At Bankers, Current Account ... ..	45	1	2			
In hand ... ..	12	19	7			
BY INVESTMENTS—					58	0
£2,900 New South Wales 3½ per cent. Stock 1918 ... ..	2,897	16	0			
£1,000 Cape of Good Hope 3½ per cent. Stock ... ..	1,000	0	0			
£1,500 City of Sydney 4 per cent. Bonds ... ..	1,500	0	0			
Mortgage on Freehold Property, Liscombe Estate, at 3 per cent.	20,000	0	0			
£353 North Eastern Railway 4 per cent. Guaranteed Stock	499	11	0			
BY INVESTMENTS (LORD IVEAGH'S DONATION)—					25,897	7
£25,000 New Zealand Government 3 per cent. Inscribed Stock 1945 ... ..	24,112	10	0			
£25,000 Victorian Government 3 per cent. Inscribed Stock 1929-1949 ... ..	23,875	0	0			
£25,000 Natal 3 per cent. Inscribed Stock 1929-1949 ... ..	24,484	7	6			
£25,000 New South Wales Government 3 per cent. Inscribed Stock 1935 ... ..	24,937	10	0			
£26,100 South Australian 3 per cent. Inscribed Stock 1916	24,860	5	0			
£25,000 Cape of Good Hope 3 per cent. Inscribed Stock 1933-1943 ... ..	23,850	0	0			
£25,000 London and South Western Railway 4 per cent. Preferred Converted Ordinary Stock ... ..	32,000	0	0			
£25,000 Great Northern Railway 3 per cent. Preference Stock	26,000	0	0			
£25,000 Midland Railway 2½ per cent. Preferred Converted Ordinary Stock ... ..	20,375	0	0			
£25,000 East India Railway 3 per cent. New Debenture Stock	25,500	0	0			
Cash at Bank ... ..	5	7	6			
BY INVESTMENTS (JENNER MEMORIAL FUND)—					250,000	0
£2,650 Southwark and Vauxhall Water Co. 3 per cent. Debenture Stock "B" ... ..	2,756	10	0			
£2,660 South Eastern Railway 3 per cent. Preference Stock 1898	2,740	5	0			
					5,496	15
BY INVESTMENT (SINKING FUND)—						
£398 11s. 4d., 2½ per cent. Consols ... ..					378	19
BY DEBTORS ... ..					1,516	1
BY STOCK OF TUBERCULIN AND MALLEIN ... ..					70	0
BY FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS AND BOOKS, as per last Account, 31st May, 1902 ... ..	2,502	16	9			
Additions during the seven months ending 31st Dec., 1902	566	0	8			
	3,068	17	5			
Less Written off for Depreciation ... ..	179	0	4			
BY EXPENDITURE ON INSTITUTE BUILDING AT CHELSEA—					2,889	17
As per Account, 31st May, 1900, including purchase of freehold site, £6,000 ... ..					42,967	5
BY QUEENSBERY LODGE FARM ALDENHAM—						
Purchase of freehold land and buildings and Expenditure on new buildings, as per last Account, 31st May, 1902	11,191	8	3			
Additions during the seven months ending 31st Dec., 1902	1,931	0	4			
					13,122	8
Stock of Animals and Forage... ..	479	9	6			
Stock of Anti-Toxins, Bottles and Corks ... ..	679	3	2			
Stable Utensils, Farm Implements and Sheds, as per last Account, 31st May, 1902 ... ..	109	11	11			
Less Written off for Depreciation ... ..	6	7	9			
					103	4
Laboratory Apparatus, as per last Account, 31st May, 1902 ... ..	207	7	5			
Additions during the seven months ending 31st December, 1902... ..	141	8	0			
	348	15	5			
Less Written off for Depreciation ... ..	20	6	11			
					328	8
Furniture, as per last Account, 31st May, 1902 ... ..	149	9	9			
Additions during the seven months ending 31st December, 1902... ..	38	19	6			
	188	9	3			
Less Written off for Depreciation ... ..	10	19	10			
					177	9
					1,767	14
					£344,164	9
					5	

Auditors have been complied with, and we report to the Members that we have audited the above Balance and correct view of the state of the Company's affairs as shown by the books of the Company.

COOPER BROTHERS & CO.,

Chartered Accountants.

Auditors.



# The Jenner Institute of

(Formerly the BRITISH INSTITUTE)

## Dr. Chelsea Gardens Department—INCOME AND EXPENDITURE

INCOME.					£ s. d.
To Interest and Dividends on Investments	...	...	...	...	4,339 14 11
To Diagnosis and Analysis Fees, &c.	...	...	...	...	611 14 2
To Sales of Tuberculin and Mallein	...	...	...	241 15 0	
<i>Add</i> Stock, 31st December, 1902	...	...	...	70 0 0	
				<hr/>	
				311 15 0	
<i>Deduct</i> Stock, 31st May, 1902...	...	...	...	50 0 0	
				<hr/>	
					261 15 0
To Rent of Laboratories received from the Local Government Board	...	...	...	...	461 13 0
					<hr/>
					<u>£5,674 17 1</u>

## Dr. Aldenham Department—INCOME AND EXPENDITURE ACCOUNT to the 30th

INCOME.					£ s. d.	£ s. d.
To Sale of Antitoxins	...	...	...	...	1,675 15 3	
<i>Add</i> Stock, 31st December, 1902...	...	...	...	...	655 18 6	
					<hr/>	
					2,331 13 9	
<i>Deduct</i> Stock, 31st May, 1902	...	...	...	...	993 15 0	
					<hr/>	
						1,337 18 9
To Balance, being Excess of Expenditure over Income transferred to Capital Fund (see Balance Sheet)	...	...	...	...	...	750 19 4
						<hr/>
						<u>£2,088 18 1</u>

# Preventive Medicine.

(OF PREVENTIVE MEDICINE.)

ACCOUNT for the 7 Months Ending 31st December, 1902.

Cr.

EXPENDITURE.		£	s.	d.
By Rates, Taxes, and Insurance	...	161	1	9
By Salaries, and Wages of Staff	...	2,901	7	9
By Stationery, Printing, Postage, and Advertising	...	92	8	2
By Office Expenses and Sundries	...	111	13	10
By Interest on Loan from Bankers	...	58	0	4
By Bank Charges	...	2	4	1
By Law Charges	...	12	8	6
By Travelling Expenses	...	5	0	9
By Auditors' Fee and Accountant's Charges	...	36	15	0
By Gas and Water	...	136	15	0
By Electric Light and Power	...	71	4	9
By Fuel	...	33	16	0
By Bacteriological Laboratory Current Expenses	...	116	10	9
By Water Laboratory Current Expenses	...	47	18	6
By Photographic Laboratory Current Expenses	...	5	3	9
By Pathological Chemistry Department Current Expenses	...	133	4	9
By Cancer Laboratory Current Expenses	...	31	4	4
By Culture Media	...	42	8	1
By Animals	...	107	18	11
By Animal House Expenses	...	80	17	9
By Repairs and Alterations to Buildings and Apparatus	...	357	4	2
By Amount written off for Depreciation of Furniture, Fittings, and Scientific Apparatus and Books	...	179	0	4
By Sinking Fund ( $\frac{1}{4}$ % per annum on Cost of Building)	...	107	18	4
		4,832	5	7
By Balance, being Excess of Income over Expenditure Transferred to Capital Fund (see Balance Sheet)	...	842	11	6
		£5,674	17	1

for the 7 Months Ending 31st December, 1902, including SUDBURY FARM  
September, 1902.

Cr.

EXPENDITURE.		£	s.	d.
By Rent, Taxes, and Insurance	...	46	16	4
By Salaries and Wages	...	955	14	0
By Animals—				
Stock 31st May, 1902	...	342	4	8
Purchased during the seven months ending 31st December, 1902	...	136	1	4
		478	6	0
<i>Deduct</i> —Sales during the seven months ending December, 31st, 1902	...	47	18	0
Stock 31st December, 1902	...	289	9	6
		337	7	6
		140	18	6
By Forage	...	192	14	9
By Stable and other Expenses	...	52	15	2
By Farm Expenses and Fuel	...	82	12	3
By Gas and Water	...	77	3	0
By Postages and Telegrams	...	2	18	2
By Laboratory Expenses, including Cost of Bottles, Corks, Chemicals and Glass Apparatus	...	494	15	1
By Travelling Expenses	...	8	8	1
By Amount written off for Depreciation on Furniture and Laboratory Apparatus	...	31	6	9
By Bad Debts	...	2	16	0
		£2,088	18	1

# JENNER INSTITUTE OF PREVENTIVE MEDICINE.

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## REPORTS OF SCIENTIFIC STAFF

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### I.—BACTERIOLOGICAL DEPARTMENT.

*1st June to 31st December, 1902.*

The results of the following investigations have been published :—

- “An Intracellular Toxin of the Typhoid Bacillus,” by A. Macfadyen and S. Rowland. *Proc. Royal Society.* August, 1902.
- “Influence of the Prolonged Action of the Temperature of Liquid Air on Micro-organisms, etc.,” by A. Macfadyen. *Ibid.* August, 1902.
- “Nature of Bacteriolytic Enzymes,” by Dr. Petrie. *Journal of Pathology,* July, 1902.
- “The Origin of Urine Albumen,” by Prof. Aschoff. *Lancet,* September 6th, 1902.
- “The Precipitins,” by Dr. Aldo Castellani. *Lancet,* July, 1902.
- “On Mammary Abscess following Typhoid,” by Dr. MacConkey. *Brit. Med. Journal.* September 13th, 1902.
- “Intravascular Antisepsis,” by Dr. Brickdale. *Lancet,* January 10th, 1903.

*Research Students.*—Dr. Petrie has completed an investigation upon the Leucocytes, and Dr. Barratt has continued his research upon Rabies.

*Other Workers.*—Dr. Copeman, Mr. Leaf, Dr. Morgan, and Dr. Scott have been engaged in research work in the Department.

The researches upon Typhoid, Cytolytic Sera, Zymase and Phototherapy in conjunction with Mr. Rowland and Dr. MacConkey, as well as with the Chemical and Photographic Laboratories are still in progress, and will be reported upon in due course.

The diagnosis work and the preparation of Tuberculin and Mallein have been continued as heretofore.

ALLAN MACFADYEN

## II.—PATHOLOGICAL CHEMISTRY DEPARTMENT.

*1st June to 31st December, 1902.*

I have continued my investigations on the proteolytic enzymes of the spleen of the ox, and I have mainly worked with the one acting only in alkaline solution, previously found by myself. The isolation of it has been very difficult owing to the fact that it is readily decomposed, and also possibly to the presence of anti-bodies in the organ. This enzyme is checked in its activity by the presence of ox blood, this effect being due to the albumin and pseudoglobulin. The euglobulin, on the contrary, when isolated and added to the enzyme increases its action without being an enzyme itself, but since the effect of the albumen prevails, the blood as a whole checks the activity of the enzyme.

In September last, Dr. Leathes published his work on the products of the action of the proteolytic spleen enzyme acting in acid solution, and since then he has been investigating the changes in the fats of the cells of organs. Since it is probable that pathological fatty degenerations are not due to the formation of fat from proteid cell substances, it seemed likely that evidence might be found of the consumption of fat in cells under conditions approaching as nearly as possible to the normal, and that this consumption might be arrested by those toxins and other poisons, which are known to cause fatty degenerations. Dr. Leathes has carried out experiments, especially with the heart muscle substance, which bear out this hypothesis. But owing to the imperfections of the technique in common use for extracting and estimating fats in organs, he has been obliged to introduce changes in this and try to effect a more complete and perfect extraction. Till the experiments have been repeated with the more satisfactory methods, which he is now working out, he cannot speak confidently of his conclusions.

Mr. Hildesheim has for the past two months been working together with Dr. Leathes at the kindred subject of the metabolism of fats in the liver.

Dr. Jenner, who has been a research student in this Department for the past year, has been engaged in following work:—

- (a) Investigation on the Pyocyanase, described by Emmerich and Loew. The results so far obtained show that a substance having a marked dissolving action on the "mucoid" produced by the *B. Pyocyanus*, can be precipitated from cultures of the organism. Search for other similar acting substances produced by other organisms have so far been without positive results.
- (b) Investigations on the part played by the proteolytic spleen enzymes in cytolysis; results so far negative; investigation still in progress.
- (c) The action of the cytases of pig and ox blood with special reference to the chemical relations of immune bodies and complements. Results: In the case of the pig one complement seems to be, or to be attached to, the parapseudoglobulin. This work is still in progress.

Mr. Dakin, who has been working here since October, is engaged in investigating the products of the activity of the proteolytic kidney-enzyme acting in an acid medium. According to the results so far obtained, these products are in some respects different from the products of the corresponding spleen enzyme as found by Dr. Leathes.

S. G. HEDIN.

### III.—CHEMICAL DEPARTMENT.

*1st June to December 31st, 1902.*

1. *Analytical Work.*—16 samples of water and one of milk have been examined. During the corresponding period of 1901, 21 samples of water and two of milk were examined.

2. *Research Work.*—The various branches of work referred to in my last half-yearly report have been continued, and in addition work has been commenced on the enzymes of cancerous tissues and the composition of the urine of cancer patients.

The following is a list of the various researches in progress:—

- (a) Experiments on the chemical action of Bacteria of the Colon and Lactic Acid groups.
- (b) Experiments on the function of glycogen in the fermentations produced by yeast and expressed yeast juice. In connection with this work a paper was published in September in the *Journal of the Chemical Society* by Mr. Young and myself on *Glycogen from Yeast*.
- (c) Experiments on the Serum of animals inoculated with yeast juice.
- (d) Experiments on the enzymes of cancerous tissues.

Dr. McKenzie resigned the Grocer's Company Research Studentship in October. His work on the B. Hydroxybutyric Acid of Urine was published in November in the *Journal of the Chemical Society*. A paper on the Biological Resolution of Optically Inactive Acids, by Dr. McKenzie and myself, is now being prepared for publication.

Dr. Aders Plimmer was appointed to the vacant Studentship, and has commenced work on the composition of the urine of patients suffering from cancer.

ARTHUR HARDEN.

### IV.—CANCER LABORATORY.

*1st October to 31st December, 1902.*

On the 1st October I commenced work at the Jenner Institute, and I was joined shortly after by Dr. Paine.

The fitting up of the Laboratory was not finished until the middle of November, when we commenced to study the Cancer cell as a cell from the biological standpoint, and also to make researches upon the various degenerative processes found in Cancer, principally with the view of getting some criterion of the Cancer cell as such.

As the animal house was not finished until the beginning of the year, no experimental work was undertaken.

H. G. PLIMMER.

## V.—PHOTOGRAPHIC LABORATORY.

*1st June to 31st December, 1902.*

The work carried out has consisted of the production of photographic records of various researches being carried on in the Institute, as well as illustrations for papers and demonstrations arising from such researches. The collection of lantern slides and negatives, both pathological and bacteriological, have been further added to.

The experimental work in progress has been advanced, and is as follows:—

1. *Action of Light on Bacteria.*—The particular radiations that are most actively bactericidal have been determined, and a preliminary communication on the subject is about to be made to the Pathological Society.
2. *Luminous Bacteria.*—Further experiments on the nutrition of these organisms have been carried out in conjunction with Dr. Harden, and are being proceeded with.
3. Experiments on the action of X-rays and allied radiations on Bacteria are about to be commenced.

The experimental work has been carried out with the co-operation of Dr. Macfadyen.

J. E. BARNARD.

## VI.—ANTITOXIN DEPARTMENT, QUEENSBERRY LODGE, ALDENHAM.

I herewith submit the following report of the work carried out in the Serum Department during the period 1st June to the 31st December, 1902.

The chief event to record is the transfer of the establishment from the Poplars, Sudbury, Harrow, to Queensberry Lodge, Aldenham, Herts.

The removal was effected in September, and though the new Laboratories were not completed at that date—several regrettable delays having occurred—it was possible to carry on the routine work and to maintain the supply of Antitoxins without any interruption. The new laboratories, operating rooms, animal houses, and stables are found to be convenient and in every way suitable for the work.

*Antitoxins, etc., sent out.*—Diphtheria Antitoxin, 12,508 bottles, each containing 2,000 units, the average strength being 500 units per c.c.m. Tetanus Antitoxin, 500; Antistreptococcic Serum, 2,471; Coley's Fluid, 144; in all 15,623 bottles.

*Research Work.*—The experiments on Tuberculosis suggested by Lord Lister, which were begun in August of last year were completed during this year, and the reports by Dr. Todd and myself were, with Lord Lister's approval, forwarded to the *Journal of Pathology and Bacteriology*, but have not yet appeared. At the same time, a brief abstract of the results was published in the *Lancet*, and the preparations obtained were demonstrated at the meeting of the Pathological Society at the Jenner Institute. During the year Dr. Todd and I published conjointly a paper on "Experiments on the Relation of the Cow to Milk-Diphtheria," in the *Journal of Hygiene* (Vol II., No. 2), in which, for the first time, the presence of virulent diphtheria bacilli was demonstrated in a vesicular disease of the cow's udder. Experiments on cows pointed to the conclusion that the bacillus was probably grafted on to a previously existing morbid condition in the cow, the lesions of which proving a suitable nidus, enabled the bacillus to multiply. In this way large quantities of milk might become infected. Several investigations and questions connected with Immunity are in progress in the department.

I wish to express my thanks to the staff of the Department, and especially to Dr. Todd for the help given me in carrying on the work, and for the careful manner in which the transfer was effected.

GEORGE DEAN.







**Jenner Institute of Preventive  
Medicine.**

(Late British Institute of Preventive Medicine.)

CHELSEA GARDENS,  
LONDON, S.W.

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ANNUAL REPORT

AND

BALANCE SHEET.

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*May 21st, 1903.*

**PRIVATE.**

**FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE ONLY.**

**APRIL, 1904.**

# The Lister Institute of Preventive Medicine,

CHELSEA GARDENS, CHELSEA BRIDGE ROAD,  
LONDON, S.W.

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**President :**

THE LORD LISTER, P.C., O.M., F.R.S.

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**THE GOVERNING BODY.**

SIR HENRY E. ROSCOE, F.R.S., *Chairman.*

THE LORD IVEAGH, K.P.

J. LUARD PATTISSON, C.B., *Hon. Treasurer.*

SIR JOHN BURDON-SANDERSON, BART., F.R.S.

J. ROSE BRADFORD, M.D., F.R.S.

SIR MICHAEL FOSTER, K.C.B., M.P., F.R.S.

COLONEL DAVID BRUCE, R.A.M.C., F.R.S.

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**Director :**

DR. C. J. MARTIN, F.R.S.

*Assistant Secretary and Accountant :*

MR. GEORGE COOPER.

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**THE SCIENTIFIC STAFF.**

**Chelsea :—**

**Director's Laboratory :—**C. J. MARTIN, M.B., D.Sc., F.R.S.

*Assistant :—*SYDNEY ROWLAND, M.R.C.S., L.R.C.P.

**Bacteriological Laboratory :—**ALLAN MACFADYEN, M.D., B.Sc.

*Assistants :—*A. MACCONKEY, M.B., B.C., D.P.H. (CAMP.).

J. E. BARNARD (*Honorary*).

*Research Student :—*J. ANDERSON CRAW.

*Jenner Memorial Student :—*A. B. SMALLMAN, M.B., D.P.H., R.A.M.C.

**Pathological Chemistry Laboratory :—**S. G. HEDIN, M.D.

*Assistant :—*J. B. LEATHES, M.B., B.Ch.

*Research Student :—*E. P. CATHCART, M.B., Ch.B.

**Chemical Laboratory :—**A. HARDEN, D.Sc., Ph.D.

*Assistant :—*W. J. YOUNG, M.Sc.

*Grocers' Research Student :—*R. H. ADERS PLIMMER, D.Sc.

**Cancer Laboratory :—**H. G. PLIMMER, M.R.C.S.

*Assistant :—*A. PAINE, M.D., B.S., D.P.H. (LOND.).

**Aldenham :—**

**Antitoxin Department :—**GEORGE DEAN, M.B.

*Assistants :—*C. TODD, M.B.

G. PETRIE, M.B.



ANNUAL GENERAL MEETING  
OF  
**The Lister Institute of Preventive Medicine**

APRIL 29TH, 1904.

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**REPORT OF THE GOVERNING BODY.**

The Governing Body are glad to report continued development and progress both in the research and practical work of the Institute.

During the past year several circumstances of special interest to the Institute have occurred; notably the change of name from the Jenner Institute to the Lister Institute; the resignation by Lord Lister (owing to ill-health) of the chairmanship of the Governing Body, which he had held from the beginning; and the appointment of Dr. Charles J. Martin, F.R.S., as Director of the Institute.

The Governing Body were sorry to have to recommend a change of title, and especially to feel obliged to drop the distinguished name of Jenner. But, as explained in the circular to the Members, and at the General Meeting called to consider the subject, the confusion arising from the fact that there was also in London a "Jenner Institute for Calf Lymph" having no connection with the Institute of Preventive Medicine, but with a prior legal title to the name of "Jenner Institute," had become such a source of misunderstanding and inconvenience that they had practically no option, especially as other efforts to overcome the difficulty had failed.

They felt fortunate, however, in being able to submit a new and singularly appropriate designation, which would permanently associate the Institute with the honoured name of Lord Lister. The Members unanimously endorsed the recommendation, and the necessary legal steps having been taken, the Board of Trade certificate to the change was granted. Accordingly the new title of the Lister Institute of Preventive Medicine came into force as from the 1st October, 1903.

At the same time, the Governing Body decided, with the concurrence of the Jenner Memorial Committee, that the substantial donation which the funds of the Institute had

received from that Committee in 1898 should be separately invested as the endowment of a Jenner Memorial Studentship in the Institute for research upon Jenner's own lines into the causes and prevention of disease.

It was with the greatest regret that the Governing Body received from Lord Lister the intimation that the state of his health compelled him to surrender his seat on their Board, and the post of their Chairman. The Institute may be said almost to owe its existence to Lord Lister. From the first he has presided over its administration and development with unceasing interest. He has given to it the advantages of his great experience in the matters it was founded to deal with; while to his colleagues, and to the whole staff of the Institute he has extended that charm of tact and courtesy which rendered all intercourse with him so pleasant and inspiring. The Governing Body could not allow him to resign without marking in an especial manner their sense of his services. Under their powers, as set forth in the Articles of Association, they created the post of President of the Institute, and begged Lord Lister to accept it. To this he has kindly assented. His advice and counsel will still, therefore, be available on all matters of importance.

To the Chairmanship of the Governing Body his colleagues have called Sir Henry E. Roscoe, who was also one of the Founders of the Institute, and as Honorary Treasurer from the commencement, has especially devoted himself to its welfare.

Lord Lister's seat on the Governing Body has been filled in the appointment by the Royal Society of Colonel David Bruce, R.A.M.C., F.R.S.

During the year the Governing Body gave effect to the intention announced in their last Annual Report of adding a new Officer to their Scientific Staff with the title of Director of the Institute. Dr. Charles J. Martin, F.R.S., late Professor of Physiology in the University of Melbourne was selected for the post. He entered upon his duties in October, and will henceforth, under the Governing Body, be the principal administrator of the Institute.

The special laboratories and stables at Aldenham in connection with the preparation of Yersin's serum entrusted to the Institute by H.M. Government were completed during the year. They are now in full working order, and are dealing with considerable demands from British Colonies for this remedial agent.

During the summer of 1903 the Governing Body invited a large number of Medical and other Scientific men to inspect the Institute's laboratories, stables, &c., at Aldenham. The visit was a pleasant success, the guests showing much interest in the arrangements and in the scientific preparations undertaken by the Institute.

The Local Government Board continue to occupy, temporarily, pending the completion of their own new laboratories for the preparation of calf lymph, several of

the rooms of the Institute at Chelsea. The Institute is therefore still somewhat pressed for accommodation for its own staff.

The research work of the Institute has been carried on during the year with much zeal and care. The results, most of which have been already published through various channels, will be found summarised in the appended Reports from the Heads of Laboratories.

Further applications have been made from Government departments for assistance and accommodation to carry out researches cognate to those undertaken by the Institute. The Governing Body have much satisfaction in being able to co-operate with H.M. Government in this manner. The solution of problems of immediate importance to the health of all classes, whether at home or abroad, and in some cases especially so to our Soldiers and Sailors, is, they consider, entirely within the objects for which the Institute was founded, and they are glad to be able to render all the assistance possible to this end.

The accounts for the year have been duly audited and certified as set forth on the accompanying Balance Sheet and Statement of Income and Expenditure.

There was no capital expenditure during the period on buildings at Chelsea, and that at Aldenham was confined to the new Yersin laboratories and stables. Toward this expenditure and the initial cost of preparation of Yersin's Serum and Haffkine's Prophylactic, three departments of the Government contributed a total sum of £3,500, the Institute agreeing to repay to the Departments (to an aggregate not exceeding the grant) the sums received by the sales of the preparations within a certain time, which expires at the end of the current year (1904).

The normal income from Investments remains the same as in former years. The returns from Diagnosis and Analysis Fees have slightly increased; but the sales of Antitoxins have decreased—partly owing to the lesser prevalence of Diphtheria, and partly to increased competition from other quarters. The returns, too, from the sales of "Yersin" and "Haffkine" referred to above, did not commence to accrue until November last. The working of the Aldenham Branch has therefore resulted in a loss, which the Governing Body are endeavouring to remedy, so that the whole income from the endowment of the Institute may be available for research.

The Chelsea expenditure, as will be seen, left a considerable balance to the good, though this will be mostly absorbed in future by the increased expenditure entailed on this department in the appointment of the Director.

HENRY E. ROSCOE,

*Chairman of the Governing Body.*

*March 18, 1904.*



# The Lister Institute

Registered 25th July, 1891, as the British Institute of  
as an Association

Dr.

## BALANCE SHEET,

	£	s.	d.	£	s.	d.
To CREDITORS ... ..				2,323	3	1
To LOAN FROM BANKERS AGAINST SECURITIES PER CONTRA ...				3,500	0	0
To WATER LABORATORY FUND—						
Amount received from the Trustees of the late Richard Berridge, for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory... ..				26,352	13	10
To JENNER MEMORIAL FUND—						
Amount received from the Committee of the Jenner Memorial Fund				5,768	0	11
To Amount received from the Government in respect of the HAFKINE YERSIN LABORATORIES ... ..				3,500	0	0
Less amount due to the Government in respect of sales to 31st December, 1903, under agreement with them ... ..				430	18	0
				3,069	2	0
To SINKING FUND ... ..				744	13	10
To CAPITAL FUND—						
Balance as per last account, 31st December, 1902 ... ..				305,684	13	5
<i>Add</i>						
Balance of Chelsea Gardens Department Income and Expenditure Account, being excess of Income over Expenditure, for the year ending 31st December, 1903 ... ..				2,322	3	5
<i>Deduct—</i>						
Balance of Aldenham Department Income and Expenditure Account, being excess of Expenditure over Income for the year ending 31st December, 1903 ... ..				1,357	19	9
				964	3	8
				306,648	17	1

J. L. PATTISSON,  
HON. TREASURER.

£348,406 10 9

In accordance with the provisions of the Companies Act 1900, we certify that all our requirements as Sheet, and in our opinion such Balance Sheet is full and fair and properly drawn up, so as to exhibit a true

# of Preventive Medicine.

Preventive Medicine, under the Companies Acts, 1862 to 1890.  
Limited by Guarantee.

31st DECEMBER, 1903.

Cr.

	£	s.	d.	£	s.	d.
By CASH—						
At Bankers, Current Account	99	11	0			
In hand	16	12	1			
By INVESTMENTS (at cost)—				116	3	1
£2,900 New South Wales 3½ per cent. Stock 1918	2,897	16	0			
£1,000 Cape of Good Hope 3½ per cent. Stock	1,000	0	0			
£1,500 City of Sydney 4 per cent. Bonds	1,500	0	0			
Mortgage on Freehold Property, Liscombe Estate, at 3 per cent.	20,000	0	0			
£353 North Eastern Railway 4 per cent. Guaranteed Stock	499	11	0			
By INVESTMENTS, LORD IVEAGH'S DONATION (at cost)—				25,897	7	0
£25,000 New Zealand Government 3 per cent. Inscribed Stock 1945	24,112	10	0			
£25,000 Victorian Government 3 per cent. Inscribed Stock 1929-1949	23,875	0	0			
£25,000 Natal 3 per cent. Inscribed Stock 1929-1949	24,484	7	6			
£25,000 New South Wales Government 3 per cent. Inscribed Stock 1935	24,937	10	0			
£26,100 South Australian Government 3 per cent. Consolidated Stock 1916	24,860	5	0			
£25,000 Cape of Good Hope 3 per cent. Inscribed Stock 1933-1943	23,850	0	0			
£25,000 London and South-Western Railway 4 per cent. Preferred Converted Ordinary Stock	32,000	0	0			
£25,000 Great Northern Railway 3 per cent. Preference Stock 1898	26,000	0	0			
£25,000 Midland Railway 2½ per cent. Preferred Converted Ordinary Stock	20,375	0	0			
£25,000 East India Railway 3 per cent. New Debenture Stock	25,500	0	0			
Cash at Bank	5	7	6			
By INVESTMENTS, JENNER MEMORIAL FUND (at cost)—				250,000	0	0
£2,650 Southwark and Vauxhall Water Co. 3 per cent. Debenture Stock "B"	2,756	10	0			
£2,660 South Eastern Railway 3 per cent. Preference Stock 1898	2,740	5	0			
By INVESTMENT, SINKING FUND (at cost)—				5,496	15	0
£527 18s. 5d. 2½ per cent. Consols				499	0	3
(The above Investments, at the market value, 31st December, 1903, show a depreciation.)						
By DEBTORS				2,430	8	11
By STOCK OF TUBERCULIN AND MALLEIN				50	0	0
By FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS AND BOOKS, as per last Account, 31st Dec., 1902	2,889	17	1			
Additions during the year ending 31st Dec., 1903	469	17	2			
	3,359	14	3			
Less Written off for Depreciation	335	19	5			
				3,023	14	10
By EXPENDITURE ON INSTITUTE BUILDING AT CHELSEA—						
As per Account, 31st May, 1900, including purchase of freehold site, £6,000				42,967	5	8
By QUEENSBERRY LODGE FARM, ALDENHAM—						
Purchase of freehold land and buildings and Expenditure on new buildings, as per last Account, 31st Dec., 1902	13,122	8	7			
Additions during the year ending 31st Dec., 1903	2,248	15	7			
				15,371	4	2
Stock of Animals and Forage	636	16	4			
Stock of Anti-Toxins, Bottles, and Syringes	1,098	4	11			
Stable Utensils, Farm Implements, and Sheds, as per last Account, 31st Dec., 1902	103	4	2			
Additions during the year ending 31st Dec., 1903	50	4	0			
	153	8	2			
Less Written off for Depreciation	15	6	10			
				138	1	4
Laboratory Apparatus, as per last Account, 31st Dec., 1902	328	8	6			
Additions during the year ending 31st December, 1903	189	8	5			
	517	16	11			
Less Written off for Depreciation	51	15	8			
				466	1	3
Furniture, as per last Account, 31st Dec., 1902	177	9	5			
Additions during the year ending 31st December, 1903	61	17	3			
	239	6	8			
Less Written off for Depreciation	23	18	8			
				215	8	0
				2,554	11	10
				£348,406	10	9

Auditors have been complied with, and we report to the Members that we have audited the above Balance and correct view of the state of the Company's affairs as shown by the books of the Company.

COOPER BROTHERS & Co.

# The Lister Institute of

## Dr. Chelsea Gardens Department—INCOME AND EXPENDITURE

	INCOME.	£ s. d.
To Donations and Annual Subscriptions ... ..	...	22 2 0
To Interest and Dividends on Investments ... ..	...	8,626 10 5
To Diagnosis and Analysis Fees, &c. ... ..	...	1,040 9 3
To Sales of Tuberculin and Mallein ... ..	141 15 8	
<i>Add</i> Stock, 31st December, 1903 ... ..	50 0 0	
	191 15 8	
<i>Deduct</i> Stock, 31st December, 1902 ... ..	70 0 0	
	121 15 8	
To Rent of Laboratories received from the Local Government Board ... ..	...	815 0 0
To Sale of Transactions ... ..	...	2 11 3
		£10,628 8 7

## Dr. Aldenham Department—INCOME AND EXPENDITURE

	INCOME.	£ s. d.
To Sale of Antitoxins, &c. ... ..	...	2,597 7 0
<i>Add</i> Stock, 31st December, 1903 ... ..	975 7 6	
	3,572 14 6	
<i>Deduct</i> Stock, 31st December, 1902 ... ..	655 18 6	
	2,916 16 0	
To Sale of Yersin Serum and Haffkine's Fluid, payable to the Government under agreement with them ... ..	430 18 0	
<i>Add</i> Stock on hand at 31st December, 1903 ... ..	85 0 0	
	515 18 0	
To Balance, being Excess of Expenditure over Income transferred to Capital Fund (see Balance Sheet) ... ..	...	1,357 19 9
		£4,790 13 9

# Preventive Medicine.

RE ACCOUNT for the Year Ending 31st December, 1903.

Cr.

EXPENDITURE.						£	s.	d.
By Rates, Taxes, and Insurance	...	...	...	...	...	425	4	4
By Salaries, and Wages of Staff	...	...	...	...	...	5,249	1	0
By Stationery, Printing and Postage	...	...	...	...	...	165	5	9
By Advertising	...	...	...	...	...	13	6	0
By Office Expenses and Sundries	...	...	...	...	...	189	7	11
By Bank Charges	...	...	...	...	...	5	1	1
By Law Charges	...	...	...	...	...	57	15	0
By Travelling Expenses	...	...	...	...	...	7	7	8
By Auditors' Fee	...	...	...	...	...	21	0	0
By Gas and Water	...	...	...	...	...	268	9	6
By Electric Light and Power	...	...	...	...	...	160	18	2
By Fuel	...	...	...	...	...	76	4	3
By Bacteriological Laboratory Current Expenses	...	...	...	...	...	168	17	2
By Water Laboratory Current Expenses	...	...	...	...	...	74	16	11
By Photographic Laboratory Current Expenses...	...	...	...	...	...	17	14	0
By Pathological Chemistry Department Current Expenses	...	...	...	...	...	211	18	9
By Cancer Laboratory Current Expenses	...	...	...	...	...	17	17	9
By Culture Media	...	...	...	...	...	32	8	9
By Animals	...	...	...	...	...	168	6	8
By Animal House Expenses	...	...	...	...	...	132	6	8
By Repairs and Alterations to Buildings and Apparatus	...	...	...	...	...	321	18	5
By Amount written off for Depreciation of Furniture, Fittings, and Scientific Apparatus and Books	...	...	...	...	...	335	19	5
By Sinking Fund ( $\frac{1}{2}$ % per annum on Cost of Building)	...	...	...	...	...	185	0	0
						<u>8,306</u>	<u>5</u>	<u>2</u>
By Balance, being Excess of Income over Expenditure Transferred to Capital Fund (see Balance Sheet)	...	...	...	...	...	2,322	3	5
						<u>£10,628</u>	<u>8</u>	<u>7</u>

ACCOUNT for the Year ending 31st December, 1903.

Cr.

EXPENDITURE.						£	s.	d.	
By Rent, Taxes, and Insurance	...	...	...	...	...	111	6	6	
By Salaries and Wages	...	...	...	...	...	2,023	8	7	
By Animals—									
Stock 31st December, 1902...	...	...	...	...	289	9	6		
Purchased during the year ending 31st December, 1903	...	...	...	...	413	0	6		
					<u>702</u>	<u>10</u>	<u>0</u>		
Deduct—Sales during the year ending 31st December, 1903	...	...	...	52	10	0			
Stock, 31st December, 1903	...	...	...	403	6	4			
				<u>455</u>	<u>16</u>	<u>4</u>			
							246	13	8
By Forage—									
Stock 31st December, 1902	...	...	...	...	190	0	0		
Purchases during the year ending 31st December, 1903	...	...	...	...	799	9	6		
					<u>989</u>	<u>9</u>	<u>6</u>		
Deduct—Stock 31st December, 1903	...	...	...	...	233	10	0		
							755	19	6
By Stable and other Expenses	...	...	...	...	...	93	6	0	
By Farm Expenses	...	...	...	...	...	111	4	4	
By Gas, Water, and Fuel	...	...	...	...	...	223	6	6	
By Postages and Telegrams	...	...	...	...	...	11	16	9	
By Advertising	...	...	...	...	...	50	19	2	
By Laboratory Expenses, including Cost of Bottles, Corks, Chemicals and Glass Apparatus	...	...	...	...	...	831	3	8	
By Travelling Expenses	...	...	...	...	...	42	11	0	
By Interest on Loan from Bankers	...	...	...	...	...	149	1	7	
By Bank Charges	...	...	...	...	...	0	6	3	
By Amount written off for Depreciation on Furniture and Laboratory Apparatus	...	...	...	...	...	75	14	4	
By Bad Debts	...	...	...	...	...	3	2	4	
By Sinking Fund ( $\frac{1}{4}$ % per annum on Estimated Cost of Buildings)	...	...	...	...	...	60	13	7	
						<u>£4,790</u>	<u>13</u>	<u>9</u>	

(The cost of the Yersin Serum and Haflkine's Fluid per contra is included in the above figures.)

# LISTER INSTITUTE OF PREVENTIVE MEDICINE.

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## REPORTS OF SCIENTIFIC STAFF.

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### I.—BACTERIOLOGICAL LABORATORY.

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*Report for the Year ending December 31st, 1903.*

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The Department has continued the investigation of the intracellular constituents of micro-organisms obtained by trituration of the cells at low temperatures. The main object of the inquiry has been to obtain and to study the properties of the intracellular toxins of pathogenic organisms. Experiments have been conducted with the toxic cell juices obtained from the typhoid bacillus, in order to determine how far it is possible to immunise animals against its effects. These experiments are still in progress.

Dr. Petrie having been appointed as Assistant Bacteriologist at Aldenham, and Dr. Wakelin Barratt having resigned his appointment in the course of the year, Mr. J. Anderson Craw and Lieut. A. B. Smallman, R.A.M.C., were elected to the vacant studentships. Mr. Anderson Craw is engaged in a research on the mechanism of agglutination and Lieut. Smallman is investigating the immunising properties of typhoid cell juices.

The diagnosis work has been carried on as heretofore, as well as the preparation of Tuberculin and Mallein.

The following researches have been published during the year :—

- POIKILOTHERMISM IN RABIES, by J. O. Wakelin Barratt. *Journal of Physiology*, Vol. XXIX., 1903.
- ON THE DISINTEGRATION OF RABID BRAIN SUBSTANCE, by J. O. Wakelin Barratt. *Proc Royal Society*, Vol. DXXII.
- ON THE RELATION OF THE LEUCOCYTES TO THE BACTERIOLYTIC POWER OF THE BLOOD, by G. F. Petrie. *Journal of Pathology*, December, 1903.
- BIOLOGICAL ACTION OF MOULDS ON ARSENICAL COMPOUNDS, by H. de R. Morgan. *Lancet*, July 4th, 1903.
- IMMUNISING EFFECT OF THE INTRACELLULAR CONTENTS OF THE TYPHOID BACILLUS, by A. Macfadyen. *Proc. Royal Society*, March 18th, 1903.
- THE INTRACELLULAR CONSTITUENTS OF THE TYPHOID BACILLUS (Second Communication), by A. Macfadyen and S. Rowland. *Baktr. Centralblatt*, Vol. XXXIX, 1903.
- AN EXPERIMENTAL EXAMINATION OF MESENTERIC GLANDS, ETC., WITH REFERENCE TO THE PRESENCE OF VIRULENT TUBERCLE BACILLI, by A. Macfadyen and A. MacConkey. *British Medical Journal*, July 18th.
- THE VIRULENCE OF THE BACILLUS OF BOVINE AND HUMAN TUBERCULOSIS FOR MONKEYS, by A. Macfadyen. *Lancet*, September 12th, 1903.

ALLAN MACFADYEN.

## II.—LABORATORY OF PATHOLOGICAL CHEMISTRY.

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*Report for the Year ending December 31st, 1903.*

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I have continued my investigations on the proteolytic enzymes in the spleen and the blood serum, which have been published during the year.

Since that work was published I have been studying the laws which determine the action of trypsin upon proteids and more especially the question whether the ferment combines with the proteid before acting upon it.

Dr. Leathes has been working upon the changes undergone by fats in the cells of different organs. He has found that the liver has the power of synthesizing fats, apparently from carbohydrates, and that this power is destroyed if the cells be first heated so as to destroy their life. The formation of fat from carbohydrates, well known to occur somewhere in the body, has not previously been located in any particular organ. Dr. Leathes is engaged in studying the steps by which this change is effected. He has found evidence, on the other hand, that fat is consumed in the heart, and serves, therefore, during life as a source of energy for this organ.

Mr. Hildesheim was, during the month of February, engaged in helping Dr. Leathes in his work on the liver.

Mr. Jenner was a research student in the Laboratory until the end of February, and continued working in it until the end of the year, mainly upon immune bodies and complements.

Mr. Cathcart, who has held a research studentship in the Department since May, has been engaged in studying the power of normal blood serum to resist the action of trypsin. In addition to this, he has investigated the products of the proteolytic action of the enzyme found in the spleen, which acts in an alkaline medium, and also of the proteolytic enzymes found in the urine.

Mr. Dakin was working in the Department up till the end of June, and the results of his work have been published.

The papers published from the laboratory in the course of the year are :—

INVESTIGATIONS ON THE PROTEOLYTIC ENZYMES OF THE SPLEEN OF THE OX, by S. G. Hedin.  
*Journal of Physiology*, pp. 155-175.

ON THE PRESENCE OF A PROTEOLYTIC ENZYME IN THE NORMAL SERUM OF THE OX, by S. G. Hedin. *Journal of Physiology*, pp. 195-201.

THE PRODUCTS OF THE PROTEOLYTIC ACTION OF AN ENZYME CONTAINED IN THE CELLS OF THE KIDNEY, by H. G. Dakin *Journal of Physiology*, pp. 84-96.

THE HYDROLYSIS OF OPTICALLY INACTIVE ESTERS BY MEANS OF ENZYMES. PART I.: THE ACTION OF LIPASE UPON ESTERS OF MANDELIC ACID. THE RESOLUTION OF INACTIVE MANDELIC ACID. By H. D. Dakin. *Journal of Physiology*, pp. 253-264.

S. G. HEDIN.

III.—CHEMICAL LABORATORY.

*Report for the Year ending December 31st, 1903.*

The following is a summary of the work carried out in the Chemical Department of the Institute during 1903:—

*Analytical Work.*—39 samples of water have been examined. During 1902, 37 samples of water and 1 of Milk were examined.

*Research Work.*—The following is a list of the various researches which have been prosecuted:—

1. Experiments on the chemical action of Bacteria of the Colon and Lactic Acid groups. In this connection a large number of experiments have been carried out in conjunction with the Bacteriological Department, on the chemical characteristics of the Colon bacilli of the intestinal tracts of man and various animals, with a view of establishing more definite criteria for the recognition of such organisms of similar properties but different origin.

2. Alcoholic fermentation effected by yeast juice.

(a) An extended series of experiments on the alcoholic fermentation effected by yeast juice prepared from top yeasts has been made with special reference to the effect of dilution on the juice and to the chemical actions involved in the fermentation of glucose by the juice. The results have been embodied in a paper which will shortly be published.

(b) The effect of various substances on the action of the enzymes of yeast juice has also been studied. A preliminary note on the effect of Horse Serum has already been published.

3. A few experiments on the enzymes of cancerous tissues have been made from time to time as material could be obtained. No characteristic difference between these and the enzymes of normal tissues has as yet been found. A short note on the subject, written in conjunction with Dr. Macfadyen, was inserted in the *Lancet* in July.

4. Dr. R. H. Aders Plimmer, Grocer's Company Research Student, was at first engaged on the chemical examination of (a) the Urine of Cancer Patients, (b) Cancerous Tumours, (c) the Fat from a case of Cancer of the Breast, but was unable to establish specific chemical characteristics for any of these materials.

He has further carried out an extended investigation on the production of Hydrocyanic Acid by the oxidation of Proteids. His results are now ready for publication; and, in this connection, a short paper, "A New Method for the Separation and Estimation of Silver Cyanide and Silver Chloride," has been published.

Dr. Plimmer has also investigated the occurrence of Betaine in beet sugar. A paper has been published on this subject in conjunction with Dr. Waller, the chemical part of which was contributed by Dr. Plimmer.

Finally, the work on the "Biological Method of Resolving Inactive Acids into their Optically Active Components," which was completed by Dr. MacKenzie and myself at the end of 1902, has now been published.

*List of Papers published during 1903.*

1. "Ueber alkoholische Gärung mit Hefe Presssaft (Buchner's Zymase) bei gegenwart von Blutserum." A. HARDEN. *Berichte*, 1903. 715.

2. "Enzymes in Tumours." A. HARDEN and ALLAN MACFADYEN. *Lancet*, July 25th, 1903.

3. "Separation and Estimation of Silver Cyanide and Silver Chloride." R. H. ADERS PLIMMER. *Trans. Chem. Soc.*, 1903. 12.

4. "The Physiological Action of Betaine Extracted from Raw Beet Sugar" A. D. WALLER and R. H. ADERS PLIMMER. *Proc. Roy. Soc.*, 1903. 72. 345.

5. "The Biological Method for Resolving Inactive Acids into their Optically Active Components." A. MACKENZIE and A. HARDEN. *Trans. Chem. Soc.*, 1903. 424.

ARTHUR HARDEN.



#### IV.—CANCER LABORATORY.

*Report for the Year ending 31st December, 1903.*

*Routine Work.*—During the year 126 cases of Carcinoma and Sarcoma have been examined histologically for diagnostic purposes for the Cancer Hospital, from whence they were obtained. Fifteen tumours from animals, kindly sent by Mr. Sewell, have also been examined.

*Research Work.*—Investigations have been carried out on the cancer cell as an independent cell, both with regard to its own qualities, and to its relations to the cells from which it arises, and to the cells found in metastases.

Schüller's work on certain bodies which he considers parasitic has been repeated, but I am not able to confirm any of his results. Experiments have been carried on, attempting by various methods to inoculate human cancer into animals and to study the changes cancer undergoes when placed in an animal. These are being continued.

Experiments to determine whether any cytolytic substance is formed after the introduction of cancer cells into an animal are also being carried out; and the effects on animals of the excretions of cancer patients are also being studied.

The effect of Radium Bromide on Cancer has been investigated. 30 milligrammes of Radium Bromide were generously placed at my disposal, and the staff of the Cancer Hospital allowed a trial of the substance to be made on 18 cases. The results, which are not encouraging, will be shortly tabulated and published. Experiments have been started to determine the effect of Radium Bromide on bacterial life, which will be shortly completed.

During the year researches have been continued on the Trypanosoma of Nagana, and on that of Surra (which was sent to the Royal Society from Mauritius), and on those of Sleeping Sickness and Gambia Fever (which Colonel Bruce has kindly given me). These are being investigated on the same lines as Nagana, and in comparison with it.

The following papers have been published:—

ON THE PARASITIC THEORY OF CANCER. *British Medical Journal.*

ON THE CYCLE OF THE TRYPANOSOMATA IN NAGANA. *Pathological Society.*

ON THE ORGANISMS OF MONKEY MALARIA AND SLEEPING SICKNESS, by H. G. Plimmer. *Pathological Society.*

ON A NEW METHOD OF STAINING WITH IRON-HAEMATOXYLIN, by A. Paine. *Pathological Society.*

H. G. PLIMMER.

#### V.—PHOTOGRAPHIC LABORATORY.

*Report for the Year ending December 31st, 1903.*

Photographs have been produced as required by the various laboratories, and for the general purposes of the Institute.

Experiments on the bactericidal action of light have been continued in conjunction with Dr. Morgan. A further series of experiments on the sensitising action of various aniline dyes are in progress.

Experiments on phosphorescent bacteria have been continued in conjunction with Dr. Harden, and are still in progress. Experiments on methods of microscopic illumination are at present being carried out

The following papers have been published from the Laboratory during the year:—

UPON THE BACTERICIDAL ACTION OF SOME ULTRA VIOLET RADIATIONS, by Barnard and Morgan. *Proc. Royal Society, 1903.*

THE PHYSICAL FACTORS IN PHOTO-THERAPY, by Barnard and Morgan. *British Medical Journal, November, 1903.*

J. E. BARNARD.

## VI.—ANTITOXIN DEPARTMENT, QUEENSBERRY LODGE, ELSTREE, HERTS.

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*Report for the Year ending December 31st, 1903.*

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I herewith submit the following report of the work which was carried out in the Serum Department during the period 1st January to 31st December, 1903.

The work of preparing and supplying Antitoxins has proceeded satisfactorily. During the year Haffkine's Prophylactic Fluid and Yersin's Serum have been added to the preparations issued by the Institute.

*Antitoxins, etc., sent out.*—Diphtheria, 18,676 bottles, each bottle containing 2,000 units, average strength 500 units per c.c.; Streptococcus, 5,152 bottles; Tetanus, 944 bottles; Coley's Fluid, 214 bottles; Yersin's Serum, 596 Bottles; Haffkine's Prophylactic Fluid, 8,834 doses, put up into 1,262 bottles; Normal Serum, 12 bottles.

*Research Work.*—In connection with the work on Plague, the investigation of a number of points, especially in relation to the toxic substances produced by the *B. pestis*, has been undertaken. During the examination of rats in connection with this work, a leprous-like infection of the rat—which was shortly afterwards described by Stefansky at Odessa—was independently observed by me here.

Dr. Todd has investigated a number of questions in regard to the *B. dysenteriae* of Shiga and Kruse. He has obtained from liquid cultures toxic filtrates, and by immunising horses with these has succeeded in obtaining an antitoxic serum. He has also conducted a series of experiments proving the identity of the Diphtheria Antitoxins obtained from different species of animals.

Dr. Petrie has investigated the relation of the pseudo-diphtheria bacillus to the true diphtheria bacillus with special reference to the question of toxin production. He has observed in rabbits a trypanosomiasis, and as practically nothing has hitherto been known of this parasite in the rabbit, he has carried out a number of observations and experiments, part of which has been published.

A number of investigations on other subjects, including Staphylococcus, Tubercle, and Influenza, and with special reference to immunity, are in progress in the Department.

I wish to thank the staff of the Department for the help given me in carrying on the work.

The following papers have been published from the Department:—

A DISEASE OF THE RAT CAUSED BY AN ACID-FAST BACILLUS, by G. Dean. *Centralblatt für Bakteriologie*, Bd. XXXIV.

ON A DYSENTERY ANTITOXIN, by C. Todd. *British Medical Journal*, December, 1903.

ON THE OCCURRENCE OF A TRYPANOSOME IN THE RABBIT, by G. F. Petrie. *Centralblatt für Bakteriologie*, Bd. XXXV.

GEORGE DEAN.



**Sister Institute of Preventive  
Medicine.**

CHERISEA GARDENS,  
LONDON, S.W

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**ANNUAL REPORT**  
AND  
**BALANCE SHEET.**

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*April 29th, 1904.*

**PRIVATE.**

**FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE ONLY.**

**APRIL, 1905.**

# The Lister Institute of Preventive Medicine,

CHELSEA GARDENS, CHELSEA BRIDGE ROAD,  
LONDON, S.W.

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**President :**

THE LORD LISTER, P.C., O.M., F.R.S.

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**THE GOVERNING BODY.**

SIR HENRY E. ROSCOE, F.R.S., *Chairman.*

THE LORD IVEAGH, K.P.

J. LUARD PATTISSON, C.B., *Hon. Treasurer.*

SIR JOHN BURDON-SANDERSON, BART., F.R.S.

J. ROSE BRADFORD, M.D., F.R.S.

SIR MICHAEL FOSTER, K.C.B., M.P., F.R.S.

COLONEL DAVID BRUCE, R.A.M.C., F.R.S.

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**Director :**

DR. C. J. MARTIN, F.R.S.

*Assistant Secretary and Accountant :*

MR. GEORGE COOPER.

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**THE SCIENTIFIC STAFF.**

**Chelsea :—**

**Director's Laboratory :—**C. J. MARTIN, M.B., D.Sc., F.R.S.

*Assistant :—*SYDNEY ROWLAND, M.A., M.R.C.S., L.R.C.P.

**Bacteriological Laboratory :—**ALLAN MACFADYEN, M.D., B.Sc.

*Assistants :—*A. E. BOYCOTT, M.A., M.D.

E. P. CATHCART, M.D., Ch.B.

J. E. BARNARD (*Honorary*).

*Jenner Memorial Student :—*A. B. SMALLMAN, M.B., D.P.H., R.A.M.C.

**Pathological Chemistry Laboratory :—**S. G. HEDIN, M.D.

*Assistant :—*J. B. LEATHES, M.B., B.Ch.

**Chemical Laboratory :—**A. HARDEN, D.Sc., Ph.D.

*Assistant :—*W. J. YOUNG, M.Sc.

*Grocers' Research Student :—*STANLEY WALPOLE, B.Sc.

**Aldenham :—**

**Antitoxin Department :—**GEORGE DEAN, M.B.

*Assistants :—*A. MACCONKEY, M.B., B.C., D.P.H. (Cambridge)

G. PETRIE, M.D.

*Research Student :—*J. ANDERSON CRAW.



ANNUAL GENERAL MEETING  
OF  
**The Lister Institute of Preventive Medicine**

APRIL 14TH, 1905.

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**REPORT OF THE GOVERNING BODY.**

The Governing Body are glad to report continued development and progress both in the research and practical work of the Institute.

During the year no changes have taken place in the personnel of the Governing Body, but when called to the Chairmanship at the end of 1903, Sir Henry Roscoe expressed a wish to be relieved of the duties of Joint Honorary Treasurer, and his colleague, Mr. J. L. Pattison, consented to undertake the whole work of the office of Treasurer.

Several changes and re-arrangements have occurred in the Scientific Staff. Dr. Todd resigned his appointment as bacteriologist in the Serum Department on being appointed a bacteriologist to the Sanitary Department of the Egyptian Government, with charge of the installation for the manufacture of curative serum for Rinder-pest at Abassieh, near Cairo, and in consequence, Dr. MacConkey, formerly Assistant in the Bacteriological Laboratory at Chelsea, has been transferred to the Elstree establishment.

Dr. A. E. Boycott, late Gordon Lecturer in Pathology at Guy's Hospital, has been appointed Assistant in the Bacteriological Laboratory at Chelsea, vice Dr. MacConkey.

Mr. Plimmer, who has been in charge of the Laboratories for Cancer Research since October, 1902, has, at his own desire, been relieved from this duty.

Dr. Paine has left the Institute on appointment as Pathologist to the Cancer Hospital.

Towards the end of the year, Dr. Aders Plimmer, Grocers' Research Scholar, was appointed Lecturer in Physiological Chemistry in University College, London. Mr. Stanley Walpole, B.Sc. has since been appointed to the vacant Scholarship.



Lieutenant A. B. Smallman, M.B., R.A.M.C., who held the Jenner Memorial Research Scholarship in Bacteriology was, in November, chosen by the Army Medical Department to proceed to India to continue some investigations undertaken by the military authorities concerning prophylactic injections with Anti-typhoid vaccine. This Scholarship is at present vacant.

In September, the Institute, at the further request of the India Office, submitted for the consideration of the Government of India suggestions regarding the problems urgently requiring solution in view of the continued spread of Plague in India, together with a scheme for a suitable Agency to direct and undertake the necessary investigation. The Institute proposed that the Royal Society in conjunction with the Governing Body should nominate a small Scientific Advisory Committee who should in the first instance appoint four investigators, two from England, and two from the Officers of the Indian Medical Service. The Committee would also be entrusted with the duty of drawing up a plan of campaign, and the general supervision and financial administration of the work of the Commission.

The Royal Society having expressed its willingness to co-operate with the Institute in this way, the scheme was submitted to the Government of India for their approval.

The recommendations put forward have recently received the approval of the Government of India, and the Governing Body has nominated Colonel Bruce, F.R.S. and Dr. C. J. Martin, F.R.S. to co-operate with the representatives of the Royal Society upon the Advisory Committee.

It has been decided by the Governing Body to undertake the preparation of Vaccine Lymph, and henceforth this will form one of the usual products of the Institute's Laboratories. The Institute has secured the services of Dr. Alan B. Green, formerly one of the Scientific Staff of the lymph-laboratories of the Local Government Board, to undertake the control of the manufacture of Vaccine Lymph, and special calf stables and laboratories have been prepared for the purpose.

The research work of the Institute has been carried on with zeal. In addition to the regular staff and the holders of the Institute's Research Studentships, Dr. H. G. Plimmer, Dr. Houston, Dr. Morgan, Dr. Armit, Lieut.-Col. Lyons, I.M.S., Captain Douglas, I.M.S., and Messrs. Dakin and Raper have been conducting researches in the laboratories of the Institute. A list of those results which have been published during the year appears upon the last page of the present Report.

During the past year no expenditure whatever has been charged to Capital Account. Expenses of every kind have been debited to Revenue, including £761 0s. 8d. for new Machinery, Tools, and Furniture, and smaller amounts for Laboratory Apparatus and

Books. A sum of £660 was specially authorised to be spent on advertising the products of the Institute. This outlay has resulted in increased Sales of Antitoxins.

The sales of Yersin & Haffkin's Fluid have been fairly maintained, and the temporary agreement with H.M. Government referred to in the last Report has now been terminated, according to arrangement, by the payment by the Institute to H.M. Treasury of £1,623 17s. in respect of sales during the year 1904.

The receipts for Diagnosis and Analysis Fees, Tuberculin and Mallein has been slightly less than in 1903.

The stocks of Antitoxins on hand at December 31st, 1904, were much larger than in former years, and it is estimated that the expenses of the Farm laboratories will be considerably reduced during the coming year by having so large a supply on hand.

In both the Chelsea and Aldenham Accounts there is a balance to the good which has been carried to the credit of the Capital Account.

HENRY E. ROSCOE,

*Chairman.*

# The Lister Institute

## BALANCE SHEET,

Dr.

	£	s.	d.	£	s.	d.
To CREDITORS ... ..				2,219	0	0
To LOAN FROM BANKERS AGAINST SECURITIES PER CONTRA ...				5,000	0	0
To WATER LABORATORY FUND—						
Amount received from the Trustees of the late Richard Berridge, for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory ... ..				26,352	13	10
To JENNER MEMORIAL FUND—						
Amount received from the Committee of the Jenner Memorial Fund				5,768	0	11
To Amount received from the Government in respect of the HAFKINE YERSIN LABORATORIES ... ..	3,500	0	0			
<i>Deduct</i>						
Amount payable to the Government in final settlement, under agreement with them, in respect of Sales—						
To 31st December, 1903 ... ..	430	18	0			
For the Year ending 31st December, 1904	1,623	17	0			
	2,054	15	0			
				1,445	5	0
To SINKING FUND ... ..				1,008	3	3
To CAPITAL FUND—						
Balance as per last account, 31st December, 1903 ... ..	306,648	17	1			
<i>Add</i>						
Balance of Chelsea Gardens Department Income and Expenditure Account, being excess of Income over Expenditure, for the year ending 31st December, 1904 ... ..	1,131	8	3			
Balance of Aldenham Department Income and Expenditure Account, being excess of Income over Expenditure for the year ending 31st December, 1904 ... ..	2,010	17	8			
	3,142	5	11			
				309,791	3	0
J. L. PATTISSON,						
HON. TREASURER.						
				£351,584	6	0

In accordance with the provisions of the Companies' Act, 1900, we certify that all our requirements as Sheet, and in our opinion such Balance Sheet is full and fair and properly drawn up, so as to exhibit a true

London, 20th February, 1906.

# of Preventive Medicine.

31st DECEMBER, 1904.

Cr.

	£	s.	d.	£	s.	d.
By CASH—						
At Bankers, Current Account	1,610	16	11			
In hand	20	4	11			
				1,631	1	10
By INVESTMENTS (at cost)—						
Mortgage on Freehold Property, Liscombe Estate, at 3 per cent.	20,000	0	0			
£2,900 New South Wales 3½ per cent. Stock 1918	2,897	16	0			
£1,000 Cape of Good Hope 3½ per cent. Stock	1,000	0	0			
£1,500 City of Sydney 4 per cent. Bonds	1,500	0	0			
£353 North Eastern Railway 4 per cent. Guaranteed Stock	499	11	0			
				25,897	7	0
By INVESTMENTS, LORD IVEAGH'S DONATION (at cost)—						
£25,006 2s. 6d New Zealand Government 3 per cent. Inscribed Stock 1945	24,117	17	6			
£25,000 Victorian Government 3 per cent. Inscribed Stock 1929-1949	23,875	0	0			
£25,000 Natal 3 per cent. Inscribed Stock 1929-1949	24,484	7	6			
£25,000 New South Wales Government 3 per cent. Inscribed Stock 1935	24,937	10	0			
£26,100 South Australian Government 3 per cent. Consolidated Stock 1916	24,860	5	0			
£25,000 Cape of Good Hope 3 per cent. Inscribed Stock 1933-1943	23,850	0	0			
£25,000 London and South-Western Railway 4 per cent. Preferred Converted Ordinary Stock	32,000	0	0			
£25,000 Great Northern Railway 3 per cent. Preference Stock 1898	26,000	0	0			
£25,000 Midland Railway 2½ per cent. Preferred Converted Ordinary Stock	20,375	0	0			
£25,000 East India Railway 3 per cent. New Debenture Stock	25,500	0	0			
				250,000	0	0
By INVESTMENTS, JENNER MEMORIAL FUND (at cost)—						
£2,650 Southwark and Vauxhall Water Co. 3 per cent. Debenture Stock "B"	2,756	10	0			
£2,660 South Eastern Railway 3 per cent. Preference Stock 1898	2,740	5	0			
£300 11s. Liverpool Corporation 3 per cent. Stock	271	5	11			
				5,768	0	11
By INVESTMENT, SINKING FUND (at cost)—						
£832 2s. 5d. 2½ per cent. Consols						762 9 8
(The above investments, at the market value, 31st December, 1904, show a depreciation.)						
By DEBTORS						1,753 0 7
By STOCK OF TUBERCULIN AND MALLEIN						30 0 0
By FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS AND BOOKS, as per last Account, 31st Dec., 1903						3,023 14 10
By EXPENDITURE ON INSTITUTE BUILDING AT CHRLSEA—						
As per Account, 31st May, 1900, including purchase of freehold site, £6,000						42,967 5 8
By QUEENSBURY LODGE FARM, ALDENHAM—						
Purchase of freehold land and buildings and Expenditure on new buildings, as per last Account, 31st Dec., 1903						15,371 4 2
Stock of Animals and Forage	718	1	0			
Stock of Anti-Toxins, Bottles, and Syringes, &c.	2,842	9	9			
Stable Utensils, Farm Implements, and Sheds, as per last Account, 31st Dec., 1903	138	1	4			
Laboratory Apparatus, as per last Account, 31st Dec., 1903	466	1	3			
Furniture, as per last Account, 31st Dec., 1903	215	8	0			
				4,380	1	4
				£351,584	6	0

Auditors have been complied with, and we report to the Members that we have audited the above Balance and correct view of the state of the Company's affairs as shown by the books of the Company.

COOPER BROTHERS & CO.,  
Chartered Accountants.

Auditors.

Dr.	<b>Chelsea Gardens Department—INCOME AND EXPENDITURE</b>						
	INCOME.						£ s. d.
To Interest and Dividends on Investments ... ..	...	...	...	...	...	...	8,469 13 1
To Diagnosis and Analysis Fees, &c. ... ..	...	...	...	...	...	...	866 18 1
To Research Fees ... ..	...	...	...	...	...	...	50 0 0
To Sales of Tuberculin and Mallein ... ..	...	...	...	...	106	16 4	
<i>Add Stock, 31st December, 1904</i> ... ..	...	...	...	...	30	0 0	
					136	16 4	
<i>Deduct Stock, 31st December, 1903</i> ... ..	...	...	...	...	50	0 0	
					86	16 4	
To Rent of Laboratories received from the Local Government Board ... ..	...	...	...	...	815	0 0	
To Sale of Transactions ... ..	...	...	...	...	0	4 1	
To Sale of Vaccines ... ..	...	...	...	...	3	2 0	
To Sale of Liquid Air ... ..	...	...	...	...	177	13 0	
							£10,469 6 7

Dr.	<b>Aldenham Department—INCOME AND EXPENDITURE</b>							
	INCOME.						£ s. d.	£ s. d.
To Sale of Antitoxins, &c. ... ..	...	...	...	...	3,634	2 6		
<i>Add Stock, 31st December, 1904</i> ... ..	...	...	...	...	2,300	0 0		
					5,934	2 6		
<i>Deduct Stock, 31st December, 1903</i> ... ..	...	...	...	...	975	7 6		
					4,958	15 0		
To Sale of Yersin Serum and Haffkine's Fluid (of which £1,623 17s. is payable to the Government under agreement with them) ... ..	...	...	...	...	2,013	18 0		
<i>Add Stock on hand at 31st December, 1904</i> ... ..	...	...	...	...	470	0 0		
					2,483	18 0		
<i>Deduct Stock on hand at 31st December, 1903</i> ... ..	...	...	...	...	85	0 0		
					2,398	18 0		
To Research Fees for work done for the Indian Government ... ..	...	...	...	...	120	0 0		
To Rent of rooms to Capt. Douglas ... ..	...	...	...	...	6	0 0		
							£7,483 13 0	

# Preventive Medicine.

REVENUE ACCOUNT for the Year ending 31st December, 1904.

Cr.

EXPENDITURE.							£	s.	d.
By Rates, Taxes, and Insurance	...	...	...	...	...	...	420	19	4
By Salaries, and Wages of Staff	...	...	...	...	...	...	6,022	9	10
By Stationery, Printing and Postage	...	...	...	...	...	...	127	15	2
By Advertising	...	...	...	...	...	...	1	11	9
By Office Expenses and Sundries	...	...	...	...	...	...	153	7	9
By Bank Charges	...	...	...	...	...	...	4	9	10
By Law Charges	...	...	...	...	...	...	6	16	6
By Travelling Expenses	...	...	...	...	...	...	28	13	8
By Auditors' Fee	...	...	...	...	...	...	21	0	0
By Gas and Water	...	...	...	...	...	...	279	18	3
By Electric Light and Power	...	...	...	...	...	...	123	11	6
By Fuel	...	...	...	...	...	...	70	18	0
By Director's Laboratory Expenses including Apparatus	...	...	...	...	...	...	121	10	6
By Bacteriological Laboratory Expenses including Apparatus	...	...	...	...	...	...	89	3	11
By Water Laboratory Expenses including Apparatus	...	...	...	...	...	...	52	1	1
By Photographic Laboratory Expenses	...	...	...	...	...	...	3	18	0
By Pathological Chemistry Department Expenses	...	...	...	...	...	...	126	12	0
By Cancer Laboratory Expenses including Apparatus	...	...	...	...	...	...	37	14	10
By Culture Media	...	...	...	...	...	...	43	8	6
By Animals	...	...	...	...	...	...	213	11	9
By Animal House Expenses	...	...	...	...	...	...	99	17	5
By Repairs and Alterations to Buildings and Apparatus	...	...	...	...	...	...	240	11	0
By New Machinery, Tools and Furniture	...	...	...	...	...	...	761	0	8
By Library Expenses	...	...	...	...	...	...	81	17	3
By General Stores	...	...	...	...	...	...	19	19	10
By Sinking Fund ( $\frac{1}{2}$ % per annum on Cost of Building)	...	...	...	...	...	...	185	0	0
							<u>9,337 18 4</u>		
By Balance, being Excess of Income over Expenditure Transferred to Capital Fund (see Balance Sheet)	...	...	...	...	...	...	1,131	8	3
							<u>£10,469 6 7</u>		

REVENUE ACCOUNT for the Year ending 31st December, 1904.

Cr.

EXPENDITURE.							£	s.	d.
By Rent, Taxes, and Insurance	...	...	...	...	...	...	94	1	1
By Salaries and Wages	...	...	...	...	...	...	1,989	13	10
By Animals—									
Stock 31st December, 1903	...	...	...	...	...	403	6	4	
Purchased during the year ending 31st December, 1904	...	...	...	...	...	331	13	7	
						<u>734 19 11</u>			
<i>Deduct</i> —Sales during the year ending 31st December, 1904	...	...	...	...	...	35	17	6	
Stock, 31st December, 1904	...	...	...	...	...	462	17	11	
						<u>498 15 5</u>			
							236	4	6
By Forage—									
Stock 31st December, 1903	...	...	...	...	...	233	10	0	
Purchases during the year ending 31st December, 1904	...	...	...	...	...	771	11	8	
						<u>1,005 1 8</u>			
<i>Deduct</i> —Stock 31st December, 1904	...	...	...	...	...	255	3	1	
						<u>749 18 7</u>			
By Stable and other Expenses including Utensils	...	...	...	...	...	...	54	9	0
By Farm Expenses including Implements	...	...	...	...	...	...	62	16	7
By Gas, Water, and Fuel	...	...	...	...	...	...	255	19	10
By Postages and Telegrams	...	...	...	...	...	...	8	3	3
By Advertising	...	...	...	...	...	...	660	18	6
By Laboratory Expenses, including Cost of Bottles, Chemicals, Apparatus and Furniture	...	...	...	...	...	...	960	8	4
By Travelling Expenses	...	...	...	...	...	...	8	7	9
By Interest on Loan from Bankers	...	...	...	...	...	...	192	3	10
By Bank Charges	...	...	...	...	...	...	0	12	6
By Farm Office Expenses and Printing	...	...	...	...	...	...	41	19	8
By Repairs and Alterations	...	...	...	...	...	...	91	9	9
By Bad Debts	...	...	...	...	...	...	4	14	9
By Sinking Fund ( $\frac{1}{2}$ % per annum on Estimated Cost of Buildings)	...	...	...	...	...	...	60	13	7
							<u>5,472 15 4</u>		
By Balance being Excess of Income over Expenditure transferred to Capital Fund (See Balance Sheet)	...	...	...	...	...	...	2,010	17	8
							<u>£7,483 13 0</u>		

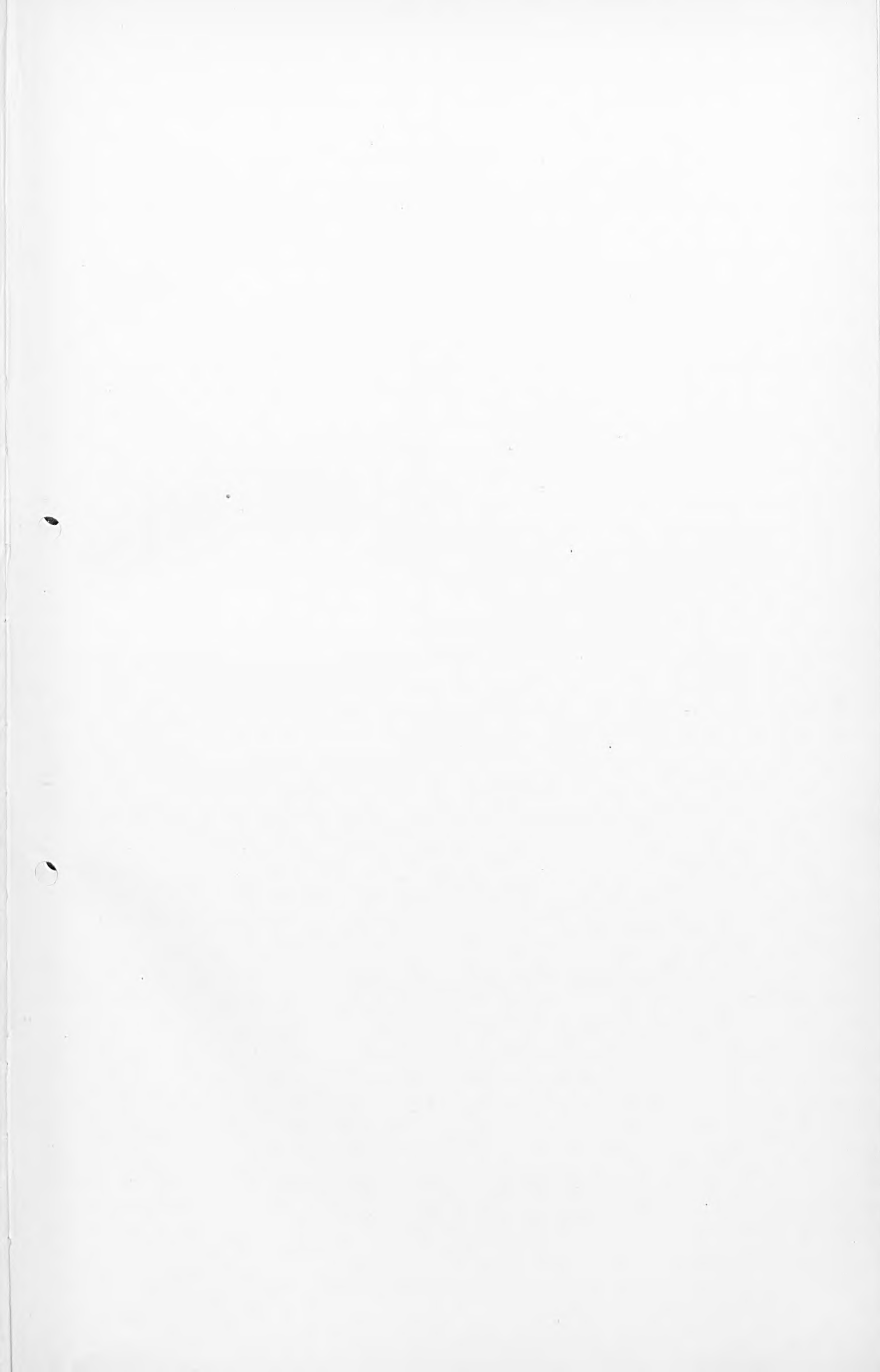
(The cost of the Yersin Serum and Haffkine's Fluid per contra is included in the above figures.)

SCIENTIFIC PAPERS PUBLISHED FROM THE LABORATORIES  
OF THE INSTITUTE DURING 1904.

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- CATHCART, E. P. ... PRODUCTS OF UROTRYPTIC DIGESTION. *Salkowski-Festschrift*, 1904.
- CATHCART, E. P. ... ON THE ANTITRYPTIC ACTION OF NORMAL SERUM. *Journal of Physiology*, Vol. XXXI., 1904.
- CRAW, J. A. ... ON THE MECHANISM OF AGGLUTINATION. *Journal of Hygiene*, Vol. V., 1905.
- DAKIN, H. D. ... THE FRACTIONAL HYDROLYSIS OF AMYGALINIC ACID. ISOAMYGDALIN. *Trans. Chem. Soc.*, 1904. Vol. LXXXV.
- DEAN, GEORGE ... FURTHER OBSERVATIONS ON A LEPROSY-LIKE DISEASE OF THE RAT. *Journal of Hygiene*, Vol. V., 1905.
- HARDEN & YOUNG ... GAHRVERSUCHE MIT PRESSSAFT AUS OBERGAHRIGER HEFE. *Deut. Chem. Gessel. Ber.* 37, 1904.
- HARDEN & YOUNG ... THE ALCOHOLIC FERMENT OF YEAST-JUICE. *Journal of Physiology*, Vol. XXXII., 1904.
- HILDESHEIM, O., & LEATHES ON THE SYNTHESIS OF HIGHER FATTY ACIDS IN THE LIVER. *Journal of Physiology*, Vol. XXXI., 1904.
- LEATHES, J. B. ... ON THE PERCENTAGE OF FAT IN DIFFERENT TYPES OF MUSCLE. *Journal of Physiology*, Vol. XXXI., 1904.
- MORGAN, H. DE R. ... THE PRESENCE OF BACTERIA IN THE ORGANS OF HEALTHY ANIMALS. *Lancet*, July 2nd, 1904.
- PLIMMER, ADERS ... THE FORMATION OF PRUSSIC ACID BY THE OXIDATION OF ALBUMINS. *Journal of Physiology*, Vol. XXXI., 1904.
- PLIMMER, ADERS ... THE FORMATION OF PRUSSIC ACID BY THE OXIDATION OF ALBUMINS. No. 2. *Journal of Physiology*, Vol. XXXII., 1904.
- PLIMMER, H. G. ... ON THE TREATMENT OF CANCER WITH RADIUM BROMIDE. *Lancet*, April 16th, 1904.
- PLIMMER, H. G. ... NOTE ON THE EFFECTS PRODUCED ON RATS BY THE TRYPANOSOMATA OF GAMBIA FEVER AND SLEEPING SICKNESS. *Proc. Roy. Soc.*, Vol. LXXIV., 1905.
- TODD, CHARLES ... ON A DYSENTERY TOXIN AND ANTITOXIN. *Journal of Hygiene*, Vol. IV., 1904.





**Eister Institute of Preventive  
Medicine.**

CHELSEA GARDENS,  
LONDON, S. W.

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**ANNUAL REPORT**

AND

**BALANCE SHEET.**

---

*April 14th, 1905.*

**PRIVATE.**

**FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE ONLY.**

**MARCH, 1906.**

# The Lister Institute of Preventive Medicine,

CHELSEA GARDENS, CHELSEA BRIDGE ROAD,  
LONDON, S.W.

---

**President :**

THE LORD LISTER, P.C. O.M., F.R.S.

---

**THE GOVERNING BODY.**

SIR HENRY E. ROSCOE, F.R.S., *Chairman.*

VISCOUNT IVEAGH, K.P.

J. ROSE BRADFORD, M.D., F.R.S.

SIR MICHAEL FOSTER, K.C.B., M.D., F.R.S.

COLONEL DAVID BRUCE, R.A.M.C., C.B., F.R.S.

J. LUARD PATTISSON, C.B., *Hon. Treasurer.*

(Vacant).

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**Director :**

DR. C. J. MARTIN, F.R.S.

*Assistant Secretary and Accountant :*

MR. GEORGE COOPER.

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**THE SCIENTIFIC STAFF.**

**Chelsea :—**

**Director's Laboratory :—**C. J. MARTIN, M.B., D.Sc., F.R.S.

*Assistant :—*SYDNEY ROWLAND, M.A., M.R.C.S., L.R.C.P.

**Bacteriological Laboratory :—**ALLAN MACFADYEN, M.D., B.Sc.

*Assistants :—*A. E. BOYCOTT, M.A., M.D.

J. O. WAKELIN BARRATT, M.D., D.Sc., F.R.C.S.

W. E. MARSHALL, M.B., Ch.B.

*Jenner Memorial Student :—*HARRIETTE CHICK, D.Sc.

**Pathological Chemistry Laboratory :—**S. G. HEDIN, M.D.

*Assistant :—*J. B. LEATHES, M.B., B.Ch.

**Chemical Laboratory :—**A. HARDEN, D.Sc., Ph.D.

*Assistant :—*W. J. YOUNG, M.Sc.

*Grocers' Research Student :—*STANLEY WALPOLE, B.Sc.

**Aldenham :—**

**Antitoxin Department :—**GEORGE DEAN, A.M., (ABERD), M.B., C.M.

*Assistants :—*A. MACCONKEY, M.B., B.C., D.P.H. (CAMP.)

ALAN B. GREEN, M.A., M.D., B.C. (CAMP.)

(*Bacteriologist in charge of the preparation of Calf Lymph.*)

G. PETRIE, M.D.

J. C. G. LEDINGHAM, M.A., M.B., B.Sc.

*Research Student :—*LEONARD NOON, F.R.C.S., B.C. (CAMP.)



ANNUAL GENERAL MEETING  
OF  
**The Lister Institute of Preventive Medicine**

APRIL 21st, 1906.

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**REPORT OF THE GOVERNING BODY.**

The Governing Body are glad to report continued development and progress both in the research and practical work of the Institute.

During the year a vacancy in the Governing Body has occurred owing to the death of one of its most distinguished and esteemed members, Sir John Burdon-Sanderson. Sir John represented the University of Oxford upon the Council, and had been connected with the Institute since its foundation, having been one of the original members of the Council of the British Institute of Preventive Medicine.

The vacancy caused by the death of Sir John Burdon-Sanderson has to be filled by the Council of the Institute at the forthcoming Annual Meeting.

During the absence of Mr. J. L. Pattisson, who was away from England for several months of the year, Colonel G. W. Addison, R.E., formerly one of the Governing Body, kindly acted as Honorary Treasurer.

Since the last report the Institute has been admitted as a School of the University of London in Hygiene and Pathology.

The following changes and additions to the scientific staff have occurred:

In May, 1905, Drs. Rowland and Petrie were, at the request of the Advisory Committee for the Investigation of Plague in India, deputed to work upon the Commission at present engaged in India.

In September Dr. Cathcart resigned his appointment of Assistant in the Bacteriological Laboratory on his being appointed Lecturer in Physiological Chemistry in the University of Glasgow.

During the year Dr. J. O. Wakelin Barratt and Dr. W. E. Marshall have been appointed Assistants, and Dr. Harriette Chick Research-student in the Bacteriological Laboratory at Chelsea, and Dr. J. C. G. Ledingham an Assistant Bacteriologist to the Serum Department at Aldenham.

Dr. Alan B. Green, formerly Assistant Bacteriologist to the Lymph Department of the Local Government Board, has been appointed an Assistant Bacteriologist at Aldenham, with special charge of the preparation of Calf Lymph.

At the expiration of the term of the Research Scholarship, held by Mr. J. Anderson Craw, Mr. Noon was appointed to the vacant studentship, and is working under Dr. Dean at Aldenham.

The investigation, undertaken at the request of the India Office, into some points concerning the preparation of plague vaccine, with a view to obtaining a standardised preparation which will give uniform results, has been continued during the year by Captain Douglas, I.M.S., and an interim report has been furnished to the Government of India.

The suggestions put forward by the Institute at the request of the India Office regarding the investigation of plague in India, which were referred to in the last report as having received the approval of the Government of India, have been carried into effect. In March, 1905, at the request of the Advisory Committee, Dr. C. J. Martin, the Director of the Institute, and one of its representatives on the Committee, was given leave of absence in order to proceed to India to confer with the Government of India and the Sanitary Commissioner, and to organise the investigation. At the request of the same Committee, the services of Major Lamb, Captain Liston and Captain Gloster, of the Indian Medical Service, were placed at the disposal of the Committee by the Government of India, and Drs. Rowland and Petrie, members of the staff of the Institute, were deputed to work upon the Commission. The various provincial Governments of India have lent the services of several native medical men, specially selected on account of their ability and interest in scientific investigation, to work with the Commission. The Municipality of Bombay has co-operated with the Committee, and through their Medical Officer of Health, Dr. John A. Turner, has rendered most valuable assistance both by placing the administrative machinery of the Health Department at the services of the Commission in its epidemiological and epizootical investigations in Bombay city, and also by appointing a special Medical Officer of that Department to co-operate with the Commission in its enquiries.

The headquarters of the Commission are at the Plague Research Laboratory at Parel, near Bombay, where every facility for experimental work is available; and an investigation is also being carried on upon two more or less isolated villages in the Punjab, which were chosen because they afforded especial advantages for the purpose.

At Aldenham the manufacture of Vaccine Lymph, the preparations for which were mentioned in the previous report, has been undertaken, and the Institute now supplies Calf Lymph as one of its regular products.

Through the munificence of Dr. Ludwig Mond, F.R.S., a large Pressure Chamber, together with a double-acting Compressor-Pump for circulating air at different pressures, has been erected at the Institute at Chelsea. This chamber comfortably accommodates two persons and is to be used for experiments upon men and animals with compressed and rarefied air.

The Governing Body gratefully appreciate this important gift from Dr. Mond.

The apparatus will be employed for investigations upon physiological adaptation to increased and decreased atmospheric pressures with a view to the understanding of the difficulties and limitations at present existing in deep sea diving and caisson-working.

During the year a number of investigations have been carried out. In addition to the regular staff and the holders of the Institute's research studentships, Drs. H. G. Plimmer, Morgan, Armit, Eyre, Arkwright, Castellani, Wigham, Captain Douglas, I.M.S., and Mr. Dakin have been conducting investigations in the laboratories of the Institute. A list of those results which have been published during the year, appears upon the last page of this report.

During the past year the only expenditure charged to Capital Account was £35 for additions to buildings at Aldenham. All other expenses have been debited to Revenue.

The total sales of Antitoxins for 1905 were somewhat less than for the previous year, but remain satisfactory.

In both the Chelsea and Aldenham Accounts there is a balance to the good which has been carried to the credit of the Capital Account.

HENRY E. ROSCOE,  
*Chairman.*



# The Lister Institute

## BALANCE SHEET,

Dr.

	£	s.	d.		£	s.	d.
To CREDITORS ... ..					645	12	10
To LOAN FROM BANKERS AGAINST SECURITIES PER CONTRA ...					3,000	0	0
To WATER LABORATORY FUND—							
Amount received from the Trustees of the late Richard Berridge, for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory ... ..					26,352	13	10
To JENNER MEMORIAL FUND—							
Amount received from the Committee of the Jenner Memorial Fund ... ..					5,768	0	11
To YERSIN LABORATORY FUND ... ..					1,445	5	0
To SINKING FUND ... ..					1,278	19	11
To CAPITAL FUND—							
Balance as per last account, 31st December, 1904 ... ..				309,791	3	0	
<i>Add</i>							
Balance of Chelsea Gardens Department Income and Expenditure Account, being excess of Income over Expenditure, for the year ending 31st December, 1905 ... ..				2,433	19	7	
Balance of Aldonham Department Income and Expenditure Account, being excess of Income over Expenditure for the year ending 31st December, 1905 ... ..				378	6	11	
				2,812	6	6	
					312,603	9	6

J. L. PATTISSON,

*HON. TREASURER.*

£351,094 2 0

In accordance with the provisions of the Companies' Act, 1900, we certify that all our requirements as Sheet, and in our opinion such Balance Sheet is full and fair and properly drawn up, so as to exhibit a true

*London, 28th February, 1906.*

# of Preventive Medicine.

31st DECEMBER, 1905.

Cr.

	£	s.	d.	£	s.	d.
By CASH—						
At Bankers, Current Account ... ..	614	9	8			
In hand ... ..	34	5	7			
						648 15 3
By INVESTMENTS (at cost)—						
Mortgage on Freehold Property, Liscombe Estate, at 3 per cent.	20,000	0	0			
£2,900 New South Wales 3½ per cent. Stock 1918 ...	2,897	16	0			
£1,000 Cape of Good Hope 3½ per cent. Stock ... ..	1,000	0	0			
£1,500 City of Sydney 4 per cent. Bonds ... ..	1,500	0	0			
£353 North Eastern Railway 4 per cent. Guaranteed Stock	499	11	0			
						25,897 7 0
By INVESTMENTS, LORD IVEAGH'S DONATION (at cost)—						
£25,000 2s. 6d. New Zealand Government 3 per cent. Inscribed Stock 1945 ... ..	24,117	17	6			
£25,000 Victorian Government 3 per cent. Inscribed Stock 1929-1949 ... ..	23,875	0	0			
£25,000 Natal 3 per cent Inscribed Stock 1929-1949 ...	24,484	7	6			
£25,000 New South Wales Government 3 per cent. Inscribed Stock 1935 ... ..	24,937	10	0			
£26,100 South Australian Government 3 per cent. Consolidated Stock 1916 ... ..	24,860	5	0			
£25,000 Cape of Good Hope 3 per cent. Inscribed Stock 1933-1943 ... ..	23,850	0	0			
£25,000 London and South-Western Railway 4 per cent. Preferred Converted Ordinary Stock ... ..	33,000	0	0			
£25,000 Great Northern Railway 3 per cent. Preference Stock 1898	26,000	0	0			
£25,000 Midland Railway 2½ per cent. Preferred Converted Ordinary Stock ... ..	20,375	0	0			
£25,000 East India Railway 3 per cent. New Debenture Stock	25,500	0	0			
						250,000 0 0
By INVESTMENTS, JENNER MEMORIAL FUND (at cost)—						
£2,650 Southwark and Vauxhall Water Co. 3 per cent. Debenture Stock "B" ... ..	2,756	10	0			
£2,660 South Eastern Railway 3 per cent Preference Stock 1893	2,740	5	0			
£300 11s. Liverpool Corporation 3 per cent. Stock ...	271	5	11			
						5,768 0 11
By INVESTMENT, SINKING FUND (at cost)—						
£1,136 3s. 11d. 2½ per cent. Consols ... ..						1,033 2 8
(The above investments, at the market value, 31st December, 1905, show a depreciation.)						
By DEBTORS ... ..						1,798 19 4
By STOCK OF TUBERCULIN AND MALLEIN ... ..						45 0 0
By FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS AND BOOKS, as per last Account, 31st Dec., 1904 ... ..	3,023	14	10			
Deduct amount written off for depreciation after charging in the Income and Expenditure account £109 5s. 8d. for Books and Boiler ... ..	193	1	10			
						2,830 13 0
By EXPENDITURE ON INSTITUTE BUILDING AT CHELSEA—						
As per Account, 31st May, 1900, including purchase of freehold site, £6,000 ... ..						42,967 5 8
By QUEENSBURY LODGE FARM, ALDENHAM—						
Purchase of freehold land and buildings and Expenditure on new buildings, as per last Account, 31st Dec., 1904 ...	15,371	4	2			
Additions to Calf Shed during the year ... ..	35	12	8			
						15,406 16 10
Stock of Animals and Forage ... ..	508	17	2			
Stock of Anti-Toxins, Bottles, &c. ... ..	3,369	13	7			
Stable Utensils, Farm Implements, and Sheds, as per Account, 31st December, 1903 ... ..	138	1	4			
Laboratory Apparatus, as per Account, 31st Dec., 1903 ...	466	1	3			
Furniture, as per Account, 31st Dec., 1903 ... ..	215	8	0			
						4,698 1 4
						£351,094 2 0

Auditors have been complied with, and we report to the Members that we have audited the above Balance and correct view of the state of the Institute's affairs as shown by the books of the Institute.

COOPER BROTHERS & Co.,  
Chartered Accountants. } Auditors.

## Dr. Chelsea Gardens Department—INCOME AND EXPENDITURE

	INCOME.	£	s.	d.
To Interest and Dividends on Investments ... ..	...	8,469	2	11
To Diagnosis and Analysis Fees, &c. ... ..	...	874	4	10
To Research Fees ... ..	...	44	0	0
To Sales of Tuberculin, Mallein, Anti-Bacterial Vaccines, &c. ...	127 7 10			
<i>Add</i> Stock of Tuberculin and Mallein, 31st December, 1905	45 0 0			
	172 7 10			
<i>Deduct</i> Stock of Tuberculin and Mallein, 31st December, 1904	30 0 0			
	142 7 10			
To Rent of Laboratories received from the Local Government Board ... ..	...	815	0	0
		£10,344	15	7

## Dr. Aldenham Department.—INCOME AND EXPENDITURE

	INCOME.	£	s.	d.	£	s.	d.
To Sale of Antitoxins, &c. ... ..	...	4,816	6	3			
<i>Add</i> Stock, 31st December, 1905	...	3,250	0	0			
		8,066	6	3			
<i>Deduct</i> Stock, 31st December, 1904	...	2,770	0	0			
		5,296	6	3			
To Research Expenses recoverable from the Indian Government ...	...	221	16	8			
To Rent of quarters to Research Students at Elstree ... ..	...	6	13	4			
		£5,524	16	3			

# of Preventive Medicine.

STATEMENT OF EXPENDITURE ACCOUNT for the Year ending 31st December, 1905.

Cr.

EXPENDITURE.							£	s.	d.
By Rates, Taxes, and Insurance	...	...	...	...	...	418	4	3	
By Salaries, and Wages of Staff	...	...	...	...	...	5,352	6	5	
By Stationery, Printing and Postage	...	...	...	...	...	167	6	9	
By Advertising	...	...	...	...	...	5	15	3	
By Office Expenses and Sundries	...	...	...	...	...	164	11	10	
By Bank Charges	...	...	...	...	...	3	13	6	
By Law Charges	...	...	...	...	...	15	15	0	
By Travelling Expenses	...	...	...	...	...	25	13	7	
By Auditors' Fee	...	...	...	...	...	21	0	0	
By Gas and Water...	...	...	...	...	...	269	3	4	
By Electric Light and Power	...	...	...	...	...	95	2	7	
By Fuel	...	...	...	...	...	69	16	0	
By Director's Laboratory Expenses including Apparatus	...	...	...	...	...	5	16	11	
By Bacteriological Laboratory Expenses including Apparatus	...	...	...	...	...	112	7	6	
By Water Laboratory Expenses including Apparatus	...	...	...	...	...	67	19	8	
By Pathological Chemistry Department Expenses	...	...	...	...	...	41	17	5	
By Culture Media	...	...	...	...	...	66	18	2	
By Animals	...	...	...	...	...	189	18	11	
By Animal House Expenses...	...	...	...	...	...	73	3	4	
By Repairs and Alterations to Buildings and Apparatus	...	...	...	...	...	263	3	2	
By Library Expenses	...	...	...	...	...	81	14	5	
By General Stores	...	...	...	...	...	21	6	2	
By Amount written off for Depreciation of Furniture, Fittings, and Scientific Apparatus and Books, after charging £109 5s. 8d. for Books and Boiler in above items	...	...	...	...	...	193	1	10	
By Sinking Fund ( $\frac{1}{2}$ % per annum on Cost of Building)	...	...	...	...	...	185	0	0	
						<u>7,910</u>	<u>16</u>	<u>0</u>	
By Balance, being Excess of Income over Expenditure Transferred to Capital Fund (see Balance Sheet)	...	...	...	...	...	2,433	19	7	
						<u>£10,344</u>	<u>15</u>	<u>7</u>	

STATEMENT OF EXPENDITURE ACCOUNT for the Year ending 31st December, 1905.

Cr.

EXPENDITURE.							£	s.	d.
By Rent, Taxes, and Insurance	...	...	...	...	...	107	18	1	
By Salaries and Wages	...	...	...	...	...	2,293	13	8	
By Animals—									
Stock 31st December, 1904	...	...	...	...	462	17	11		
Purchased during the year ending 31st December, 1905	...	...	...	...	241	17	0		
					<u>704</u>	<u>14</u>	<u>11</u>		
Deduct—Sales during the year ending 31st December, 1905	...	...	...	...	33	2	3		
Stock, 31st December, 1905	...	...	...	...	445	17	2		
					<u>478</u>	<u>19</u>	<u>5</u>		
								225 15 6	
By Forage—									
Stock 31st December, 1904	...	...	...	...	255	3	1		
Purchases during the year ending 31st December, 1905	...	...	...	...	501	0	6		
					<u>756</u>	<u>3</u>	<u>7</u>		
Deduct—Stock 31st December, 1905	...	...	...	...	63	0	0		
								693 3 7	
By Stable and other Expenses including Utensils	...	...	...	...	...	44	10	3	
By Farm Expenses	...	...	...	...	...	67	17	11	
By Gas, Water, and Fuel	...	...	...	...	...	216	1	6	
By Postages and Telegrams...	...	...	...	...	...	12	13	10	
By Advertising	...	...	...	...	...	55	6	4	
By Laboratory Expenses, including Cost of Bottles, Chemicals, Apparatus and Furniture	...	...	...	...	...	948	6	6	
By Travelling Expenses	...	...	...	...	...	14	4	1	
By Interest on Loan from Bankers	...	...	...	...	...	177	10	8	
By Bank Charges	...	...	...	...	...	0	12	6	
By Farm Office Expenses and Printing	...	...	...	...	...	47	13	7	
By Repairs and Alterations	...	...	...	...	...	176	8	1	
By Bad Debts	...	...	...	...	...	3	16	0	
By Sinking Fund ( $\frac{1}{2}$ % per annum on Estimated Cost of Buildings)	...	...	...	...	...	60	17	3	
						<u>£5,146</u>	<u>9</u>	<u>4</u>	
By Balance being Excess of Income over Expenditure transferred to Capital Fund (See Balance Sheet)	...	...	...	...	...	378	6	11	
						<u>£5,524</u>	<u>16</u>	<u>3</u>	

SCIENTIFIC PAPERS PUBLISHED FROM THE LABORATORIES  
OF THE INSTITUTE DURING 1905.



- BOYCOTT, A. E. ... .. ANKYLOSTOMIASIS. *Trans. Epidemiological Society*, 1905.
- BOYCOTT, A. E. ... .. THE SEASONAL PREVALENCE OF HOFMANN'S BACILLUS. *Journal of Hygiene*, Vol. V., 1905.
- BOYCOTT, A. E. ... .. A CASE OF SKIN INFECTION WITH ANKYLOSTOMA. *Journal of Hygiene*, Vol. V., 1905.
- CATHCART, E. P. ... .. ON THE OCCURRENCE OF INACTIVE ARGININE. *Journal of Physiology*, Vol. XXXII., 1905.
- CATHCART, E. P. ... .. THE FORMATION OF INACTIVE ARGININE BY ENZYMES FROM PROTEIDS WHICH YIELD OPTICALLY ACTIVE ARGININE ON HYDROLYSIS WITH ACIDS. *Journal of Physiology*, Vol. XXXII., 1905.
- CATHCART, E. P. ... .. ON THE PRODUCTS OF DIGESTION OF THE PROTEOLYTIC SPLEEN ENZYME ACTING IN AN ALKALINE MEDIUM. *Journal of Physiology*, Vol. XXXII., 1905.
- CRAW, J. A. ... .. ON THE PHYSICAL CHEMISTRY OF THE TOXIN-ANTITOXIN REACTION: WITH SPECIAL REFERENCE TO THE NEUTRALISATION OF LYSIN BY ANTILYSIN. *Proc. Royal Society*, Vol. B76, 1905.
- DAKIN, H. D. ... .. THE PHYSIOLOGICAL ACTION OF SYNTHETICAL SUBSTANCES ALLIED TO ADRENALIN. *Journal of Physiology*, Vol. XXXII., 1905.
- DAKIN, H. D. ... .. THE FRACTIONAL HYDROLYSIS OF OPTICALLY INACTIVE ESTERS BY LIPASE. Part II. *Journal of Physiology*, Vol. XXXII., 1905.
- DAKIN, H. D. ... .. ON THE PHYSIOLOGICAL ACTIVITY OF SUBSTANCES INDIRECTLY RELATED TO ADRENALIN. *Proc. Royal Society*, Vol. B76, 1905.
- DAKIN, H. D. ... .. THE SYNTHESIS OF A SUBSTANCE ALLIED TO ADRENALIN. *Proc. Royal Society*, Vol. B76, 1905.
- DEAN, G. ... .. AN EXPERIMENTAL ENQUIRY INTO THE NATURE OF THE SUBSTANCE IN SERUM WHICH INFLUENCES PHAGOCYTOSIS. *Proc. Royal Society*, Vol. B76, 1905.
- EMBLEY, E. H. & MARTIN, C. J. THE ACTION OF ANESTHETIC QUANTITIES OF CHLOROFORM UPON THE BLOOD VESSELS OF THE BOWEL AND KIDNEY; WITH AN ACCOUNT OF AN ARTIFICIAL CIRCULATION APPARATUS. *Journal of Physiology*, Vol. XXXII., 1905.

- HARDEN, A. ... .. THE CHEMICAL ACTION ON GLUCOSE OF THE LACTOSE-FERMENTING ORGANISMS OF FÆCES. *Journal of Hygiene*, Vol. V., 1905.
- HEDIN, S. G. ... .. ON THE ANTITRYPTIC ACTION OF SERUM ALBUMEN. *Journal of Physiology*, Vol. XXXII, 1905.
- HEDIN, S. G. ... .. OBSERVATIONS ON THE ACTION OF TRYPSIN. *Journal of Physiology*, Vol. XXXII, 1905.
- MACONKEY, A. ... .. LACTOSE-FERMENTING BACTERIA IN FÆCES. *Journal of Hygiene*, Vol. V., 1905.
- MARTIN, C. J. ... .. OBSERVATIONS UPON FIBRIN-FERMENTS IN THE VENOMS OF SNAKES AND THE TIME RELATIONS OF THEIR ACTION. *Journal of Physiology*, Vol. XXXII., 1905.
- MORGAN, H. DE R. ... .. SOME OBSERVATIONS UPON THE MICRO-ORGANISMS OF MEAT POISONING AND THEIR ALLIES. *Brit. Med. Journal*, June 10th, 1905.
- PETRIE, G. F. ... .. OBSERVATIONS RELATING TO THE STRUCTURE AND GEOGRAPHICAL DISTRIBUTION OF CERTAIN TRYPANOSOMES. *Journal of Hygiene*, Vol. V., 1905.
- PETRIE, G. F. ... .. ON THE RELATIONSHIP OF THE PSEUDO-DIPHTHERIA TO THE DIPHTHERIA BACILLUS. *Journal of Hygiene*, Vol. V., 1905.
- RAPEB, H. S. ... .. ON THE FORMATION OF FATTY ACIDS FROM LACTIC ACID WHEN FUSED WITH CAUSTIC ALKALIES. *Journal of Physiology*, Vol. XXXII, 1905.
- SMALLMAN, A. B. ... .. UPON THE ACTIVE IMMUNISATION OF EXPERIMENTAL ANIMALS WITH TYPHOID CELL JUICES. *Journ. Royal Army Medical Corps*, April, 1905.







**Elster Institute of Preventive  
Medicine.**

CHELSEA GARDENS,  
LONDON, S.W.

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ANNUAL REPORT

AND

BALANCE SHEET.

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March 21, 1906.

**PRIVATE.**

FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE ONLY.

**APRIL, 1907.**

# The Lister Institute of Preventive Medicine.

CHELSEA GARDENS, CHELSEA BRIDGE ROAD,  
LONDON, S W.; AND  
QUEENSBERRY LODGE, ELSTREE, HERTS.

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**President :**

THE LORD LISTER, P.C., O.M., F.R.S.

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**THE GOVERNING BODY.**

SIR HENRY E. ROSCOE, D.C.L., F.R.S., *Chairman.*

VISCOUNT IVEAGH, K.P.

COLONEL DAVID BRUCE, R.A.M.C., C.B., F.R.S.

J. ROSE BRADFORD, M.D., F.R.S.

PROFESSOR W. OSLER, M.D., D.Sc., F.R.S.

J. LUARD PATTISSON, C.B., *Hon. Treasurer.*

PROFESSOR ERNEST H. STARLING, M.D., F.R.S.

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**THE SCIENTIFIC STAFF.**

**Director :**

C. J. MARTIN, M.B., D.Sc., F.R.S.

**Bacteriological, Antitoxin and Vaccine Department :**

GEORGE DEAN, M.A., C.M., M.B., *Bacteriologist-in-Chief.* A. T. MACCONKEY, M.B., B.C., D.P.H.,  
*Bacteriologist in charge of Serum Laboratories.* ALAN B. GREEN, M.D., M.A., *Bacteriologist in charge of*  
*Calf Vaccine Laboratories.* A. E. BOYCOTT, M.A., M.D.; J. C. G. LEDINGHAM, M.A., M.B., B.Sc.;  
W. E. MARSHALL, M.B., Ch.B., D.P.H.; G. F. PETRIE, M.D.; SYDNEY ROWLAND, M.A., M.R.C.S.,  
L.R.C.P., *Assistants.* HARRIETTE CHICK, D.Sc., *Jenner Memorial Student.*

**Department of Bio-Chemistry :**

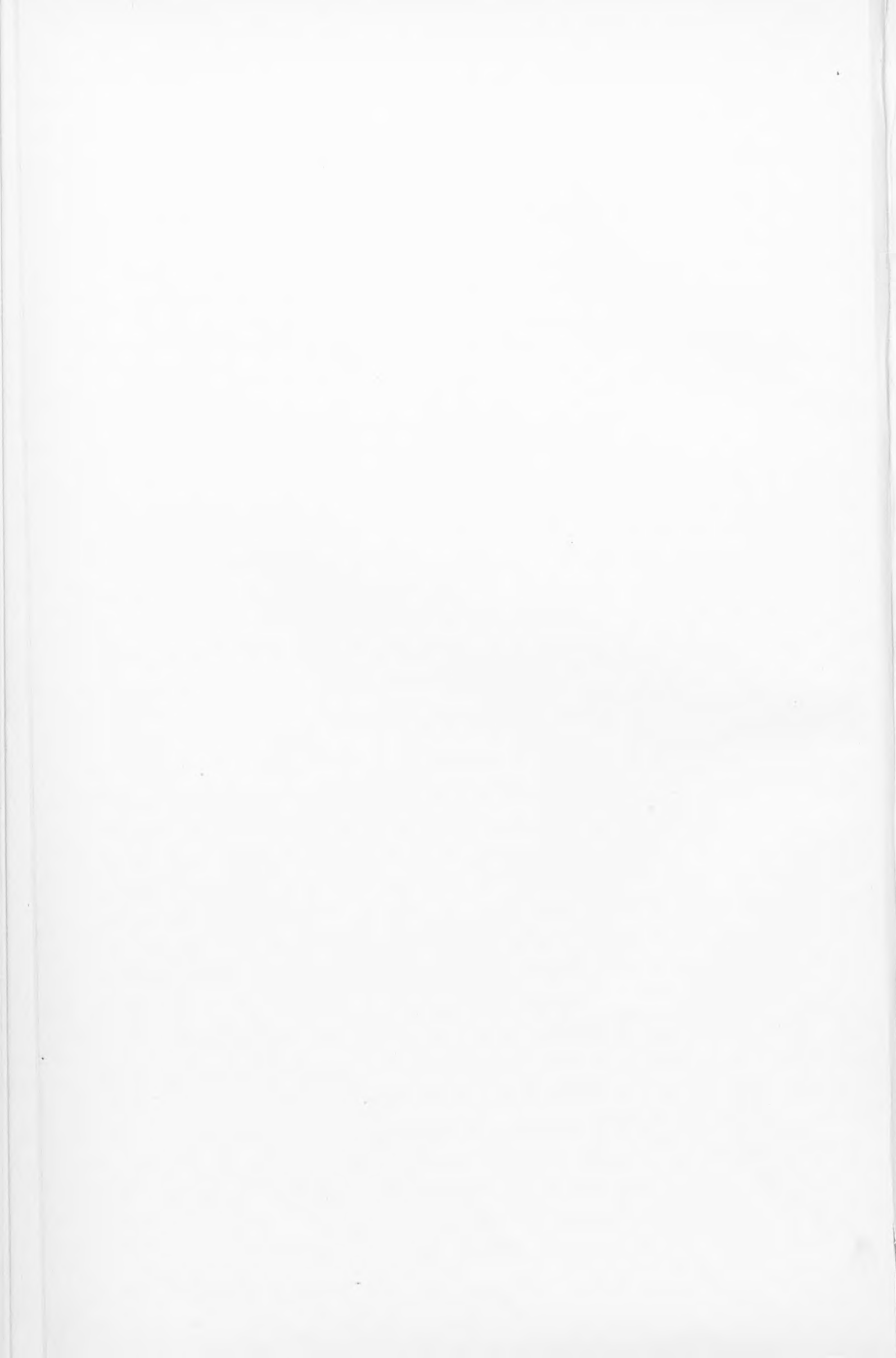
A. HARDEN, D.Sc., Ph.D., *Chemist in Chief.* J. B. LEATHES, M.B., Ch.B., F.R.C.S., *Chemist in Charge*  
*of Laboratories for Pathological Chemistry.* W. J. YOUNG, M.Sc., *Assistant.* PERCIVAL HARTLEY,  
B.Sc., *Grocers' Research Student.*

**Department of Protozoology :**

E. A. MINCHIN, M.A., *Professor of Protozoology in the University of London.* J. D. THOMSON, M.A.,  
M.B., C.M.; H. M. WOODCOCK, D.Sc., *Assistants.*

**Assistant Secretary and Accountant :**

MR. GEORGE COOPER.



ANNUAL GENERAL MEETING  
OF  
**The Lister Institute of Preventive Medicine.**

APRIL 18TH. 1907.

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**REPORT OF THE GOVERNING BODY.**

The Governing Body are glad to report continued development and progress, both in the research and practical work of the Institute. The list of scientific papers published during the year appears at the end of this report.

The vacancy on the Governing Body occasioned by the death of Sir John Burdon-Sanderson, which existed at the time of the last report, was filled by the appointment by the Council of Professor Osler, Regius Professor of Medicine in the University of Oxford. During the year the Governing Body has sustained another serious loss owing to the death of Sir Michael Foster. Sir Michael Foster had been a member of the Governing Body since 1901. The seat on the Governing Body lately occupied by him has been filled by the appointment of Professor Starling.

The Governing Body have to record also with great regret the premature death of Dr. Allan Macfadyen, formerly Secretary of the Institute, and Head of the Bacteriological Laboratory. Dr. Macfadyen had especially taken an active part in the organisation of the Institute during its earlier years; and upon his recent retirement the Governing Body had marked their sense of these services by voting him a substantial honorarium.

During the absence of Mr. J. L. Pattison from this country, in January and February of this year, Colonel G. W. Addison, R.E., formerly one of the Governing Body, kindly acted as Honorary Treasurer.

The following changes and additions to the scientific staff have occurred:

During the year Dr. Hedin resigned his position in the Department of Pathological Chemistry and Dr. Barratt his position as Assistant in the Bacteriological Laboratory, on being appointed an Assistant in the Research Laboratories of the University of Liverpool.

The Governing Body have appointed Dr. Dean, hitherto Bacteriologist in charge of the Serum Department at Elstree, to be Chief Bacteriologist to the Institute, and Dr. Ledingham, also of Elstree, to be one of his Assistants. The Elstree Branch

of the Institute has been placed under the charge of Dr. MacConkey, with Dr. Alan Green as his Chief Assistant. Dr. Green remains responsible for the manufacture of Calf Lymph, undertaken by the Department.

The Departments of Chemistry and Pathological Chemistry have been fused into one Department of Bio-Chemistry, under the administrative control of Dr. Harden. Dr. Leathes has been placed in charge of the laboratories for Pathological Chemistry.

Drs. Rowland and Petrie are still in India as members of the Commission for the Investigation of Plague at present working at Parel, near Bombay.

Mr. Noon, formerly a research student in the Department of Bacteriology, has been appointed John Lucas Walker Student at the University of Cambridge. Mr. Walpole has resigned his studentship in the Chemical Department, but still continues to work at the Institute under Dr. Harden upon some investigations undertaken for the Royal Commission on Tuberculosis. Miss Harriette Chick, D.Sc., has been appointed to the Jenner Research Studentship for a further period of one year, and Mr. P. Hartley, B.Sc., to the studentship vacated by Mr. Walpole.

In the Report of last year it was mentioned that the Institute was admitted as a School of Research in Hygiene and Pathology in the University of London, and during the present year the heads of all departments in the Institute have been recognised as University Teachers.

In the early part of 1906 negotiations were entered into between the University of London and the Institute regarding the possibility of finding laboratory accommodation at the Institute for the projected Chair of Protozoology in the University, and as the result the Institute offered to undertake the equipment and upkeep of the Department of Protozoology on condition that the Professor and his assistants should become members of the staff of the Institute. Under this arrangement the endowment of the chair would be freed from all charges for maintainance of laboratories, and could be entirely utilized to provide salaries for one or more assistants in addition to the Professor.

The University welcomed the proposition, and Professor Minchin having been appointed to the Chair, took up his duties at the Institute on July 1st, and Dr. Thomson and Dr. Woodcock were afterwards appointed by the University to be his assistants.

The agreement entered into between the University and the Institute has, in the first place, been made for a period of two years, and afterwards can be determined on one year's notice, should either Institution wish to terminate the arrangement.

The investigation, undertaken at the request of the India Office, into some points concerning the Preparation of Plague Vaccine, which was begun by Captain Douglas, I.M.S., in 1905 has been continued.

The Commission for the Investigation of Plague in India, in the inception and organisation of which the Institute took a prominent part, and which was referred to in

the last report as having commenced work in India, still continues its investigations. During last year a first report of the Commission was published in a special number of the *Journal of Hygiene*, and a second report is at present in the press, and will shortly appear in another special number of the same journal.

The investigations into the circumstances attending the occurrence of accidents in deep sea diving and caisson-working, with a view to obviate the dangers to the men engaged in these occupations, have been continued during the year. In the last report, in referring to these investigations, it was pointed out that they had been rendered possible by the gift from Dr. Ludwig Mond of a large steel pressure chamber. The Governing Body have now to gratefully record the receipt of further substantial help towards the expenses of these researches from the well known engineering and contracting firms of Messrs. John Aird & Sons., J. Pearson & Co., Price & Reeves, and from Mr. Basil P. Ellis.

The Institute has, during the year, also undertaken for the Royal Commission on Mines the investigation of the various forms of respiratory apparatus which have been invented to enable miners to proceed to situations where the air is irrespirable, more particularly with a view to rescuing comrades in mine accidents.

The Governing Body are pleased to report that an arrangement has been arrived at with the Managing Committee of the Victoria Hospital for Children, Chelsea, whereby the Institute undertakes the entire pathological work of the Hospital, and in accordance with this arrangement, the Director and Dr. Ledingham have been appointed Pathologist and Assistant Pathologist respectively to the Victoria Hospital.

In addition to the regular staff and the holders of research studentships, Drs. H. G. Plimmer, J. S. Haldane, F.R.S., Morgan, Armit, Eyre, Arkwright, Bayon, Duncan Reid, Cumpston, Cathcart and Mavrogordato, Colonel Alcock, F.R.S., I.M.S., Capt. S. P. James, I.M.S., and Messrs. Raper, Walpole, and Damant, have been engaged in researches in the various laboratories of the Institute.

The Balance Sheet of the Institute for the year ending 31st December, 1906, is attached, and shows a satisfactory financial position.

During the past year nothing has been charged to Capital Account. The buildings of the Institute have been well maintained. All repairs, and also a sum of £894 1s. 6d. expended on new apparatus, have been debited to Revenue, and for this reason no depreciation has been written off the Furniture, Fittings, Scientific Apparatus and Books, but the usual sum has been placed to the credit of the Sinking Fund.

HENRY E. ROSCOE,

*Chairman of the Governing Body.*

# The Lister Institute

## BALANCE SHEET,

Dr.

	£	s.	d.		£	s.	d.
To CREDITORS ... ..					3,065	5	1
To LOAN FROM BANKERS AGAINST SECURITIES PER CONTRA ...					1,000	0	0
To WATER LABORATORY FUND—							
Amount received from the Trustees of the late Richard Berridge, for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory ... ..					26,352	13	10
To JENNER MEMORIAL FUND—							
Amount received from the Committee of the Jenner Memorial Fund ... ..					5,768	0	11
To YERSIN LABORATORY FUND... ..					1,445	5	0
To SINKING FUND ... ..					1,555	6	8
To CAPITAL FUND—							
Balance as per last account, 31st December, 1905 ... ..	312,603	9	6				
<i>Add</i>							
Balance of Chelsea Gardens Department Income and Expenditure Account, being excess of Income over Expenditure, for the year ending 31st December, 1906 ... ..				164	19	2	
Balance of Elstree Department Income and Expenditure Account, being excess of Income over Expenditure for the year ending 31st December, 1906 ... ..				115	15	8	
				—————	280	14	10
					—————	312,884	4 4

J. L. PATTISSON,  
*Hon. Treasurer.*

£352,070 15 10

In accordance with the provisions of the Companies' Act, 1900, we certify that all our requirements as Sheet, and in our opinion such Balance Sheet is full and fair and properly drawn up, so as to exhibit a true

*London, 10th April, 1907.*

# of Preventive Medicine.

31st DECEMBER, 1906.

Cr.

	£	s.	d.	£	s.	d.
BY CASH—						
At Bankers, Current Account ... ..	1,158	1	3			
In hand... ..	12	3	8			
				1,170	4	11
BY INVESTMENTS (at cost)—						
Mortgage on Freehold Property, Liscombe Estate, at 3 per cent.	20,000	0	0			
£2,900 New South Wales 3½ per cent. Stock 1918 ... ..	2,897	16	0			
£1,000 Cape of Good Hope 3½ per cent. Stock ... ..	1,000	0	0			
£1,500 City of Sydney 4 per cent. Bonds ... ..	1,500	0	0			
£353 North Eastern Railway 4 per cent. Guaranteed Stock ...	499	11	0			
				25,897	7	0
BY INVESTMENTS, LORD IVEAGH'S DONATION (at cost)—						
£25,000 2s. 6d. New Zealand Government 3 per cent. Inscribed Stock 1945 ... ..	24,117	17	6			
£25,000 Victorian Government 3 per cent. Inscribed Stock 1929-1949 ... ..	23,875	0	0			
£25,000 Natal 3 per cent. Inscribed Stock 1929-1949 ... ..	24,484	7	6			
£25,000 New South Wales Government 3 per cent. Inscribed Stock 1935 ... ..	24,937	10	0			
£26,100 South Australian Government 3 per cent. Consolidated Stock 1916 ... ..	24,860	5	0			
£25,000 Cape of Good Hope 3 per cent. Inscribed Stock, 1933-1943 ... ..	23,850	0	0			
£25,000 London and South-Western Railway 4 per cent. Preferred Converted Ordinary Stock ... ..	32,000	0	0			
£25,000 Great Northern Railway 3 per cent. Preference Stock 1898 ... ..	26,000	0	0			
£25,000 Midland Railway 2½ per cent. Preferred Converted Ordinary Stock ... ..	20,375	0	0			
£25,000 East India Railway 3 per cent. New Debenture Stock ... ..	25,500	0	0			
				250,000	0	0
BY INVESTMENTS, JENNER MEMORIAL FUND (at cost)—						
£2,660 Southwark and Vauxhall Water Co. 3 per cent. Debenture Stock "B" ... ..	2,756	10	0			
£2,660 South Eastern Railway 3 per cent. Preference Stock 1898 ... ..	2,740	5	0			
£300 11s. Liverpool Corporation 3 per cent. Stock ... ..	271	5	11			
				5,768	0	11
BY INVESTMENT, SINKING FUND (at cost)—						
£1,440 15s. 9d. 2½ per cent. Consols ... ..				1,309	9	5
(The above investments, at the market value, 31st December, 1906, show a depreciation.)						
BY DEBTORS ... ..				2,191	5	0
BY STOCK OF TUBERCULIN, MALLEIN, ANTI-BACTERIAL VACCINES, &c. ... ..				198	6	0
BY FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS AND BOOKS, as per last Account, 31st Dec., 1905 ... ..				2,830	13	0
BY EXPENDITURE ON INSTITUTE BUILDING AT CHELSEA—						
As per Account, 31st May, 1900, including purchase of freehold site, £6,000 ... ..				42,967	5	8
BY QUEENSBERRY LODGE FARM, ELSTREE—						
Purchase of freehold land and buildings and Expenditure on new buildings, as per last Account, 31st Dec., 1905 ... ..				15,406	16	10
Stock of Animals and Forage ... ..	414	4	3			
Stock of Anti-Toxins, Bottles, &c. ... ..	3,097	12	3			
Stable Utensils, Farm Implements, and Sheds, as per Account, 31st December, 1903 ... ..	138	1	4			
Laboratory Apparatus, as per Account, 31st Dec., 1903 ... ..	466	1	3			
Furniture, as per Account, 31st Dec., 1903 ... ..	215	8	0			
				4,331	7	1

£352,070 15 10

Auditors have been complied with, and we report to the Members that we have audited the above Balance and correct view of the state of the Institute's affairs as shown by the books of the Institute.



# The Lister Institute

Dr.	Chelsea Gardens Department.—INCOME AND EXPENSE						
	INCOME.				£ s. d.		
To Donations for Special Researches	...	...	...	...	550	0	0
To Interest and Dividends on Investments	...	...	...	...	8,471	1	9
To Diagnosis and Analysis Fees, &c.	...	...	...	...	1,061	1	2
To Research Fees	...	...	...	...	24	0	0
To Sales of Tuberculin, Mallein, Anti-Bacterial Vaccines, &c.	...	...	...	449	2	3	
<i>Add</i> Stock of Tuberculin and Mallein, Anti-Bacterial Vaccines, etc., 31st December, 1906	...	...	...	198	6	0	
				647	8	3	
<i>Deduct</i> Stock of Tuberculin and Mallein, 31st December, 1905				45	0	0	
				602	8	3	
To Rent of Laboratories received from the Local Government Board	...	...	...	815	0	0	
				£11,523 11 2			

Dr.	Elstree Department.—INCOME AND EXPENDITURE									
	INCOME.				£ s. d.			£ s. d.		
To Sale of Antitoxins, &c.	...	...	...	...	4,510	8	3			
<i>Add</i> Stock, 31st December, 1906	...	...	...	...	3,069	8	3			
					7,579	16	6			
<i>Deduct</i> Stock, 31st December, 1905	...	...	...	...	3,250	0	0			
					4,329	16	6			
To Rent of quarters to Research Students at Elstree	...	...	...	...	11	12	0			
					£4,341 8 6					

# of Preventive Medicine.

EXPENDITURE ACCOUNT for the Year ending 31st December, 1906.

Cr.

EXPENDITURE.		£	s.	d.
By Rates, Taxes, and Insurance	...	426	1	3
By Salaries, and Wages of Staff	...	5,742	8	6
By Honorarium to Dr. Allan Macfadyen	...	2,400	0	0
By Stationery, Printing and Postage	...	147	7	0
By Office Expenses and Sundries	...	155	16	8
By Bank Charges	...	4	9	4
By Travelling Expenses	...	11	1	9
By Auditors' Fee	...	21	0	0
By Gas and Water	...	284	18	4
By Electric Light and Power	...	86	12	6
By Fuel	...	70	14	9
By Director's Laboratory Expenses including Apparatus	...	66	8	3
By Bacteriological Laboratory Expenses including Apparatus	...	204	12	9
By Water Laboratory Expenses including Apparatus	...	72	5	10
By Pathological Chemistry Department Expenses	...	54	0	10
By Culture Media	...	51	0	5
By Animals	...	123	16	3
By Animal House Expenses	...	57	10	11
By Repairs and Alterations to Buildings and Apparatus, including Workshop Tools	...	146	4	11
By Library Expenses	...	113	17	6
By General Stores	...	48	5	10
By Protozoological Expenses including Apparatus	...	276	12	10
By Respiratory Chamber and House	...	608	5	7
By Sinking Fund ( $\frac{1}{2}$ % per annum on Cost of Building)	...	185	0	0
		<u>11,358</u>	<u>12</u>	<u>0</u>
By Balance, being Excess of Income over Expenditure Transferred to Capital Fund (see Balance Sheet)	...	164	19	2
		<u>£11,523</u>	<u>11</u>	<u>2</u>

EXPENDITURE ACCOUNT for the Year ending 31st December, 1906.

Cr.

EXPENDITURE.		£	s.	d.
By Rent, Taxes, and Insurance	...	114	14	2
By Salaries and Wages	...	2,282	15	4
By Animals—				
Stock 31st December, 1905	...	445	17	2
Purchased during the year ending 31st December, 1906	...	63	11	0
		<u>509</u>	<u>8</u>	<u>2</u>
Deduct—Sales during the year ending				
31st December, 1906	...	46	8	1
Stock, 31st December, 1906	...	346	14	3
		<u>393</u>	<u>2</u>	<u>4</u>
			<u>116</u>	<u>5</u>
By Forage—				
Stock 31st December, 1905	...	63	0	0
Purchases during the year ending 31st December, 1906	...	468	1	11
		<u>531</u>	<u>1</u>	<u>11</u>
Deduct—Stock 31st December, 1906	...	67	10	0
			<u>463</u>	<u>11</u>
By Stable and other Expenses including Utensils	...	23	17	7
By Farm Expenses including Implements	...	52	10	5
By Gas, Water, and Fuel	...	190	14	1
By Postages and Telegrams	...	11	12	3
By Advertising	...	38	10	9
By Laboratory Expenses, including Cost of Bottles, Chemicals and Apparatus	...	579	10	4
By Travelling Expenses	...	10	12	1
By Interest on Loan from Bankers	...	77	1	7
By Bank Charges	...	1	8	3
By Farm Office Expenses and Printing	...	23	13	8
By Repairs and Alterations	...	175	16	10
By Bad Debts	...	2	0	6
By Sinking Fund ( $\frac{1}{2}$ % per annum on Estimated Cost of Buildings)	...	60	17	3
		<u>£4,225</u>	<u>12</u>	<u>10</u>
By Balance being Excess of Income over Expenditure transferred to Capital Fund (See Balance Sheet)	...	115	15	8
		<u>£4,341</u>	<u>8</u>	<u>6</u>

SCIENTIFIC PAPERS PUBLISHED FROM THE LABORATORIES  
OF THE INSTITUTE DURING 1906-7



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- ARNIT, H. W., AND HARDEN, A. THE QUANTITATIVE ESTIMATION OF SMALL QUANTITIES OF NICKEL IN ORGANIC SUBSTANCES. *Proc. Royal Society, B.* Vol. 77, 1906.
- BAINBRIDGE, F. A., AND LEATHES, J. B. ... THE EFFECT OF ARTERIAL OR VENOUS OBSTRUCTION UPON THE NUTRITION OF THE LIVER CELLS. *Bio-Chemical Journal*, Vol. I., 1906.
- BARRATT, J. O. WAKELIN ... THE STAINING ACT: AN INVESTIGATION INTO THE NATURE OF METHYLENE-BLUE-EOSIN STAINING. *Bio-Chemical Journal*, Vol. I., 1906. *Zeitsch. f. Physikalische Chemie*, Vol. LVIII., 1907.
- BARRATT, J. O. WAKELIN ... DIE REAKTIONSGESCHWINDIGKEIT ZWISCHEN OPSONIN UND DER ROTEN BLUTZELLE.
- BARRATT, J. O. WAKELIN ... ON OPSONINS IN RELATION TO RED BLOOD CELLS. *Proc. Royal Society, B.* Vol. 79, 1907.
- BOYCOTT, A. E. ... OBSERVATIONS ON THE BACTERIOLOGY OF PARA-TYPHOID FEVER AND ON THE REACTIONS OF TYPHOID AND PARA-TYPHOID SERA. *Journal of Hygiene*, Vol. VI., 1906.
- CATHCART, E. P.... THE TOXIN OF THE BACILLUS ENTERITIDIS OF GARTNER. *Journal of Hygiene*, Vol. VI., 1906.
- CATHCART, E. P.... UPON THE REDUCTION OF METHYLENE BLUE BY COW'S MILK. *Journal of Hygiene*, Vol. VI., 1906.
- CATHCART, E. P.... THE BACTERIAL FLORA OF "BLOWN" TINS OF PRESERVED FOOD. *Journal of Hygiene*, Vol. VI., 1906.
- CATHCART, E. P.... ON THE ABSORPTION OF PROTEIDS FROM THE INTESTINE. *Journal of Physiology*, Vol. XXXIII., 1906.
- CRAW, J. A. ... ON THE FILTRATION OF CRYSTALLOIDS AND COLLOIDS THROUGH GELATINE: WITH SPECIAL REFERENCE TO THE BEHAVIOUR OF HAEMOLYSINS. *Proc. Royal Society, B.* Vol. 77, 1906.
- DEAN, GEORGE ... RESEARCHES ON CERTAIN PROBLEMS OF PLAGUE IMMUNITY. *Studies in Pathology of the University of Aberdeen*, 1906.
- GREEN, ALAN B. ... NOTE ON THE INFLUENCE OF THE CHEMICAL RAYS OF DAYLIGHT ON VACCINATED ANIMALS. *Journal of Hygiene*, Vol. VII., 1907.
- HARDEN, A. ... ON VOGES AND PROSKAUER'S REACTION FOR CERTAIN BACTERIA. *Proc. Royal Society, B.* Vol. 77, 1906.
- HARDEN, A., AND YOUNG, W. J. THE ALCOHOLIC FERMENT OF YEAST-JUICE. *Proc. Royal Society, B.* Vol. 77, 1906.
- HARDEN, A., AND YOUNG, W. J. THE ALCOHOLIC FERMENT OF YEAST-JUICE. Part ii.—THE COFERMENT OF YEAST-JUICE. *Proc. Royal Society, B.* Vol. 78, 1906.
- HARDEN, A., AND YOUNG, W. J. THE INFLUENCE OF ARSENATES ON THE FERMENTATION OF GLUCOSE BY YEAST-JUICE. *Proc. Chem. Soc.* 1906.
- HARDEN, A., & WALPOLE, G. S. CHEMICAL ACTION OF BACILLUS LACTIS AEROGENES (ESCHERICH) ON GLUCOSE AND MANNITOL: PRODUCTION OF 2:3-BUTYLENEGLYCOL AND ACETYLMETHYLCARBINOL. *Proc. Royal Society, B.* Vol. 77, 1906.

- HEDIN, S. G. ... .. TRYPSIN AND ANTITRYPSIN. *Bio-Chemical Journal*, Vol. II., 1906.
- HEDIN, S. G. ... .. AN EXPLANATION OF THE INFLUENCE OF ACID AND ALKALI ON THE AUTOLYSIS OF ORGANS. *Festschrift für Olaf Hammarsten*, Vol. VI., 1906.
- HEDIN, S. G. ... .. AN ANTITRYPTIC EFFECT OF CHARCOAL AND A COMPARISON BETWEEN THE ACTION OF CHARCOAL AND THAT OF THE TRYPTIC ANTIBODY IN THE SERUM. *Bio-Chemical Journal*, Vol. II., 1906.
- HEDIN, S. G. ... .. FURTHER OBSERVATIONS ON THE TIME-RELATIONS IN THE ACTION OF TRYPSIN. *Journal of Physiology*, Vol. XXXIV., 1906.
- HEDIN, S. G. ... .. ON EXTRACTION BY CASEIN OF TRYPSIN, ADSORBED BY CHARCOAL. *Bio-Chemical Journal*, Vol. II., 1907.
- HEDIN, S. G. ... .. A CASE OF SPECIFIC ADSORPTION OF ENZYMES. *Bio-Chemical Journal*, Vol. II., 1907.
- LEATHES, J. B. ... .. ON DIURNAL AND NOCTURNAL VARIATIONS IN THE EXCRETION OF URIC ACID. *Journal of Physiology*, Vol. XXXV., 1906.
- LEDINGHAM, J. C. G. ... .. ON THE RELATION OF THE ANTITOXIN TO THE GLOBULIN CONTENT OF THE BLOOD SERUM DURING DIPHTHERIA IMMUNISATION. *Journal of Hygiene*, Vol. VII., 1907.
- LEDINGHAM, J. C. G. ... .. NOTES ON THE LEUCOCYTE REACTION DURING THE IMMUNISATION OF THE HORSE AND GOAT WITH DIPHTHERIA TOXIN. *Journal of Hygiene*, Vol. VII., 1907.
- MACCONKEY, ALFRED ... .. ON THE LIQUEFACTION OF GELATIN BY THE BACILLUS CLOACAE. *Journal of Hygiene*, Vol. VI., 1906.
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- MACFADYEN, ALLAN ... .. UPON THE PROPERTIES OF AN ANTITYPHOID SERUM OBTAINED FROM THE GOAT. *Proc. Royal Society, B*, Vol. 77, 1906.
- MARSHALL, W. E. ... .. NOTE ON THE OCCURRENCE OF DIPHTHERIA BACILLI IN MILK. *Journal of Hygiene*, Vol. VII., 1907.
- MINCHIN, E. A. ... .. ON THE OCCURRENCE OF ENCYSTATION IN TRYPANOSOMA GRAYI NOVY, WITH REMARKS ON THE METHOD OF INFECTION IN TRYPANOSOMES GENERALLY. *Proc. Royal Society, B*, Vol. 79, 1907.
- MORGAN, H. DE R. ... .. UPON THE BACTERIOLOGY OF THE SUMMER DIARRHŒA OF INFANTS. *British Medical Journal*, Vol. I., 1906.
- NOON, L. ... .. ON THE OCCURRENCE OF TOXIC COMPOUNDS OF TETANUS TOXIN AND ANTITOXIN AND TETANUS TOXIN AND BRAIN EMULSIONS. *Journal of Hygiene*, Vol. VII., 1907.
- PLIMMER, H. G. ... .. FURTHER OBSERVATIONS ON THE EFFECTS PRODUCED ON RATS BY THE TRYPANOSOMES OF GAMBIA FEVER AND SLEEPING SICKNESS. *Proc. Royal Society*, Vol. 79, 1907. Series B.
- RAPER, H. S. ... .. NOTE ON THE OCCURRENCE OF D. OCTOIC (CAPRYLIC) ACID, IN THE BUTYRIC FERMENTATION; (b) THE CONSTITUTION OF THE HEXOIC ACID IN BUTTER FAT. *Proc. Physiol. Society*, Feb., 1907. *Journal of Physiol.*, Vol. 35, 1907.
- THOMSON, JOHN D. ... .. BLOOD PARASITES OF THE MOLE, INCLUDING A NEW FORM OF INTRA-CORPUSCULAR PARASITE. *Journal of Hygiene*, Vol. VI., 1906.
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**Eisler Institute of Preventive  
Medicine.**

CHELSEA GARDENS,  
LONDON, S.W.

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**ANNUAL REPORT**

AND

**BALANCE SHEET.**

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*April 18, 1907.*

**PRIVATE.**

FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE ONLY.

**MAY, 1908.**

# The Lister Institute of Preventive Medicine.

CHELSEA GARDENS, CHELSEA BRIDGE ROAD,  
LONDON, S.W.; AND  
QUEENSBERRY LODGE, ELSTREE, HERTS.

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**President :**

THE LORD LISTER, P.C., O.M., F.R.S.

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**THE GOVERNING BODY.**

SIR HENRY E. ROSCOE, D.C.L., F.R.S., *Chairman.*

THE VISCOUNT IVEAGH, K.P., F.R.S.

COLONEL DAVID BRUCE, R.A.M.C., C.B., F.R.S.

J. ROSE BRADFORD, M.D., F.R.S.

PROFESSOR W. OSLER, M.D., D.Sc., F.R.S.

J. LUARD PATTISSON, C.B., *Hon. Treasurer.*

PROFESSOR ERNEST H. STARLING, M.D., F.R.S.

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**THE SCIENTIFIC STAFF.**

**Director :**

C. J. MARTIN, M.B., D.Sc., F.R.S.

**Bacteriological, Antitoxin and Vaccine Department :**

GEORGE DEAN, M.A., C.M., M.B., *Bacteriologist-in-Chief.* A. T. MacCONKEY, M.B., B.C., D.P.H.,  
*Bacteriologist in charge of Serum Laboratories.* ALAN B. GREEN, M.A., M.D., B.C., *Bacteriologist in charge*  
*of Calf Vaccine Laboratories.* J. C. G. LEDINGHAM, M.A., M.B., B.Sc.; W. E. MARSHALL, M.B., Ch.B.,  
D.P.H.; G. F. PETRIE, M.D.; J. HENDERSON SMITH, M.B., Ch.B., *Assistants.*

F. A. BAINBRIDGE, M.D., D.P.H., *Jenner Memorial Student.*

**Department of Bio-Chemistry :**

A. HARDEN, D.Sc., Ph.D., *Chemist in Chief.* J. B. LEATHES, M.B., Ch.B., F.R.C.S., *Chemist in Charge of*  
*Laboratories for Pathological Chemistry.* W. J. YOUNG, M.Sc., *Assistant.* PERCIVAL HARTLEY, B.Sc.,  
*Grocers' Research Student.* JAMES THOMPSON, Ph.D., *Research Student.*

**Department of Protozoology .**

E. A. MINCHIN, M.A., *Professor of Protozoology in the University of London.* J. D. THOMSON, M.A.,  
M.B., C.M.; H. M. WOODCOCK, D.Sc., *Assistants.*

**Director's Laboratory :**

MISS HARRIETTE CHICK, D.Sc.; SYDNEY ROWLAND, M.A., M.R.C.S., *Assistants.*

MISS LANE-CLAYPON, M.B., D.Sc., *Jenner Memorial Student.*

**Assistant Secretary and Accountant :**

Mr. GEORGE COOPER.





ANNUAL GENERAL MEETING  
OF  
**The Lister Institute of Preventive Medicine.**

MAY 13TH. 1908.

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**REPORT OF THE GOVERNING BODY.**

The Governing Body are glad to report continued development and progress both in the research and general work of the Institute.

The Governing Body record with regret the death of Sir Joseph Fayrer, a member of the Council. Sir Joseph Fayrer was one of the original members of the Council of the College of State Medicine, which was amalgamated with the Institute, and in the early years of the Institute's existence took an active part in its development.

The following changes and additions to the scientific staff have occurred :

Drs. Rowland and Petrie, lately members of the Commission for investigation of plague in India, have re-assumed their work at the Institute.

In September Dr. Boycott resigned his position in the Bacteriological department on being appointed Lecturer on Pathology to Guy's Hospital. Dr. J. Henderson Smith has been appointed an Assistant Bacteriologist to the Institute, and Miss Harriette Chick, D.Sc., formerly Jenner Memorial Student, has been appointed an Assistant in the Director's Laboratory.

Dr. James Thompson has been appointed to a Research Studentship in the department of Bio-chemistry, and Dr. F. A. Bainbridge and Miss Lanc-Claypon, M.B., D.Sc., to Jenner Memorial Research Studentships.

In addition to the individual researches which have been conducted in the various laboratories, the general scope of which may be gathered from the list of scientific papers published during the year appended to this report, certain organised enquiries with a definite object, with which the Institute has been concerned, deserve mention.

The Commission for the Investigation of Plague in India still continues its investigations. During the year the second and third reports of the Commission were published in special numbers of the *Journal of Hygiene*, and a fourth report is at present in the press. This will complete the publication of the results of the programme originally drawn up by the Advisory Committee.

The work of the Commission has afforded a satisfactory interpretation of the main features of the epidemic spread of plague in India. Further problems, however, demanded solution, and the Committee indicated to the Government of India their readiness to continue the enquiry if desired. The Government of India having welcomed this suggestion, Dr. Martin visited India early in January of this year to confer with the Indian Authorities and the members of the Commission, and to make arrangements for further investigations. The programme for future enquiries having been approved by the members of the Advisory Committee, further work was undertaken in Bombay City and two other towns in the Presidency.

The investigations into the circumstances attending the accidents in deep sea diving and caisson-working have been concluded during the year. These investigations were rendered possible, as mentioned in the last report, by the gift of a large steel pressure chamber from Dr. Ludwig Mond, F.R.S., and substantial help towards the expenses of these researches from the engineering and contracting firms of Messrs. John Aird & Sons, S. Pearson & Son, Price & Reeves, and from the late Mr. Basil P. Ellis. Some portion of the results of the investigations was published in an Appendix to the Report of a Committee appointed by the Admiralty to consider the conditions of Deep Sea Diving, issued as a Parliamentary Blue Book in 1907, and the complete results will appear in the forthcoming number of the *Journal of Hygiene*.

The investigation undertaken for the Royal Commission on Mines into the merits of the various forms of breathing apparatus for use in Mines, mentioned in the previous annual report of the Institute, has been completed, and published as an Appendix to the First Report of the Royal Commission on Mines, issued as a Parliamentary Blue Book in 1907.

The Institute has also, at the request of the Principal Chemist to the Government, drawn up a scheme for the standardisation of disinfectants. This has been adopted by the Board of Trade and other of the Government departments. To accomplish this satisfactorily it was found necessary to obtain further knowledge concerning the laws governing the process of disinfection. This research was carried out by Miss Harriette Chick, D.Sc., and the results have been published in the *Journal of Hygiene*, Vol. VIII., 1908.

During the months of August and September, 1907, a concerted enquiry into the aetiology of the summer diarrhoea of infants was undertaken by the Institute. The Committees and Medical Staffs of the four principal Children's Hospitals in London were approached and afforded every assistance towards obtaining the necessary material. A staff of eight workers was engaged in the selection of the material and the isolating and identification of the organisms present in it.

The search for a causal agent was in the first instance confined to the group of non-lactose fermenting bacilli, in view of the importance of this group in known diseases of the alimentary canal. Moreover, the researches of Dr. Morgan, conducted at the Institute during the two previous summers, had shown good grounds for regarding as highly significant the frequent association of a particular organism of this group discovered by him with cases of this disease.

The summer was, however, owing to the absence of hot weather, unfavourable to the epidemic, but all available cases (191) were examined and the non-lactose fermenting bacteria isolated and identified.

The results of the investigation confirmed those previously obtained by Dr. Morgan. With the development of the epidemic the bacillus previously discovered by him assumed predominance, and the incidence of this bacillus in the cases examined during August and September showed a striking parallelism to the general mortality from infantile diarrhoea during the same period. The results of the enquiry, as far as it has progressed at present, are ready for publication, and it is hoped that a continuation may be possible during the ensuing summer.

In addition to the regular Staff and the holders of Research Studentships, Drs. H. C. Plimmer, J. S. Haldane, F.R.S., Morgan, Armit, Arkwright, Bayon, Duncan Reid, Cumpston, Cathcart, Mavrogordato, Jex Blake, A. White Robertson, Stawell, E. S. Gilbert, L. Noon, E. L. Kennaway, Bradley, and H. D. McCulloch, Colonel Alcock, I.M.S., Major Leonard Rogers, I.M.S., Captain Bateman, R.A.M.C., Captain Hamerton, R.A.M.C., Lieut. Damant, R.N., and Messrs. Raper and Walpole, have been engaged in researches in the various laboratories of the Institute.

The Balance Sheet of the Institute for the year ending 31st December, 1907, is attached, and shows a satisfactory financial position.

During the past year nothing has been charged to Capital Account. The buildings of the Institute have been well maintained. All repairs, and also a sum of £462 15s. 5d. expended on new apparatus, have been debited to Revenue, and for this reason no depreciation has been written off the furniture, fittings, scientific apparatus and books, but the usual sum has been placed to the credit of the Sinking Fund.

Owing to the larger number of workers at the Institute and the consequently increased demand for facilities for research, the available laboratories are fully occupied. The Governing Body have accordingly decided to proceed at once with the completion of the original design of the Institute by building the hitherto unfinished wing.

HENRY E. ROSCOE,

*Chairman.*

# The Lister Institute

## BALANCE SHEET,

Dr.

	£	s.	d.	£	s.	d.
To CREDITORS .. .. .				804	2	4
To WATER LABORATORY FUND—						
Amount received from the Trustees of the late Richard Berridge, for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory .. .. .				26,352	13	10
To JENNER MEMORIAL FUND—						
Amount received from the Committee of the Jenner Memorial Fund .. .. .				5,768	0	11
To YERSIN LABORATORY FUND .. .. .				1,445	5	0
To SINKING FUND .. .. .				1,843	4	0
To CAPITAL FUND—						
Balance as per last account, 31st December, 1906 .. .. .				312,884	4	4
<i>Add</i>						
Balance of Chelsea Gardens Department Income and Expenditure Account, being excess of Income over Expenditure, for the year ending 31st December, 1907 .. .. .				2,135	12	6
Balance of Elstree Department Income and Expenditure Account, being excess of Income over Expenditure for the year ending 31st December, 1907 .. .. .				2,315	4	4
				—————		
					4,450	16 10
					—————	
					317,335	1 2

J. LUARD PATFISSON,

*Hon. Treasurer.*

£353,548 7 3

In accordance with the provisions of the Companies' Act, 1900, we certify that all our requirements as Sheet, and in our opinion such Balance Sheet is full and fair and properly drawn up, so as to exhibit a true

London, April 7th, 1908.

# of Preventive Medicine.

31st DECEMBER, 1907.

Cr.

	£	s.	d.	£	s.	d.
By CASH—						
At Bankers, Deposit Account ... ..	1,500	0	0			
„ „ Current Account ... ..	1,219	9	9			
In hand ... ..	17	7	0			
						2,736 16 9
By INVESTMENTS (at cost)—						
£5,000 Great Northern Railway 3 per cent. Debenture Stock	4,570	11	0			
£5,000 Lancashire and Yorkshire Railway 3 per cent. Consolidated Preference Stock ... ..	4,520	3	6			
£4,900 London and North-Western Railway 4 per cent. Consolidated Preference Stock ... ..	5,940	5	0			
£5,000 Great Central and Midland Railway Joint Committee 3½ per cent. Guaranteed Stock ... ..	5,123	19	3			
£2,900 New South Wales 3½ per cent. Stock 1918 ... ..	2,897	16	0			
£1,000 Cape of Good Hope 3½ per cent. Stock ... ..	1,000	0	0			
£1,500 City of Sydney 4 per cent. Bonds... ..	1,500	0	0			
£353 North Eastern Railway 4 per cent. Guaranteed Stock ... ..	499	11	0			
						26,052 5 9
By INVESTMENTS, LORD IVEAGH'S DONATION (at cost)—						
£25,006 2s. 6d. New Zealand Government 3 per cent. Inscribed Stock, 1945 ... ..	24,117	17	6			
£25,000 Victorian Government 3 per cent. Inscribed Stock 1929-1949 ... ..	23,875	0	0			
£25,000 Natal 3 per cent. Inscribed Stock 1929-1949 ... ..	24,484	7	6			
£25,000 New South Wales Government 3 per cent. Inscribed Stock, 1935 ... ..	24,937	10	0			
£26,100 South Australian Government 3 per cent. Consolidated Stock 1916 ... ..	24,860	5	0			
£25,000 Cape of Good Hope 3 per cent. Inscribed Stock, 1933-1943 ... ..	23,850	0	0			
£25,000 London and South-Western Railway 4 per cent. Preferred Converted Ordinary Stock ... ..	32,000	0	0			
£25,000 Great Northern Railway 3 per cent. Preference Stock 1898 ... ..	26,000	0	0			
£25,000 Midland Railway 2½ per cent. Preferred Converted Ordinary Stock ... ..	20,375	0	0			
£25,000 East Indian Railway 3 per cent. New Debenture Stock ... ..	25,500	0	0			
						250,000 0 0
By INVESTMENTS, JENNER MEMORIAL FUND (at cost)—						
£2,650 Southwark and Vauxhall Water Co. 3 per cent. Debenture Stock "B" ... ..	2,756	10	0			
£2,660 South Eastern Railway 3 per cent. Preference Stock 1898 ... ..	2,740	5	0			
£300 11s. Liverpool Corporation 3 per cent. Stock ... ..	271	5	11			
						5,768 0 11
By INVESTMENT, SINKING FUND (at cost)—						
£1 774 4s. 0d. 2½ per cent Consols ... ..						1,597 6 9
(The above investments, at the market value, 31st December, 1907, show a depreciation.)						
By DEBTORS ... ..						2,156 3 6
By STOCK OF TUBERCULIN, MALLEIN, ANTI-BACTERIAL VACCINES, &c. ... ..						205 9 9
By FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS AND BOOKS, as per Account, 31st Dec., 1905 ... ..						2,830 13 0
By EXPENDITURE ON INSTITUTE BUILDING AT CHELSEA—						
As per Account, 31st May, 1900, including purchase of freehold site, £6,000 ... ..						42,967 5 8
By QUEENSBERRY LODGE FARM, ELSTREE—						
Purchase of freehold land and buildings and Expenditure on new buildings, as per Account, 31st Dec., 1905 ... ..						15,406 16 10
Stock of Animals and Forage ... ..	345	18	9			
Stock of Anti-Toxins, Bottles, &c. ... ..	2,661	19	0			
Stable Utensils, Farm Implements, and Sheds, as per Account, 31st December, 1903 ... ..	138	1	4			
Laboratory Apparatus, as per Account, 31st Dec., 1903 ... ..	466	1	3			
Furniture, as per Account, 31st Dec., 1903 ... ..	215	8	0			
						3,827 8 4
						£353,548 7 3

Auditors have been complied with, and we report to the Members that we have audited the above Balance and correct view of the state of the Institute's affairs as shown by the books of the Institute.

COOPER BROTHERS & CO.,

Chartered Accountants.

Auditors.

# The Lister Institute

Dr.	Chelsea Gardens Department.—INCOME AND EXPENDITURE					
	INCOME.					
To Donations for Special Researches ...	...	...	...	...	...	£ s. d. 250 0 0
To Interest and Dividends on Investments ...	...	...	...	...	...	8,498 10 9
To Diagnosis and Analysis Fees, &c. ...	...	...	...	...	...	1,249 13 7
To Research Fees ...	...	...	...	...	...	24 0 0
To Sales of Tuberculin, Mallein, Anti-Bacterial Vaccines, &c. ...				420	14 1	
<i>Add</i> Stock of Tuberculin and Mallein, Anti-Bacterial Vaccines, etc., 31st December, 1907 ...	...	...	...	205	9 9	
				-----		
				626	3 10	
<i>Deduct</i> Stock of Tuberculin and Mallein, 31st December, 1906				198	6 0	
				-----		
						497 17 10
To Rent of Laboratories received from the Local Government Board	...	...	...	...	...	407 10 0
						-----
						£10,857 12 2

Dr.	Elstree Department.—INCOME AND EXPENDITURE					
	INCOME.					
To Sale of Antitoxins, &c. ...	...	...	...	...	...	£ s. d. 5,773 10 4
<i>Add</i> Stock, 31st December, 1907	...	...	...	...	...	2,571 4 6
						-----
				8,344	14 10	
<i>Deduct</i> Stock, 31st December, 1906	...	...	...	3,069	8 3	
				-----		
						5,275 6 7
						-----
						£5,275 6 7

# Preventive Medicine.

EXPENDITURE ACCOUNT for the Year ending 31st December, 1907.

Cr.

EXPENDITURE.		£	s.	d.
By Rates, Taxes, and Insurance	...	433	9	9
By Salaries, and Wages of Staff	...	5,591	9	10
By Law Charges...	...	1	11	6
By Stationery, Printing, Postage, and Advertising	...	193	17	6
By Office Expenses and Sundries	...	161	14	7
By Bank Charges ...	...	2	14	0
By Travelling Expenses	...	9	12	9
By Auditors' Fee ...	...	21	0	0
By Gas and Water	...	309	18	4
By Electric Light and Power	...	110	18	5
By Fuel ...	...	75	16	6
By Director's Laboratory Expenses including General Apparatus	...	187	15	10
By Bacteriological Laboratory Expenses including Apparatus	...	206	13	7
By Water and Bio-chemical Laboratory Expenses including Apparatus	...	104	5	4
By Furniture	...	57	11	6
By Culture Media...	...	55	9	0
By Animals	...	94	4	8
By Animal House Expenses	...	124	7	3
By Repairs and Alterations to Buildings and Apparatus, including Workshop Tools...	...	537	0	2
By Library Expenses	...	117	3	3
By General Stores	...	38	19	0
By Protozoological Expenses including Apparatus	...	98	0	3
By Bad Debts	...	3	6	8
By Sinking Fund ( $\frac{1}{2}$ % per annum on Cost of Building) ...	...	185	0	0
		8,721	19	8
By Balance, being Excess of Income over Expenditure Transferred to Capital Fund (see Balance Sheet) ...	...	2,135	12	6
		£10,857	12	2

EXPENDITURE ACCOUNT for the Year ending 31st December, 1907.

Cr.

EXPENDITURE.		£	s.	d.
By Rent, Taxes, and Insurance	...	119	10	10
By Salaries and Wages	...	1,429	14	6
By Animals—				
Stock 31st December, 1906	...	346	14	3
Purchased during the year ending 31st December, 1907...	...	101	10	11
		448	5	2
Deduct—Sales during the year ending 31st December, 1907	...	9	8	0
Stock, 31st December, 1907	...	255	18	9
		265	6	9
		182	18	5
By Forage—				
Stock 31st December, 1906...	...	67	10	0
Purchases during the year ending 31st December, 1907...	...	358	17	4
		426	7	4
Deduct—Stock 31st December, 1907	...	90	0	0
		336	7	4
By Stable and other Expenses including Utensils	...	26	12	4
By Farm Expenses including Implements	...	46	5	10
By Gas, Water, and Fuel	...	186	16	5
By Postages and Telegrams	...	14	0	4
By Laboratory Expenses, including Cost of Bottles, Chemicals and Apparatus	...	437	11	5
By Travelling Expenses	...	13	14	5
By Interest on Loan from Bankers	...	13	0	6
By Bank Charges	...	0	4	2
By Farm Office Expenses and Printing	...	12	1	0
By Repairs and Alterations...	...	80	7	6
By Sinking Fund ( $\frac{1}{2}$ % per annum on Estimated Cost of Buildings)	...	60	17	3
		£2,960	2	3
By Balance being Excess of Income over Expenditure transferred to Capital Fund (See Balance Sheet) ...	...	2,315	4	4
		£5,275	6	7



SCIENTIFIC PAPERS PUBLISHED FROM THE LABORATORIES OF  
THE INSTITUTE DURING 1907-8.



- ARMIT, H. W. ... .. THE TOXICOLOGY OF NICKEL CARBONYL. Pt. I. *Journal of Hygiene*, Vol. VII., No. 4, 1907.
- ARMIT, H. W. ... .. THE TOXICOLOGY OF NICKEL CARBONYL. Pt. II. *Journal of Hygiene*, Vol. VIII. (in the press).
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- ARKWRIGHT, J. A. .... .. OBSERVATIONS ON THE BACTERIOLOGY OF AN EPIDEMIC OF DIPHTHERIA IN A SCHOOL. *Journal of Hygiene*, Vol. VIII., No. 1, 1908.
- BOYCOTT, A. E. ... .. REPORT ON BREATHING APPARATUS. APPENDIX TO FIRST REPORT OF THE ROYAL COMMISSION ON MINES. *Parliamentary Blue Book*, 1907.
- BOYCOTT, A. E. AND DAMANT, G. C. C. A NOTE ON THE QUANTITIES OF MARSH GAS, HYDROGEN AND CARBON DIOXIDE PRODUCED IN THE ALIMENTARY CANAL OF GOATS. *Journal of Physiology*, Vol. XXXVI., Nos. 4 and 5, 1907.
- BOYCOTT, A. E. AND DAMANT, G. C. C. EXPERIMENTS IN RELATION TO DEEP WATER DIVING. APPENDIX TO REPORT OF ADMIRALTY COMMITTEE UPON THE CONDITIONS OF DEEP WATER DIVING. *Parliamentary Blue Book*, 1907.
- BOYCOTT, A. E., DAMANT, G. C. C., AND HALDANE, J. S. THE PREVENTION OF COMPRESSED AIR ILLNESS. *Journal of Hygiene*, Vol. 8, No. 2.
- CATHCART, E. P., AND LEATHES, J. B. ON THE RELATION BETWEEN THE OUTPUT OF URIC ACID AND THE RATE OF HEAT PRODUCTION IN THE BODY. *Proc. Royal Society, B.* Vol. 79, 1907.
- CHICK, HARRIETTE ... .. AN INVESTIGATION OF THE LAWS OF DISINFECTION. *Journal of Hygiene*, Vol. VIII., No. 1, 1908.
- CLAYPON, J. LANE ... .. ON THE PRESENCE OF HAEMOLYTIC FACTORS IN MILK. *Journal of Hygiene*, Vol. 8. (in the press).
- CRAW, J. A. ... .. ON VARIATION IN WEIGHT OF NORMAL GUINEA-PIGS IN RELATION TO THE ESTIMATION OF FREE DIPHTHERIA TOXIN. *Journal of Hygiene*, Vol. VII., No. 4, 1907.
- CRAW, J. A. AND DEAN, G. ... .. ON THE ESTIMATION OF FREE DIPHTHERIA TOXIN. *Journal of Hygiene*, Vol. VII., No. 4, 1907.
- CUMPSTON, H. ... .. A CONTRIBUTION TO THE BACTERIOLOGY OF POST-SCARLATINAL DIPHTHERIA. *Journal of Hygiene*, Vol. VII., No. 4, 1907.
- CUMPSTON, H. ... .. THE RELATIVE FREQUENCY OF VARIOUS TYPES OF STREPTOCOCCI IN SCARLATINA. *Journal of Hygiene*, Vol. VII., No. 4, 1907.
- DEAN, G. ... .. AN EXPERIMENTAL ENQUIRY INTO THE NATURE OF THE SUBSTANCE IN SERUM WHICH INFLUENCES PHAGOCYTOSIS. *Proc. Royal Society, B.* Vol. 79, 1907.

- DEAN, G. ... .. ON PHAGOCYTOSIS AND BACTERICIDAL ACTION. *British Medical Journal*, Vol. II., 1907.
- DEAN, G. ... .. THE SPECIFIC PROPHYLAXIS AND TREATMENT OF BACTERIAL DYSENTERY. *Journal of the Royal Army Medical Corps*, Vol. IX., Dec., 1907.
- DEAN, G. ... .. A TYPHOID CARRIER OF TWENTY-NINE YEARS' STANDING. *British Medical Journal*, Vol. I., 1908, p. 562.
- DEAN, G. ... .. IMMUNITY AND TOXIN-ANTITOXIN RELATIONSHIPS IN DIPHTHERIA, FROM "The Bacteriology of Diphtheria," by many authors. Edited by Nuttall & Graham-Smith, Cambridge, 1908.
- HARTLEY, P. ... .. ON THE NATURE OF THE FAT CONTAINED IN THE LIVER, KIDNEY, AND HEART. *Journal of Physiology*, Vol. XXXVI., No. 1, 1907.
- HARTLEY, P. AND MAVROGORDATO, A. ON THE NATURE OF THE FAT CONTAINED IN NORMAL AND PATHOLOGICAL HUMAN LIVERS. *Journal of Pathology and Bacteriology*, Vol. XII., 1908.
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- LEATHES, J. B. ... .. ON THE EXCRETION OF NITROGEN, CREATININE AND URIC ACID IN FEVER. *Journal of Physiology*, Vol. XXXV., No. 3, 1907.
- LEATHES, J. B. ... .. ACIDOSIS IN PREGNANCY. *Proc. Royal Society of Medicine*, March, 1908.
- LEDINGHAM, J. C. G. ... .. THE INHIBITORY ACTION UPON SUBSEQUENT PHAGOCYTOSIS EXERTED ON ACTIVE NORMAL SERUM BY INACTIVE NORMAL SERUM THROUGH WHICH BACILLI HAVE BEEN PASSED. *Proc. Royal Society, B*, Vol. 79, 1907.
- LEDINGHAM, J. C. G. ... .. THE PATHOLOGICAL HISTOLOGY OF THE SPLEEN AND LIVER IN SPONTANEOUS RAT-PLAGUE, WITH OBSERVATIONS ON THE EXPERIMENTAL INFECTION. *Journal of Hygiene*, Vol. VII., No. 3, 1907.
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- MACCONKEY, A. T. ... .. ON THE RESEMBLANCE BETWEEN THE BACILLUS PESTIS AND THE BACILLUS PSEUDO-TUBERCULOSIS-RODENTUM (PFEIFFER). *Journal of Hygiene*, April, 1908.
- MARSHALL, W. E. ... .. THE PARA-DIMETHYL-AMIDO-BENZALDEHYDE TEST FOR INDOLE. *Journal of Hygiene*, Vol. VII, No. 4, 1907.
- MARSHALL, W. E. ... .. THE INFLUENCE OF DILUTION OF SERUM ON ITS OPSONISING POWER. *Journal of Pathology and Bacteriology*, Vol. XII., 1908.
- MARTIN, C. J., AND LAMB, G. ... .. SNAKE-POISON AND SNAKE-BITE. From "A System of Medicine," Edited by T. Clifford Allbutt and H. D. Rolleston.
- MINCHIN, E. A. ... .. INVESTIGATIONS ON THE DEVELOPMENT OF TRYPANOSOMES IN TSETSE-FLIES AND OTHER DIPTERA. *Quarterly Journal of Microscopic Science*, Vol. 52, Part II., 1908.
- MINCHIN, E. A. ... .. ON A NEW SPECIES OF HEMOGREGARINE FROM THE BLOOD OF A HIMALAYAN LIZARD (*Agama Tuberculata*). *Proc. Zool. Soc.*, 1908 (in the press).

- MORGAN, H. DE R. ... .. UPON THE BACTERIOLOGY OF THE SUMMER DIARRHŒA OF INFANTS. (Second Communication.) *British Medical Journal*, Vol. II., 1907.
- PLIMMER, H. G. ... .. FURTHER OBSERVATIONS ON THE EFFECTS PRODUCED ON RATS BY THE TRYPANOSOMATA OF GAMBIA FEVER AND OF SLEEPING SICKNESS. *Proc. Royal Society*, B. Vol. 79, 1907.
- PLIMMER, H. G., AND THOMSON, J. D. ... .. A PRELIMINARY SUMMARY OF THE RESULTS OF THE EXPERIMENTAL TREATMENT OF TRYPANOSOMIASIS IN RATS. *Proc. Royal Society*, B. Vol. 79, 1907.
- PLIMMER, H. G., AND THOMSON, J. D. ... .. FURTHER RESULTS OF THE EXPERIMENTAL TREATMENT OF TRYPANOSOMIASIS IN RATS: BEING A PROGRESS REPORT OF A COMMITTEE OF THE ROYAL SOCIETY. *Proc. Royal Society*, B. Vol. 80, 1908.
- RAPER, HENRY S. ... .. THE CONDENSATION OF ACETALDEHYDE AND ITS RELATION TO THE BIOCHEMICAL SYNTHESIS OF FATTY ACIDS. *Journ. of Chemical Society*, Nov., 1907.
- THOMSON, J. D. ... .. CULTIVATION OF THE TRYPANOSOME FOUND IN THE BLOOD OF THE GOLD-FISH. *Journal of Hygiene*, Vol. VIII, 1908.
- WOODCOCK, H. M. (WITH JOHNSTONE, J.) ... .. ON A MYXOSPORIDIAN INFECTION OF *Gadus Esmarkii*, WITH A NOTE ON THE IDENTIFICATION OF THE PARASITE. *Trans. Biol. Soc. Liverpool*, XXI., 1907, pp. 204-208, fol. IX.



**Sister Institute of Preventive  
Medicine.**

CHELSEA GARDENS,  
LONDON, S. W.

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**ANNUAL REPORT**

AND

**BALANCE SHEET.**

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*May 18th, 1908.*

**PRIVATE.**

FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE ONLY.

**MAY, 1909.**

# The Lister Institute of Preventive Medicine.

CHELSEA GARDENS, CHELSEA BRIDGE ROAD,  
LONDON, S.W.; AND  
QUEENSBERRY LODGE, ELSTREE, HERTS.

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**President:**

THE LORD LISTER, P.C., O.M., F.R.S.

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**THE GOVERNING BODY.**

SIR HENRY E. ROSCOE, D.C.L., F.R.S., *Chairman.*

THE VISCOUNT IVEAGH, K.P., F.R.S.

COLONEL SIR DAVID BRUCE, R.A.M.C., C.B., F.R.S.

J. ROSE BRADFORD, M.D., F.R.S.

PROFESSOR W. OSLER, M.D., D.Sc., F.R.S.

J. LUARD PATTISSON, C.B., *Hon. Treasurer.*

PROFESSOR ERNEST H. STARLING, M.D., F.R.S.

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**THE SCIENTIFIC STAFF.**

**Director:**

C. J. MARTIN, M.B., D.Sc., F.R.S.

**Department of Bacteriology:**

J. C. G. LEDINGHAM, M.A., M.B., B.Sc., *Bacteriologist-in-Chief at Chelsea.* G. F. PETRIE, M.D.;

J. HENDERSON SMITH, M.B., Ch.B.; J. A. ARKWRIGHT, M.A., M.B., B.Sc., *Assistants.*

F. A. BAINBRIDGE, M.D., D.P.H., *Jenner Memorial Student.*

**Department of Bio-Chemistry:**

A. HARDEN, D.Sc., Ph.D., F.R.S., *Chemist-in-Chief.* J. B. LEATHES, M.B., Ch.B., F.R.C.S., *Chemist in Charge of Laboratories for Pathological Chemistry.* W. J. YOUNG, M.Sc., *Assistant.* JAMES THOMPSON, Ph.D.,

*Grocers' Research Student.*

**Department of Protozoology:**

E. A. MINCHIN, M.A., *Professor of Protozoology in the University of London.*

H. M. WOODCOCK, D.Sc.; Miss MURIEL ROBERTSON, M.A., *Assistants.*

**Antitoxin and Vaccine Department:**

A. T. MacCONKEY, M.B., B.C., D.P.H., *Bacteriologist in Charge of Serum Laboratories.*

ALAN B. GREEN, M.A., M.D., B.C., *Bacteriologist in Charge of Calf Vaccine Laboratories.*

**Director's Laboratory:**

Miss HARRIETTE CHICK, D.Sc.; SYDNEY ROWLAND, M.A., M.R.C.S., *Assistants.*

**Assistant Secretary and Accountant:**

MR. GEORGE COOPER.



ANNUAL GENERAL MEETING  
OF  
**The Lister Institute of Preventive Medicine.**

MAY 12TH, 1909.

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**REPORT OF THE GOVERNING BODY.**

The Governing Body are glad to report continued development and progress both in the research and general work of the Institute.

During the absence abroad of Mr. J. L. Pattison, Hon. Treasurer, the duties of Treasurer were kindly undertaken by Colonel Addison, R.E.

The following changes and additions to the scientific staff have occurred :

Dr. Dean has resigned his position as Chief Bacteriologist to the Institute on his appointment to the Chair of Pathology in the University of Aberdeen, and Dr. Ledingham has been placed in charge of the Bacteriological Laboratories at Chelsea.

Dr. Marshall has resigned his position in the Bacteriological department on receiving a commission in the Royal Army Medical Corps, and Dr. J. A. Arkwright has been appointed an Assistant Bacteriologist.

Dr. Thomson has resigned his position as Assistant to Professor Minchin, and Miss Muriel Robertson has been appointed to the vacant post in the Protozoological department.

The services of Mr. Sydney Rowland have again been placed at the disposal of the Advisory Committee for the Investigation of Plague in India.

Mr. Percival Hartley has resigned his studentship on his appointment to the position of Bio-chemist to the Imperial Bacteriological Laboratories of India, and Miss Lane-Clayton has accepted an appointment at the Royal Free Hospital.

In addition to the individual researches which have been conducted in the various laboratories, the general scope of which may be gathered from the list of scientific papers published during the year and appended to this report, certain organised enquiries with a definite object, with which the Institute has been concerned, deserve mention.

The Commission for the Investigation of Plague in India has continued its enquiries. Epidemiological investigations have been carried on at Poona and Belgaum, and are still in progress. During the year the Advisory Committee were requested by the Government of India to extend the scope of the enquiry entrusted to them, so as to include an investigation into the value of Yersin Serum in the treatment of cases of plague, and also to institute researches into immunisation by killed cultures of the plague bacillus with a view to the improvement and standardisation of plague vaccines. The former of these enquiries is in



progress in Bombay, but the Committee being of opinion that the latter could best be done in this country under their supervision, the Institute has placed its isolated plague laboratories at Elstree at the disposal of the Committee for the purpose.

In the last report it was mentioned that the Institute had been requested by the Principal Chemist to the Government to draw up a scheme for the standardisation of disinfectants and that, to do this more satisfactorily, an investigation into the laws governing the process of disinfection had been undertaken. This was followed by a further experimental enquiry into the conditions requisite for the standardisation of disinfectants and the influence of admixture of various forms of organic matter upon the germicidal value of disinfectants. The results of these enquiries were published in the *Journal of Hygiene*, Vols. VIII. & IX.

The systematic examination for Tubercle bacilli of samples of milk intended for consumption in the Metropolis which devolved upon the London County Council by a recent Act of Parliament has, at the request of the Council, been undertaken by the Institute.

On the initiative of the Local Government Board, the Institute arranged in June, 1908, to co-operate with the Medical Department of the Board in the investigation of "typhoid-carriers." A considerable time must elapse before a definite pronouncement can be made on the exact importance to be attached to the "typhoid-carrier" as a factor in the spread of enteric fever in this country.

An arrangement was also made for an investigation of "diphtheria-carriers" in schools, in conjunction with the Medical Department of the Local Government Board. The work is in progress.

During the summer, 1908, an investigation into the nature and efficiency of various rat-viruses of bacterial origin was undertaken for the Colonial Office. The result of this work has appeared in a Colonial Office paper.

The Chemical Department has during the year undertaken enquiries for the Medical Department of the Local Government Board as to the safety of using potassium ferrocyanide in certain processes employed in the manufacture of vinegar, and also as to the influence of varying quantities of boric acid and borates upon the keeping properties of cream at different temperatures. The latter investigation was undertaken with a view to aiding in determining the maximum quantity of these preservatives to be allowed by the Local Government Board.

During the months of August and September, 1908, the Institute resumed its investigation of the etiology of epidemic diarrhoea in children. Six members of the Staff of the Institute co-operated in this research, and the services of three temporary assistants were secured for the period of the epidemic.

As in previous summers, the Institute was greatly indebted to the staffs of Shadwell and Victoria Hospitals for affording facilities for the collection of material. It has also to record its grateful appreciation of the cordial assistance rendered to the investigation by Dr. Dudfield, Medical Officer of Health, Paddington, and Drs. Eyre and Minet, of the Bacteriological Laboratory of Guy's Hospital.

In addition to the examination of material from cases of the disease and also from healthy children, milk, dust, and flies from infected and uninfected houses were examined. The association of Morgan's bacillus with cases of epidemic diarrhoea was again fully demonstrated. This bacillus was also found to occur in a small percentage of cases of diarrhoea of a non-epidemic character and in a few of the healthy children. Flies and bovine excreta may also harbour the bacillus in certain cases, but, so far, it has only once been recovered from milk. The agglutination reactions obtained in typical cases of the disease were distinctly encouraging, and it is proposed during the coming summer to confine our attention very largely to this part of the subject. An account of the work has been already presented to the Epidemiological Society, and the full report will appear in the *Journal of Hygiene*.

In addition to the regular staff and the holders of research studentships, Drs. H. G. Plimmer, J. S. Haldane, F.R.S., Morgan, Armit, Duncan Reid, Cathcart, Mavrogordato, Jex Blake, Fein (Moscow), Parkinson, C. T. Andrew, E. L. Kennaway, Bradley, McKay, Anderson, Penfold, Castellani, Fremlin, Bagshaw, Bosanquet, Cunningham, and Meyer Wedell, Colonel Leslie, I.M.S., Capts. Bateman, Fry and Hamerton, R.A.M.C., Messrs. Walpole, Ogier Ward, Trotter and Robinson, and Miss Curwen have been engaged in researches in the various laboratories of the Institute.

The Balance Sheet of the Institute for the year ending 31st December, 1908, is attached, and shows a satisfactory financial position.

During the past year nothing has been charged against Capital account. On the other hand, as will be seen from the Balance Sheet, a considerable sum has been allotted from savings of Revenue towards the cost of the new wing.

The buildings of the Institute have been well maintained. All repairs, and also a sum of £199 5s. 6d., expended on new apparatus, &c., have been debited to Revenue. After allowing for these improvements a further sum of £83 15s. 10d. has been written off the Chelsea Account for depreciation of furniture, fittings, scientific apparatus, and books.

The usual sums have been placed to the credit of the Sinking Fund in the Chelsea and Elstree accounts.

The building operations for the completion of the original design of the building mentioned in the last report have been proceeding during the year, and it is hoped that the new laboratories will be available for occupation in the autumn.

In conclusion, the Governing Body wish to acknowledge the effective and cordial co-operation of the Director and all members of the Staff in the research work of the Institute.

HENRY E. ROSCOE,  
*Chairman.*

# The Lister Institute

## BALANCE SHEET,

Dr.

	£	s.	d.	£	s.	d.
To CREDITORS ... ..				946	4	3
To WATER LABORATORY FUND—						
Amount received from the Trustees of the late Richard Berridge for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory ... ..				26,352	13	10
To JENNER MEMORIAL FUND—						
Amount received from the Committee of the Jenner Memorial Fund ... ..				5,768	0	11
To YERSIN LABORATORY FUND... ..				1,445	5	0
To SINKING FUND ... ..				2,137	4	7
To CAPITAL FUND—						
Balance as per last account, 31st December, 1907 ... ..	317,335	1	2			
<i>Add</i>						
Balance of Chelsea Gardens Department Income and Expenditure Account, being excess of Income over Expenditure, for the year ending 31st December, 1908 ... ..	1,948	10	2			
Balance of Elstree Department Income and Expenditure Account, being excess of Income over Expenditure for the year ending 31st December, 1908 ... ..	4,727	11	8			
	—————			6,676	1	10
				—————	—————	324,011 3 0

HENRY E. ROSCOE,  
*Chairman.*

J. L. PATTISSON,  
*Hon. Treasurer.*

£360,660 11 7

### REPORT OF THE AUDITORS

We have audited the above Balance Sheet. We have obtained all the information and explanations we and correct view of the state of the Institute's affairs, according to the best of our information and the explanations

London, April 7th, 1909.

# of Preventive Medicine.

31st DECEMBER, 1908.

Cr.

	£	s.	d.	£	s.	d.
By CASH—						
At Bankers, Deposit Account ... ..	3,000	0	0			
"    Current Account ... ..	468	16	7			
In hand ... ..	13	3	2			
						3,481 19 9
By INVESTMENTS (at cost)—						
£5,000 Great Northern Railway 3 per cent. Debenture Stock	1,570	11	0			
£5,000 Lancashire and Yorkshire Railway 3 per cent. Consolidated Preference Stock	1,520	3	6			
£4,900 London and North Western Railway 4 per cent. Consolidated Preference Stock	5,940	5	0			
£5,000 Great Central and Midland Railway Joint Committee 3½ per cent. Guaranteed Stock	5,123	19	3			
£2,900 New South Wales 3½ per cent. Stock 1918	2,897	16	0			
£1,000 Cape of Good Hope 3½ per cent. Stock	1,000	0	0			
£1,500 City of Sydney 4 per cent. Bonds	1,500	0	0			
£353 North Eastern Railway 4 per cent. Guaranteed Stock	499	11	0			
						26,052 5 9
By INVESTMENTS, LORD IVEAGH'S DONATION (at cost)—						
£25,006 2s. 6d. New Zealand Government 3 per cent. Inscribed Stock, 1945	24,117	17	6			
£25,000 Victorian Government 3 per cent. Inscribed Stock 1929-1949	23,875	0	0			
£25,000 Natal 3 per cent. Inscribed Stock 1929-1949	24,484	7	6			
£25,000 New South Wales Government 3 per cent. Inscribed Stock, 1935	24,937	10	0			
£26,100 South Australian Government 3 per cent. Consolidated Stock 1916	24,860	5	0			
£25,000 Cape of Good Hope 3 per cent. Inscribed Stock, 1933-1943	23,850	0	0			
£25,000 London and South Western Railway 4 per cent. Preferred Converted Ordinary Stock	32,000	0	0			
£25,000 Great Northern Railway 3 per cent. Preference Stock 1898	26,000	0	0			
£25,000 Midland Railway 2½ per cent. Preferred Converted Ordinary Stock	20,375	0	0			
£25,000 East Indian Railway 3 per cent. New Debenture Stock	25,500	0	0			
						250,000 0 0
By INVESTMENTS, JENNER MEMORIAL FUND (at cost)—						
£2,650 Southwark and Vauxhall Water Co. 3 per cent. Debenture Stock "B"	2,756	10	0			
£2,660 South Eastern Railway 3 per cent. Preference Stock 1898	2,740	5	0			
£300 11s. Liverpool Corporation 3 per cent. Stock	271	5	11			
						5,768 0 11
By INVESTMENT, SINKING FUND (at cost)—						
£2,110 17s. 10d. 2½ per cent. Consols						1,891 7 4
(The above investments, at the market value, 31st December, 1908, show a depreciation.)						
By DEBTORS						3,213 18 1
By STOCK OF TUBERCULIN, MALLEIN, ANTI-BACTERIAL VACCINES, &c.						398 7 6
By FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS AND BOOKS, as per Account, 31st Dec., 1905	2,830	13	0			
Deduct amount written off for depreciation after charging in the Income and Expenditure account £199 5s. 6d. for Books, Apparatus and Furniture	83	15	10			
						2,746 17 2
By EXPENDITURE ON INSTITUTE BUILDING AT CHELSEA—						
As per Account, 31st May, 1900, including purchase of freehold site £6,000	42,967	5	8			
Add additions during the year	4,059	11	6			
						47,026 17 2
By QUEENSBERRY LODGE FARM, ELSTREE—						
Purchase of freehold land and buildings and Expenditure on new buildings, as per Account, 31st Dec., 1905						15,406 16 10
Stock of Animals and Forage	562	1	9			
Stock of Anti-Toxins, Bottles, &c.	3,292	8	9			
Stable Utensils, Farm Implements and Sheds, as per Account, 31st December, 1903	138	1	4			
Laboratory Apparatus, as per Account, 31st Dec., 1903	466	1	3			
Furniture, as per Account, 31st Dec., 1903	215	8	0			
						4,674 1 1
						£360,660 11 7

## TO THE MEMBERS.

have required. In our opinion, such Balance Sheet is full and fair, and properly drawn up so as to exhibit a true given us and as shown by the books of the Institute.

COOPER BROTHERS & CO.,

Chartered Accountants.

Auditors.

## Dr. Chelsea Gardens Department.—INCOME AND EXPENDITURE

	INCOME.	£ s. d.
To Interest and Dividends on Investments	...	8,480 10 10
To Investigation, Diagnosis and Analysis Fees, &c.	...	2,114 17 6
To Research Fees	...	24 0 0
To Sales of Tuberculin, Mallein, Anti-Bacterial Vaccines, &c.	...	658 10 5
<i>Add</i> Stock of Tuberculin and Mallein, Anti-Bacterial Vaccines, &c., 31st December, 1908	...	398 7 6
		1,056 17 11
<i>Deduct</i> Stock of Tuberculin and Mallein, 31st December, 1907	...	205 9 9
		851 8 2

£11,479 16 6

## Dr. Elstree Department.—INCOME AND EXPENDITURE

	INCOME.	£ s. d.	£ s. d.
To Sale of Antitoxins, &c....	...	7,637 11 9	
<i>Add</i> Stock, 31st December, 1908	...	3,193 2 6	
		10,830 14 3	
<i>Deduct</i> Stock, 31st December, 1907	...	2,571 4 6	
		8,259 9 9	
To Rent of Rooms at Elstree	...	19 7 6	

£8,278 17 3

# Preventive Medicine.

EXPENDITURE ACCOUNT for the Year ending 31st December, 1908.

Cr.

EXPENDITURE.						£	s.	d.
By Rates, Taxes, and Insurance	...	...	...	...	...	409	19	8
By Salaries and Wages of Staff	...	...	...	...	...	6,345	11	10
By Law Charges...	...	...	...	...	...	1	1	0
By Stationery, Printing, Postage, and Advertising	...	...	...	...	...	272	9	8
By Office Expenses and Sundries	...	...	...	...	...	193	3	2
By Bank Charges	...	...	...	...	...	4	13	6
By Travelling Expenses	...	...	...	...	...	12	4	11
By Auditors' Fee...	...	...	...	...	...	21	0	0
By Gas and Water	...	...	...	...	...	303	14	2
By Electric Light and Power	...	...	...	...	...	114	13	2
By Fuel...	...	...	...	...	...	74	12	0
By Director's Laboratory Expenses including General Apparatus	...	...	...	...	...	133	6	7
By Bacteriological Laboratory Expenses including Apparatus	...	...	...	...	...	230	15	5
By Water and Bio-chemical Laboratory Expenses including Apparatus	...	...	...	...	...	152	15	5
By Furniture	...	...	...	...	...	5	8	6
By Culture Media	...	...	...	...	...	77	6	4
By Animals	...	...	...	...	...	233	19	0
By Animal House Expenses	...	...	...	...	...	219	3	2
By Repairs and Alterations to Buildings and Apparatus, including Workshop Tools	...	...	...	...	...	214	16	5
By Library Expenses	...	...	...	...	...	89	5	8
By General Stores	...	...	...	...	...	65	11	4
By Protozoological Expenses including Apparatus	...	...	...	...	...	80	3	7
By Bad Debts	...	...	...	...	...	6	16	0
By Amount written off for Depreciation of Furniture, Fittings, and Scientific Apparatus and Books, after charging £199 5s. 6d. for Books, Apparatus, and Furniture in above items	...	...	...	...	...	83	15	10
By Sinking Fund ( $\frac{1}{2}$ % per annum on Cost of present Building)	...	...	...	...	...	185	0	0
						<u>9,531</u>	<u>6</u>	<u>4</u>
By Balance, being Excess of Income over Expenditure Transferred to Capital Fund (see Balance Sheet)...	...	...	...	...	...	1,948	10	2
						<u>£11,479</u>	<u>16</u>	<u>6</u>

EXPENDITURE ACCOUNT for the Year ending 31st December, 1908.

Cr.

EXPENDITURE.						£	s.	d.
By Rent, Taxes, and Insurance	...	...	...	...	...	106	5	1
By Salaries and Wages	...	...	...	...	...	1,540	16	9
By Animals—								
Stock 31st December 1907	...	...	...	...	255	18	9	
Purchased during the year ending 31st December, 1908	...	...	...	...	386	13	10	
					<u>642</u>	<u>12</u>	<u>7</u>	
Deduct—Sales during the year ending 31st December, 1908	...	21	16	0				
Stock, 31st December, 1908	...	487	1	9				
		<u>508</u>	<u>17</u>	<u>9</u>				
								133 14 10
By Forage—								
Stock 31st December, 1907	...	...	...	...	90	0	0	
Purchases during the year ending 31st December, 1908	...	...	...	...	494	8	7	
		<u>584</u>	<u>8</u>	<u>7</u>				
Deduct—Stock 31st December, 1908	...	75	0	0				
								509 8 7
By Stable and other Expenses including Utensils	...	...	...	...	...	13	13	4
By Farm Expenses including Implements and Furniture	...	...	...	...	...	76	9	2
By Gas, Water, and Fuel	...	...	...	...	...	197	16	11
By Postages and Telegrams	...	...	...	...	...	12	16	1
By Laboratory Expenses, including Cost of Bottles, Chemicals and Apparatus	...	...	...	...	...	596	12	4
By Travelling Expenses	...	...	...	...	...	13	12	2
By Bank Charges	...	...	...	...	...	4	2	
By Farm Office Expenses and Printing	...	...	...	...	...	14	5	3
By Repairs and Alterations	...	...	...	...	...	274	13	8
By Sinking Fund ( $\frac{1}{2}$ % per annum on Estimated Cost of Buildings)	...	...	...	...	...	60	17	3
						<u>£3,551</u>	<u>5</u>	<u>7</u>
By Balance being excess of Income over Expenditure transferred to Capital Fund (See Balance Sheet)	...	...	...	...	...	4,727	11	8
						<u>£8,278</u>	<u>17</u>	<u>3</u>

SCIENTIFIC PAPERS PUBLISHED FROM THE LABORATORIES OF  
THE INSTITUTE DURING THE YEAR.



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- ARMIT, H. W. ... .. THE TOXICOLOGY OF NICKEL CARBONYL. Pt. II. *Journal of Hygiene*, Vol. VIII., p. 565, 1908.
- AVELINE, H. T. S., BOYCOTT, A. E., AND MACDONALD, W. F. BACILLUS DYSENTERIÆ OF FLEXNER IN RELATION TO ASYLUM DYSENTERY. *Journal of Hygiene*, Vol. VIII., 1908.
- BAINBRIDGE, F. A. ... .. ON THE NATURE AND EFFICIENCY OF CERTAIN RAT VIRUSES (in the Press).
- BAINBRIDGE, F. A. ... .. THE RELATIONSHIPS OF THE PARATYPHOID GROUP OF BACILLI (in the Press).
- BOYCOTT, A. E., DAMANT, G. C. C., AND HALDANE, J. S. THE PREVENTION OF COMPRESSED-AIR ILLNESS. *Journal of Hygiene*, Vol. VIII., 1908.
- BOYCOTT, A. E., AND HALDANE, J. S. THE EFFECTS OF LOW ATMOSPHERIC PRESSURES ON RESPIRATION. *Journal of Physiology*, Vol. XXXVII., 1908, p. 355.
- CATHCART, E. P., KENNAWAY, E. L., AND LEATHES, J. B. ON THE ORIGIN OF ENDOGENOUS URIC ACID. *Quarterly Journal of Medicine*, 1908.
- CHICK, HARRIETTE, AND MARTIN, C. J. ... .. THE PRINCIPLES INVOLVED IN THE STANDARDISATION OF DISINFECTANTS AND THE INFLUENCE OF ORGANIC MATTER UPON GERMICIDAL VALUE. *Journal of Hygiene*, Vol. VIII., 1908, p. 654.
- CHICK, HARRIETTE, AND MARTIN, C. J. ... .. A COMPARISON OF THE POWER OF A GERMICIDE EMULSIFIED OR DISSOLVED, WITH AN INTERPRETATION OF THE SUPERIORITY OF THE EMULSIFIED FORM. *Journal of Hygiene*, Vol. VIII., 1908, p. 698.
- DEAN, G., AND MARSHALL, W. E. ... OBSERVATIONS INDICATING THAT THE RECENT OUTBREAK OF DIPHTHERIA IN THE WOOD-PIGEON (*COLUMBA PALUMBUS*) IS CAUSED BY A "FILTER-PASSER." *Journal of Pathology and Bacteriology*, Vol. 13, 1908.
- GREEN, ALAN B. ... .. SOME EXPERIMENTS ON IMMUNITY AGAINST VACCINIA IN ANIMALS. *Journal of Hygiene*, Vol. VIII., 1908.
- GREEN, ALAN B. ... .. THE INFLUENCE OF TEMPERATURE AND SOME OTHER PHYSICAL CONDITIONS ON CALF VACCINE. *Journal of Hygiene*, Vol. VIII., 1908.
- GREEN, ALAN B. ... .. AN OUTBREAK OF COW-POX. *Lancet*, Vol. 2, 1908.
- HARDEN, A., AND YOUNG, W. J. ... THE ALCOHOLIC FERMENT OF YEAST-JUICE. Part III. THE FUNCTION OF PHOSPHATES IN THE FERMENTATION OF GLUCOSE BY YEAST-JUICE. *Proc. Royal Society, B*. Vol. 80, 1908.
- KENNAWAY, E. L. ... .. THE EFFECTS OF MUSCULAR WORK UPON THE EXCRETION OF ENDOGENOUS PURINES. *Journal of Physiology*, Vol. XXXVIII., 1908.



- KENNAWAY, E. L., AND LEATHES, J. B. ... A PRELIMINARY NOTE ON THE EXAMINATION OF THE FAT IN THE LIVER IN HEALTH AND DISEASE. *Proc. Royal Society of Medicine*, February, 1909.
- LANE-CLAYPON, JANET E. ... ON THE PRESENCE OF HAEMOLYTIC FACTORS IN MILK. *Journal of Pathology and Bacteriology*, Vol. 13, 1908.
- LANE-CLAYPON, JANET E. ... ON THE MULTIPLICATION OF BACTERIA AND THE INFLUENCE OF TEMPERATURE AND SOME OTHER CONDITIONS THEREUPON (in the Press.)
- LEATHES, J. B. ... ON CHANGES IN THE AMOUNT OF HIGHER FATTY ACIDS TO BE OBTAINED FROM THE LIVER AFTER REMOVAL FROM THE BODY. *Archiv für Experimentelle Pathologie und Pharmakologie. Suppl. Band. "Schmiedeberg Festschrift,"* 1908.
- LEATHES, J. B. ... ON THE FUNCTIONS OF THE LIVER IN RELATION TO METABOLISM OF FATS. *Lancet*, Vol. I., 1909.
- LEATHES, J. B., AND MEYER-WEDELL, L. ... ON THE DESATURATION OF FATTY ACIDS IN THE LIVER. *Proc. Physiological Society*, February, 1909.
- LEDINGHAM, J. C. G. ... ON THE INFLUENCE OF TEMPERATURE ON PHAGOCYTOSIS. *Proc. Royal Society*, Vol. B, 80, 1908.
- LEDINGHAM, J. C. G. ... THE TYPHOID-CARRIER PROBLEM, WITH SOME EXPERIMENTS ON IMMUNITY IN CARRIERS. *British Medical Journal*, Vol. 2, 1908.
- MACCONKEY, A. T. ... BILE SALT MEDIA AND THEIR ADVANTAGES IN SOME BACTERIOLOGICAL EXAMINATIONS. *Journal of Hygiene*, Vol. VIII., 1908.
- MACCONKEY, A. T. ... ON THE RELATIONSHIP BETWEEN *BACILLUS PESTIS* AND *BACILLUS PSEUDO-TUBERCULOSIS RODENTIUM* (PFEIFFER). *Journal of Hygiene*, Vol. VIII., 1908.
- MACCONKEY, A. T. ... FURTHER OBSERVATIONS ON THE DIFFERENTIATION OF LACTOSE-FERMENTING BACILLI, WITH SPECIAL REFERENCE TO THOSE OF INTESTINAL ORIGIN. *Journal of Hygiene*, Vol. IX., 1909.
- MINCHIN, E. A. ... ON A HAEMOGREGARINE FROM THE BLOOD OF A HIMALAYAN LIZARD (*AGAMA TUBERCULATA*). *Proc. of the Zoological Society, London*, 1907, p. 1098.
- MINCHIN, E. A. ... NOTE ON THE POLYMORPHISM OF *TRYPANOSOMA GAMBIENSE*. *Parasitology*, Vol. I., 1908.
- MORGAN, H. DE R., AND LEDINGHAM, J. C. G. ... THE BACTERIOLOGY OF SUMMER DIARRHŒA. *Proc. Royal Society of Medicine, Epidemiological Section*, March, 1909.
- PLIMMER, H. G., AND BATEMAN, H. R. ... FURTHER RESULTS OF THE EXPERIMENTAL TREATMENT OF TRYPANOSOMIASIS: BEING A PROGRESS REPORT TO A COMMITTEE OF THE ROYAL SOCIETY. *Proc. Royal Society, B*, Vol. 80, 1908.
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**Sister Institute of Preventive  
Medicine,**

CHELSEA GARDENS,  
LONDON, S. W.

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ANNUAL REPORT

AND

BALANCE SHEET.

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*May 12th, 1909.*

**PRIVATE.**

FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE ONLY.

**MAY, 1910.**

# The Lister Institute of Preventive Medicine.

CHELSEA GARDENS, CHELSEA BRIDGE ROAD,  
LONDON, S.W.; AND  
QUEENSBERRY LODGE, ELSTREE, HERTS.

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**President:**

THE LORD LISTER, P.C., O.M., F.R.S.

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## THE GOVERNING BODY.

THE RIGHT HON. SIR HENRY ROSCOE, P.C., D.C.L., F.R.S., *Chairman.*

THE VISCOUNT IVEAGH, K.P., F.R.S.

COLONEL SIR DAVID BRUCE, R.A.M.C., C.B., F.R.S.

J. ROSE BRADFORD, M.D., F.R.S.

PROFESSOR W. OSLER, M.D., D.Sc., F.R.S.

J. LUARD PATTISSON, C.B., *Hon. Treasurer.*

PROFESSOR ERNEST H. STARLING, M.D., F.R.S.

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## THE SCIENTIFIC STAFF.

**Director:**

C. J. MARTIN, M.B., D.Sc., F.R.S.

**Department of Bacteriology:**

J. C. G. LEDINGHAM, M.A., M.B., D.Sc., *Bacteriologist-in-Chief at Chelsea.* G. F. PETRIE, M.D.;

J. HENDERSON SMITH, M.B., Ch.B.; J. A. ARKWRIGHT, M.A., M.B., B.Sc.;

F. A. BAINBRIDGE, M.D., D.P.H.; H. R. DEAN, M.A., M.B., Ch.B., M.R.C.P.; G. H. MACALISTER,  
M.A., M.D., D.P.H., *Assistants.*

**Department of Bio-Chemistry:**

A. HARDEN, D.Sc., Ph.D., F.R.S., *Chemist-in-Chief.* H. MACLEAN, M.D., Ch.B.

W. J. YOUNG, M.Sc., *Assistants.*

**Department of Protozoology:**

E. A. MINCHIN, M.A., *Professor of Protozoology in the University of London.*

H. M. WOODCOCK, D.Sc.; MURIEL ROBERTSON, M.A., *Assistants.*

**Antitoxin and Vaccine Department.**

A. T. MacCONKEY, M.B., B.C., D.P.H., *Bacteriologist in Charge of Serum Laboratories.*

ALAN B. GREEN, M.A., M.D., B.C., *Bacteriologist in Charge of Calf Vaccine Laboratories.*

**Director's Laboratory:**

HARRIETTE CHICK, D.Sc.; SYDNEY ROWLAND, M.A., M.R.C.S., *Assistants.*

**Statistician:**

MAJOR GREENWOOD, M.R.C.S., L.R.C.P.

**Librarian:**

ANNA MUELLENBACH.

**Assistant Secretary and Accountant:**

GEORGE COOPER.



ANNUAL GENERAL MEETING  
OF  
**The Lister Institute of Preventive Medicine.**

MAY 11TH, 1910.

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**REPORT OF THE GOVERNING BODY.**

The Governing Body are glad to report continued development and progress both in the research and general work of the Institute.

During the short absence abroad of Mr. J. L. Pattison, Hon. Treasurer, the duties of Treasurer were kindly undertaken by Colonel Addison, R.E.

The following changes and additions to the scientific staff have occurred :

Dr. Leathes has resigned his position as Chemist in charge of the Laboratories for Pathological Chemistry on his appointment to the Chair of Pathological Chemistry in the University of Toronto, Canada.

The Staff of the Bacteriological Department has been increased by the appointment of Dr. Bainbridge, Dr. Dean and Dr. Macalister, and the services of Dr. O'Brien have been secured for a period of one year to undertake a special investigation for the London County Council.

Dr. Maclean has been appointed as Senior Assistant in the Department of Biochemistry.

The development of the Library and the increased demands made upon it have rendered it necessary to secure the services of a Librarian. Miss A. Muellenbach has been appointed to the position.

For some time the Governing Body have had under consideration the advisability of adding a Statistician to the Staff of the Institute. The validity of conclusions drawn from many enquiries in the domain of experimental Medicine, as well as those regarding the practical value of prophylactic and curative treatment must ultimately rest upon the results of statistical analysis of the facts. Further, the statistical treatment of data regarding the spread of disease has in the past, and will, it is imagined, still more in the future, aid in defining the relative importance of different means whereby a disease is spread.

The study of methods of mathematical treatment of data of the kind available has received a considerable impetus during recent years largely owing to the researches of Karl Pearson, Edgeworth and Lexis, and has resulted in the discovery of statistical methods which permit of the analysis of complex data which have not hitherto been amenable to such treatment.

For the position of Statistician to the Institute, the Governing Body believe themselves fortunate in having secured the services of Mr. Major Greenwood, who has already made for himself a reputation in this branch of medical research.

During the year the position of Jenner Memorial and Grocers' Research Scholars in the Institute have been filled by the appointment of Mr. Ashley Cooper and Mr. Roland V. Norris respectively. Mr. S. Paine has been appointed to a special research Scholarship to work in the Chemical Department.

Mr. Sydney Rowland, whose services were last year placed at the disposal of the Advisory Committee for the Investigation of Plague in India, continues to work under that Committee.

In addition to the individual researches which have been conducted in the various laboratories, the general scope of which may be gathered from the list of scientific papers published during the year and appended to this report, certain organised enquiries, with which the Institute has been concerned, deserve mention.

The Commission for the Investigation of Plague in India has continued its enquiries. Epidemiological investigations have been carried on at Poona and Belgaum, and are now being extended to Madras and Assam. The investigation into the value of Yersin Serum in the treatment of cases of plague will be continued in Bombay during the present plague season. The researches into immunisation by various products of the plague bacillus with a view to the improvement and standardisation of plague vaccines has been assiduously prosecuted during the year at the Institute's special laboratories at Elstree, and a first report of the results of the experiments is in the press.

The systematic examination for Tubercle Bacilli of samples of milk intended for consumption in the Metropolis which, as mentioned in the last report, was undertaken by the Institute on behalf of the London County Council, has been continued. A number of subsidiary enquiries concerning the Milk Supply of London have also been carried out at the request of the Council.

On the initiative of the Local Government Board, the Institute arranged in 1908 to co-operate with the Medical Department of the Board in the investigation of "typhoid carriers." A preliminary account of the work so far accomplished appeared in the Annual Report of the Chief Medical Officer of the Board (Dec., 1909). This investigation is being continued.

The Chemical Department has, during the year, undertaken enquiries for the Medical Department of the Local Government Board as to the influence of the bleaching of flour on its dietetic value.

The Institute has continued its investigations into the etiology of epidemic summer diarrhœa of children, which were carried on in 1907 and 1908. During the epidemic season of 1909 an attempt was made to obtain some evidence of the existence of specific antibodies for Morgan's Bacillus in the serum of affected cases, but the season being so cold, the paucity of suitable material prevented definite conclusions being reached. A serum prepared by immunising horses with Morgan's Bacillus was tried therapeutically in a few cases. The

results, however, were not very encouraging. During the coming season it is proposed to make a renewed enquiry into the question of flies as carriers of infection, and further experiments on Immunity are also contemplated.

In addition to the regular Staff and the holders of research studentships, Drs. Morgan, Molesworth, Kumagava (Japan), Penfold (B.M.A. Research Scholar), Bradley, Mavrogordato, Ida Smedley (Beit Scholar), Cunningham, Nicoll (Ernest Hart Scholar B.M.A.), Manwaring (U.S.A.), Armit, Bosanquet, Kofoid (U.S.A.), Duke, Graham W. Smith, J. D. White, Sir E. Ray Lankester, Surgeon Atkinson, R.N., Major Lamb, I.M.S., Major Liston, I.M.S., Captain Gloster, I.M.S., Captain McCanison, I.M.S., Professor Janssens (Louvain), Messrs. Groom, Cope, Dunkerly, Lanchester, Cooper and Miss Sternberg have been engaged in researches in the various laboratories of the Institute.

In 1908 the Governing Body decided to build the other wing of the Institute, and so complete the original design of the building. The building operations, which were commenced in July, 1908, finished early in this year, but much of the internal fittings of the laboratories is still incomplete. When the new portion is ready, the total laboratory accommodation of the Institute will be nearly doubled and the possibilities and conveniences of the Institute for research greatly enhanced.

It has also been found necessary to very considerably extend the animal house accommodation at Chelsea, and two new animal houses have been erected in the yard at the back of the building. Additional stables and cottages for the employes have been built at Queensberry Lodge, Elstree, to meet the increasing requirements of the Serum Department.

The Balance Sheet of the Institute for the year ending 31st December, 1909, is attached, and shows a satisfactory position. In both the Chelsea and Elstree accounts there is a substantial balance to the good, which has been carried to the credit of the Capital Fund.

During the year, £13,349 17s. 3d. has been spent on building operations at Chelsea, and £287 17s. 6d. on the new cottages at Elstree. The sum of £460 11s. 2d. has been debited to Revenue for new Apparatus, etc., and for this reason nothing has been written off for depreciation of Furniture, Fittings, Scientific Apparatus and Books. The usual sums have been placed to the credit of the Sinking Fund in the Chelsea and Elstree Accounts.

The Governing Body desire to acknowledge the effective and cordial co-operation of the Director and all Members of the Staff in the research work of the Institute.

HENRY E. ROSCOE,

*Chairman.*



# The Lister Institute

## BALANCE SHEET,

Dr.

	£	s.	d.	£	s.	d.
To CREDITORS ... ..				994	7	10
To LOAN from Bankers against Securities per Contra ... ..				6,000	0	0
To WATER LABORATORY FUND—						
Amount received from the Trustees of the late Richard Berridge for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory ... ..				26,352	13	10
To JENNER MEMORIAL FUND—						
Amount received from the Committee of the Jenner Memorial Fund				5,768	0	11
To YERSIN LABORATORY FUND ... ..				1,445	5	0
To SINKING FUND ... ..				2,439	10	11
To CAPITAL FUND—						
Balance as per last account, 31st December, 1908 ... ..	324,011	3	0			
<i>Add</i>						
Balance of Chelsea Gardens Department Income and Expenditure Account, being excess of Income over Expenditure, for the year ending 31st December, 1909 ... ..	2,630	18	3			
Balance of Elstree Department Income and Expenditure Account, being excess of Income over Expenditure for the year ending 31st December, 1909 ... ..	3,934	9	5			
	6,565	7	8			
				330,576	10	8

HENRY E. ROSCOE,  
*Chairman.*

J. L. PATTISSON,  
*Hon. Treasurer.*

£373,576 9 2

### REPORT OF THE AUDITORS

We have audited the above Balance Sheet. We have obtained all the information and explanations we and correct view of the state of the Institute's affairs, according to the best of our information and the explanations  
*London, 24th February, 1910.*

# of Preventive Medicine.

31st DECEMBER, 1909.

Cr.

	£	s.	d.	£	s.	d.
By CASH—						
At Bankers ... ..	1,723	8	2			
In hand ... ..		9	19			
				1,733	7	4
By INVESTMENTS (at cost)—						
£5,000 Great Northern Railway 3 per cent. Debenture Stock	4,570	11	0			
£5,000 Lancashire and Yorkshire Railway 3 per cent. Consolidated Preference Stock	4,520	3	6			
£4,900 London and North Western Railway 4 per cent. Consolidated Preference Stock	5,940	5	0			
£5,000 Great Central and Midland Railway Joint Committee 3½ per cent. Guaranteed Stock	5,123	19	3			
£2,900 New South Wales 3½ per cent. Stock, 1918 ...	2,897	16	0			
£1,000 Cape of Good Hope 3½ per cent. Stock	1,000	0	0			
£1,500 City of Sydney 4 per cent. Bonds	1,500	0	0			
£353 North Eastern Railway 4 per cent. Guaranteed Stock	499	11	0			
				26,052	5	9
By INVESTMENTS, LORD IVEAGH'S DONATION (at cost)—						
£23,006 2s. 6d. New Zealand Government 3 per cent. Inscribed Stock, 1945	24,117	17	6			
£23,000 Victorian Government 3 per cent. Inscribed Stock, 1929-1949...	23,875	0	0			
£23,000 Natal 3 per cent. Inscribed Stock, 1929-1949	24,484	7	6			
£25,000 New South Wales Government 3 per cent. Inscribed Stock, 1935	24,937	10	0			
£26,100 South Australian Government 3 per cent. Consolidated Stock, 1916	24,860	5	0			
£25,000 Cape of Good Hope 3 per cent. Inscribed Stock, 1933-1943...	23,850	0	0			
£25,000 London and South Western Railway 4 per cent. Preferred Converted Ordinary Stock	32,000	0	0			
£25,000 Great Northern Railway 3 per cent. Preference Stock, 1898	26,000	0	0			
£25,000 Midland Railway 2½ per cent. Preferred Converted Ordinary Stock	20,375	0	0			
£25,000 East Indian Railway 3 per cent. New Debenture Stock	25,500	0	0			
				250,000	0	0
By INVESTMENTS, JENNER MEMORIAL FUND (at cost)—						
£2,650 Southwark and Vauxhall Water Co. 3 per cent. Debenture Stock "B"	2,756	10	0			
£2,660 South Eastern Railway 3 per cent. Preference Stock, 1898	2,740	5	0			
£300 11s. Liverpool Corporation 3 per cent. Stock...	271	5	11			
				5,768	0	11
By INVESTMENT, SINKING FUND (at cost)—						
£2,464 19s. 0d. 2½ per cent. Consols				2,193	13	8
(The above Investments, at the market value, 31st December, 1909, show a depreciation.)						
By DEBTORS				3,256	8	9
By STOCK OF TUBERCULIN, MALLEIN, ANTI-BACTERIAL VACCINES, &c.				341	0	0
By FURNITURE, FITTINGS, AND SCIENTIFIC APPARATUS AND BOOKS, as per account, 31st Dec. 1908...				2,746	17	2
By EXPENDITURE ON INSTITUTE BUILDING AT CHELSEA—						
As per Account 31st Dec., 1908, including purchase of freehold site, £6,000	47,026	17	2			
Add additions during the year	13,349	17	3			
				60,376	14	5
By QUEENSBERRY LODGE FARM, ELSTREE—						
Purchase of freehold land and buildings and Expenditure on new buildings, as per Account, 31st Dec., 1905	15,406	16	10			
Add additions during the year	287	17	6			
				15,694	14	4
Stock of Animals and Forage	502	15	7			
Stock of Anti-Toxins, Bottles, &c.	4,091	0	8			
Stable Utensils, Farm Implements and Sheds, as per Account, 31st December, 1903	138	1	4			
Laboratory Apparatus, as per Account, 31st Dec., 1903	466	1	3			
Furniture, as per Account, 31st Dec., 1903	215	8	0			
				5,413	6	10
				£373,576	9	2

## TO THE MEMBERS.

have required. In our opinion, such Balance Sheet is full and fair, and properly drawn up so as to exhibit a true given to us and as shown by the books of the Institute.

COOPER BROTHERS & CO.,  
Chartered Accountants. } Auditors.

# The Lister Institute of

## Dr. Chelsea Gardens Department.—INCOME AND EXPENDITURE

				INCOME.		£	s.	d.
To Interest and Dividends on Investments	...	...	...	...	...	8,577	1	0
To Investigation, Diagnosis and Analysis Fees, &c.	...	...	...	...	...	3,048	7	3
To Research Fees	...	...	...	...	...	6	0	0
To Sales of Tuberculin, Mallein, Anti-Bacterial Vaccines, &c.	...	...	...	...	...	1,007	17	5
<i>Add</i> Stock of Tuberculin and Mallein, Anti-Bacterial Vaccines, &c., 31st December, 1909	...	...	...	...	...	341	0	0
						<hr/>		
						1,348	17	5
<i>Deduct</i> Stock of Tuberculin and Mallein, 31st December, 1908	...	...	...	...	...	398	7	6
						<hr/>		
						950	9	11

£12,581 18 2

## Dr. Elstree Department.—INCOME AND EXPENDITURE ACCOUNT

				INCOME.		£	s.	d.	£	s.	d.
To Sale of Antitoxins, &c.	...	...	...	...	...	7,352	5	2			
<i>Add</i> Stock, 31st December, 1909	...	...	...	...	...	3,965	3	2			
						<hr/>					
						11,317	8	4			
<i>Deduct</i> Stock, 31st December, 1908	...	...	...	...	...	3,193	2	6			
						<hr/>			8,124	5	10
To Rent of Rooms at Elstree	...	...	...	...	...	...	...	...	18	0	0

£8,142 5 10

# of Preventive Medicine.

URE ACCOUNT for the Year ending 31st December, 1909.

Cr.

EXPENDITURE.		£	s.	d.
By Rates, Taxes, and Insurance	...	430	7	9
By Salaries and Wages of Staff	...	6,310	13	9
By Law Charges	...	6	6	0
By Stationery, Printing, Postage, and Advertising	...	260	5	7
By Office Expenses and Sundries	...	205	18	11
By Bank Charges...	...	3	13	6
By Travelling Expenses	...	51	9	7
By Auditors' Fee	...	21	0	0
By Gas and Water	...	263	13	2
By Electric Light and Power	...	99	2	10
By Fuel	...	79	13	0
By Director's Laboratory Expenses, including General Apparatus	...	72	7	0
By Bacteriological Laboratory Expenses, including Apparatus	...	330	4	8
By Water and Bio-chemical Laboratory Expenses	...	95	10	3
By Furniture	...	16	4	6
By Culture Media...	...	104	19	11
By Animals	...	580	14	4
By Animal House Expenses	...	261	5	9
By Repairs and Alterations to Buildings and Apparatus	...	142	19	11
By Library Expenses	...	166	14	1
By General Stores	...	88	13	5
By Protozoological Expenses, including Apparatus	...	75	0	11
By Bad Debts	...	6	3	6
By Rent of Flat for Caretaker during Alterations	...	24	0	0
By Interest on Loan from Bankers	...	68	17	7
By Sinking Fund ( $\frac{1}{2}$ % per annum on £37,000, Cost of Original Buildings)	...	185	0	0
		<hr/>		
		9,950	19	11
By Balance, being Excess of Income over Expenditure Transferred to Capital Fund (see Balance Sheet)	...	2,630	18	3
		<hr/>		
		£12,581	18	2

ACCOUNT for the Year ending 31st December, 1909.

Cr.

EXPENDITURE.		£	s.	d.
By Rent, Taxes, and Insurance	...	107	13	5
By Salaries and Wages	...	1,771	13	8
By Animals—				
Stock 31st December, 1908	...	487	1	9
Purchased during the year ending 31st December, 1909	...	304	18	6
		<hr/>		
		792	0	3
Deduct—Sales during the year ending				
31st December, 1909	...	25	15	0
Stock, 31st December, 1909	...	460	15	7
		<hr/>		
		486	10	7
		<hr/>		
		305	9	8
By Forage—				
Stock 31st December, 1908...	...	75	0	0
Purchased during the year ending 31st December, 1909	...	722	6	11
		<hr/>		
		797	6	11
Deduct—Stock 31st December, 1909	...	42	0	0
		<hr/>		
		755	6	11
By Stables and other Expenses, including Utensils	...	23	15	3
By Farm Expenses, including Implements and Furniture	...	68	18	2
By Gas, Water, and Fuel	...	220	0	4
By Postages and Telegrams	...	19	2	6
By Laboratory Expenses, including Cost of Bottles, Chemicals and Apparatus	...	668	13	7
By Travelling Expenses	...	7	3	0
By Bank Charges	...	4	2	
By Farm Office Expenses and Printing	...	18	6	5
By Repairs and Alterations...	...	180	12	1
By Sinking Fund ( $\frac{1}{2}$ % per annum on Estimated Cost of Buildings)	...	60	17	3
		<hr/>		
		4,207	16	5
By Balance, being excess of Income over Expenditure transferred to Capital Fund (see Balance Sheet)	...	3,934	9	5
		<hr/>		
		£8,142	5	10

SCIENTIFIC PAPERS PUBLISHED FROM THE LABORATORIES OF  
THE INSTITUTE DURING THE YEAR.



- ARKWRIGHT, J. A. ... ON THE PRODUCTION OF ANTITOXIN BY THE INJECTION OF FILTRATES OF CULTURES OF NON-VIRULENT DIPH'THERIA BACILLI. *Journal of Hygiene*, Vol. IX., 1910.
- ARMIT, H. W. ... THE PHYSIOLOGICAL EFFECT OF COBALT CARBONYL VAPOUR. *Journal of Hygiene*, Vol. IX., 1909.
- ARMIT, H. W. ... HYPERSENSIBILITY TO PURE EGG ALBUMIN. *Zeitschr f. Immunitätsforschung* (in the Press).
- BOSANQUET, W. C. ... BRIEF NOTES ON TWO MYXOSPORIDIAN ORGANISMS. (PLEISTOPHORA HIPPOGLOSSOIDEOS, N.SP., AND MYXIDIUM MACHIEI, N.SP.). *Zoolog. Anz.*, Vol. XXXV., 1910.
- BOSANQUET, W. C. ... A NOTE ON THE SPIROCHAETE PRESENT IN ULCERATIVE GRANULOMA OF THE PUDENDA OF AUSTRALIAN NATIVES. *Parasitology*, Vol. II., 1910.
- CHICK, H. ... FURTHER OBSERVATIONS ON THE PROCESS OF DISINFECTION BY CHEMICAL AGENTS AND HOT WATER. *Journal of Hygiene* (in the Press).
- DUNKERLY, J. S. ... NOTES ON THE CHOANOFLLAGELLATE GENERA SALPINGOECA AND POLYOECA, WITH DESCRIPTION OF POLYOECA DUMOSA, SP.N. *Annals and Magazine of Natural History*, Ser. 8, Vol. V., 1910.
- HARDEN, A., AND YOUNG, W. J. ... THE ALCOHOLIC FERMENT OF YEAST-JUICE. Part IV. THE FERMENTATION OF GLUCOSE, MANNOSE, AND FRUCTOSE BY YEAST-JUICE. *Proc. Royal Society*, B. Vol. 81, 1909.
- HARDEN A., AND YOUNG, W. J. ... THE ALCOHOLIC FERMENT OF YEAST-JUICE. Part V. THE FUNCTION OF PHOSPHATES IN ALCOHOLIC FERMENTATION. *Proc. Royal Society* (in the Press).
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- HARTLEY, P. ... ON THE NATURE OF THE FAT CONTAINED IN THE LIVER, KIDNEY, AND HEART. Part II. *Journal of Physiology*, Vol. XXXVIII., 1909.
- HENDERSON-SMITH, J., AND CANDLER, J. P. ... ON THE WASSERMANN REACTION IN GENERAL PARALYSIS OF THE INSANE. *British Medical Journal*, Vol. II., 1909.
- KENNAWAY, E. L. ... ESTIMATION OF PURINE BASES IN URINE. *Journal of Physiology*, Vol. XXXIX., 1909.
- LANE-CLAYPON, JANET E. ... OBSERVATIONS ON THE INFLUENCE OF HEATING UPON THE NUTRIENT VALUE OF MILK AS AN EXCLUSIVE DIET FOR YOUNG ANIMALS. *Journal of Hygiene*, Vol. IX., 1909.

- LEATHES, J. B. ... .. DIE SYNTHESE DER FETTE IM TIERKÖRPER. *Ergebn. d. Physiol.*, 1908.
- LEDINGHAM, J. C. G. ... .. THE PHAGOCYTOSIS OF SO-CALLED NEUTRAL SUBSTANCES. EXPERIMENTS WITH HIPPOMELANIN. *Zeitschr. f. Immunitätsforsch.*, 1909.
- MANWARING, W. H. ... .. THE PHYSIOLOGICAL MECHANISM OF ANAPHYLACTIC SHOCK. (In the Press).
- MINCHIN, E. A. ... .. OBSERVATIONS ON THE FLAGELLATES PARASITIC IN THE BLOOD OF FRESH-WATER FISHES. *Proc. Zoological Society*, 1909.
- MINCHIN, E. A. ... .. THE STRUCTURE OF *TRYPANOSOMA LEWISI* IN RELATION TO MICROSCOPICAL TECHNIQUE. *Quarterly Journal of Microscopical Science*, Vol. 53, 1909.
- MINCHIN, E. A., AND THOMSON, J. D. THE TRANSMISSION OF *TRYPANOSOMA LEWISI* BY THE RAT-FLEA. *Proc. Royal Society, B.* Vol. LXXXII., 1910.
- MINCHIN, E. A.,  
AND WOODCOCK, H. M. ... .. OBSERVATIONS ON CERTAIN BLOOD PARASITES OF FISHES OCCURRING IN ROVIGNO. *Quarterly Journal of Microscopical Science*, April, 1910.
- MOLESWORTH, E. H. ... .. THE CULTIVATION OF THE ACNE BACILLUS. (In the Press).
- NOON, L. ... .. OBSERVATIONS ON THE EVOLUTION OF IMMUNITY IN DISEASE. *Journal of Hygiene*, Vol. IX., 1909.
- PETRIE, G. F., AND AVARI, C. R. ... THE SEASONAL PREVALENCE OF *TRYPANOSOMA LEWISI* IN *MUS RATTUS* AND IN *MUS DECUMANUS*, AND ITS RELATION TO THE MECHANISM OF TRANSMISSION OF THE INFECTION. *Parasitology*, Vol. II., 1909.
- PENFOLD, W. J. ... .. VARIATION AND MUTATION IN INTESTINAL MICRO-ORGANISMS. PRELIMINARY COMMUNICATION. *Journal of Pathology and Bacteriology*, 1910.
- PLIMMER, H. G. ... .. REPORT ON DEATHS WHICH OCCURRED IN THE ZOOLOGICAL GARDENS DURING 1908. *Proc. Zoological Society*, 1909.
- PLIMMER, H. G.,  
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**Sister Institute of Preventive  
Medicine,**

CHELSEA GARDENS,  
LONDON, S. W.

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**ANNUAL REPORT**

AND

**BALANCE SHEET.**

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*May 11th, 1910.*

**PRIVATE.**

FOR CIRCULATION AMONG THE MEMBERS OF THE INSTITUTE ONLY.

MAY, 1911.

# The Lister Institute of Preventive Medicine.

CHELSEA GARDENS, CHELSEA BRIDGE ROAD,  
LONDON, S.W.; AND  
QUEENSBERRY LODGE, ELSTREE, HERTS.

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**President:**

THE LORD LISTER, P.C., O.M., F.R.S.

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**THE GOVERNING BODY.**

THE RIGHT HON. SIR HENRY ROSCOE, P.C., D.C.L., F.R.S., *Chairman.*

THE VISCOUNT IVEAGH, K.P., F.R.S.

COLONEL SIR DAVID BRUCE, R.A.M.C., C.B., F.R.S.

J. ROSE BRADFORD, M.D., F.R.S.

PROFESSOR W. OSLER, M.D., D.Sc., F.R.S.

J. LUARD PATTISSON, C.B., *Hon. Treasurer.*

PROFESSOR ERNEST H. STARLING, M.D., F.R.S.

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**THE SCIENTIFIC STAFF.**

**Director:**

C. J. MARTIN, M.B., D.Sc., F.R.S.

**Department of Bacteriology:**

J. C. G. LEDINGHAM, M.A., M.B., D.Sc., *Bacteriologist-in-Chief at Chelsea.* G. F. PETRIE, M.D.;

J. HENDERSON SMITH, M.B., Ch.B.; J. A. ARKWRIGHT, M.A., M.B., B.Sc.;

F. A. BAINBRIDGE, M.D., D.P.H.; H. R. DEAN, M.A., M.B., Ch.B., M.R.C.P.; G. H. MACALISTER,  
M.A., M.D., D.P.H., *Assistants.*

**Department of Bio-Chemistry:**

A. HARDEN, D.Sc., Ph.D., F.R.S., *Chemist-in-Chief.* H. MACLEAN, M.D., Ch.B.

W. J. YOUNG, M.Sc., *Assistants.*

**Department of Protozoology:**

E. A. MINCHIN, M.A., F.R.S., *Professor of Protozoology in the University of London.*

H. M. WOODCOCK, D.Sc.; MURIEL ROBERTSON, M.A., *Assistants.*

**Antitoxin and Vaccine Department:**

A. T. MacCONKEY, M.B., B.C., D.P.H., *Bacteriologist in Charge of Serum Laboratories.*

ALAN B. GREEN, M.A., M.D., B.C., *Bacteriologist in Charge of Calf Vaccine Laboratories.*

**Director's Laboratory:**

HARRIETTE CHICK, D.Sc.; SYDNEY ROWLAND, M.A., M.R.C.S., *Assistants.*

**Statistician:**

MAJOR GREENWOOD, M.R.C.S., L.R.C.P.

**Librarian:**

FLORENCE WILSON.

**Assistant Secretary and Accountant:**

GEORGE COOPER.



ANNUAL GENERAL MEETING  
OF  
**The Lister Institute of Preventive Medicine,**

MAY 10TH. 1911.

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**REPORT OF THE GOVERNING BODY.**

The Governing Body are glad to report continued development and progress both in the research and general work of the Institute.

During the short absence abroad of Mr. J. L. Pattisson, Hon. Treasurer, the duties of Treasurer were kindly undertaken by Colonel Addison, R.E. Leave of absence for one year was granted to Professor Starling, who was unfortunately obliged to take a protracted holiday owing to ill-health.

Dr. Pye-Smith, F.R.S., who has for many years represented the University of London upon the Council of the Institute, has resigned owing to failing health, and the Rt. Hon. Lord Justice Fletcher Moulton, F.R.S., has been appointed by the Senate of the University in his stead.

No changes in the scientific staff have occurred.

During the year the position of Jenner Memorial and Grocers' Research Scholars in the Institute have continued to be filled by Mr. Ashley Cooper and Mr. Roland V. Norris respectively. Mr. S. Paine has been re-appointed to the research Scholarship in the Chemical Department held by him last year, and Miss A. E. Porter, M.D., has been appointed to an additional research studentship in the Institute.

Mr. Sydney Rowland, whose services were placed at the disposal of the Advisory Committee for the Investigation of Plague in India two years ago, continues to work under that Committee. The Advisory Committee has also recently requested that the services of Dr. Petrie, a former member of the Commission, should be placed at their disposal to proceed to Manchuria to study the recent epidemic of pneumonic plague in that province. The Governing Body was pleased to be able to comply with this request, and Dr. Petrie left for China in February.

In addition to the individual researches which have been conducted in the various laboratories, the general scope of which may be gathered from the list of scientific papers published during the year and appended to this report, certain organised enquiries, with which the Institute has been concerned, deserve mention.

The Commission for the Investigation of Plague in India has continued its enquiries. Experimental work has been conducted at the Bombay Bacteriological Laboratory at Parel, and

epidemiological investigations have been carried on at Poona, Belgaum, and Assam, and are now being extended to Madras and the United Provinces. Researches into immunisation by various products of the plague bacillus with a view to the improvement and standardisation of plague vaccines have been continued during the year at the Institute's special laboratories at Elstree. In November the Advisory Committee issued a fifth report of the work of the Commission as a special number of the Journal of Hygiene.

On behalf of the London County Council, the Institute still continues to examine milk intended for consumption in the Metropolis. The number of samples examined for the presence of tubercle bacilli has during the last few years steadily increased, and in 1910 reached 2,950. A further enquiry into the presence of other organisms, possibly deleterious to health, in the milk supply of London, has, at the request of the Council, been undertaken.

The systematic enquiry into the prevalence of typhoid-carriers in this country which has been carried on for the last two years by Dr. Theodore Thompson of the Local Government Board and Dr. Ledingham, Chief Bacteriologist to the Institute, has terminated. Arrangements have, however, been made by which the Institute will continue the bacteriological examination of samples in the case of typhoid outbreaks throughout the country where infection is suspected by the Medical Officers of the Board to be due to a typhoid carrier.

Last summer a concerted enquiry into the Intestinal Bacterial flora of children was organised by the Medical Department of the Local Government Board. A number of bacteriologists throughout the kingdom were asked to co-operate in the investigation. The London portion of this enquiry was carried out at the Institute by Dr. O'Brien.

At the invitation of the Principal Medical Officer of the Local Government Board, Drs. Martin and Rowland undertook an investigation into certain aspects of the Epizootic of Plague recently discovered in East Anglia. Their observations were directed to the study of—

- (1) The species, habits and distribution of the rats in the area affected.
- (2) The amount of plague infection existing among the rodents.
- (3) The parasites carried by rats and rabbits and their prevalence.

Observations were made during November and again at the end of December.

In December, at the request of the Local Government Board, the Institute submitted a scheme for the systematic examination, for plague infection, of rats captured in areas abutting on those in East Suffolk in which plague had already been discovered amongst the rodents. The object of the enquiry was to ascertain the present limits of the epizootic. The scheme submitted by the Institute was approved by the Local Government Board and carried out by Drs. Petrie and Macalister, with the help of a subsidiary staff, during January and February of this year.

In addition to the regular Staff and the holders of the Institute's Research Studentships, Drs. Armit, Bosanquet, St. John Brooks, Cunningham, Elders, Foy, Casimir Funk,

Griffiths, Hort, Lane-Claypon, Mauwaring, Morgan, Nabarro, Nicoll, (Ernest Hart Scholar British Medical Association), Penfold (British Medical Association Scholar), Priestley (Beit Scholar), Seidelin, Ida Smedley (Beit Scholar), Vickers and J. D. White, Major Liston, I.M.S., Captain Gloster, I.M.S., Captain Mackenzie, R.A.M.C., Messrs. Ord Brown, Dunkerley, Davies, Mrs. Norris, Miss Frances Chick and Miss Pixell have been engaged in researches in the various laboratories of the Institute.

The internal fittings of the new wing of the Institute were completed during the year. Most of the new laboratories have been put to immediate use to meet the demand for accommodation occasioned by the increase in Staff and workers which has taken place during the last few years. The remaining laboratories, although at present unoccupied, have been completely fitted, and the Governing Body anticipates that it will not be long before these also will be called into requisition. Additional stables and cottages for the employés have been built at Queensberry Lodge, Elstree, to meet the increasing requirements of the Serum Department.

The Balance Sheet of the Institute for the year ending 31st December 1910 is attached and shows a satisfactory position. In both the Chelsea and Elstree accounts there is a substantial balance to the good, which has been carried to the credit of the Capital Fund.

During the year, £10,539 8s. 8d. has been paid on account of the building operations at Chelsea, and £1,358 7s. 6d. for the new cottages and stables at Elstree. The sum of £476 10s. 10d. has been debited to Revenue for the purchase of new Apparatus, etc., and for this reason nothing has been written off for depreciation of Furniture, Fittings, Scientific Apparatus and Books. The total sum of £393 13s. 5d. has been placed to the credit of the Sinking Fund in the Chelsea and Elstree Accounts.

The Governing Body desire again to acknowledge the effective and cordial co-operation of the Director and all Members of the Staff in the research work of the Institute.

HENRY E. ROSCOE,  
*Chairman.*

# The Lister Institute

## BALANCE SHEET,

Dr.

	£	s.	d.	£	s.	d.
To CREDITORS ... ..				3,237	9	10
To LOAN from Bankers against Securities per Contra ... ..				10,000	0	0
To WATER LABORATORY FUND—						
Amount received from the Trustees of the late Richard Berridge for building and endowing a Water Laboratory, conditionally that not more than £8,000 shall be spent upon the building of the Water Laboratory ... ..				26,352	13	10
To JENNER MEMORIAL FUND—						
Amount received from the Committee of the Jenner Memorial Fund				5,768	0	11
To YERSIN LABORATORY FUND ... ..				1,445	5	0
To SINKING FUND ... ..				2,899	0	5
To CAPITAL FUND—						
Balance as per last account, 31st December, 1909 ... ..	330,576	10	8			
<i>Add</i>						
Balance of Chelsea Gardens Department Income and Expenditure Account, being excess of Income over Expenditure, for the year ending 31st December, 1910 ... ..			2,028	12	7	
Balance of Elstree Department Income and Expenditure Account, being excess of Income over Expenditure for the year ending 31st December, 1910 ... ..			4,718	19	1	
			—————	6,747	11	8
				—————	337,324	2 4

HENRY E. ROSCOE,  
*Chairman.*

J. L. PATTISSON,  
*Hon. Treasurer.*

£387,026 12 4

### REPORT OF THE AUDITORS

We have audited the above Balance Sheet. We have obtained all the information and explanations we and correct view of the state of the Institute's affairs, according to the best of our information and the explanations  
London, 18th April, 1911.

# of Preventive Medicine.

31st DECEMBER, 1910.

Cr.

	£	s.	d.	£	s.	d.
By CASH—						
At Bankers ... ..	341	7	4			
In hand ... ..	21	17	10			
						363 5 2
By INVESTMENTS (at cost)—						
£5,000 Great Northern Railway 3 per cent. Debenture Stock	4,570	11	0			
£5,000 Lancashire and Yorkshire Railway 3 per cent. Consolidated Preference Stock ... ..	4,520	3	6			
£4,900 London and North Western Railway 4 per cent. Consolidated Preference Stock ... ..	5,940	5	0			
£5,000 Great Central and Midland Railway Joint Committee 3½ per cent. Guaranteed Stock ... ..	5,123	19	3			
£2,900 New South Wales 3½ per cent. Stock, 1918 ... ..	2,897	16	0			
£1,000 Cape of Good Hope 3½ per cent. Stock ... ..	1,000	0	0			
£1,500 City of Sydney 4 per cent. Bonds ... ..	1,500	0	0			
£353 North Eastern Railway 4 per cent. Guaranteed Stock ... ..	499	11	0			
						26,052 5 9
By INVESTMENTS, LORD IVEAGH'S DONATION (at cost)—						
£25,006 2s. 6d. New Zealand Government 3 per cent. Inscribed Stock, 1945 ... ..	24,117	17	6			
£25,000 Victorian Government 3 per cent. Inscribed Stock, 1929-1949 ... ..	23,875	0	0			
£25,000 Natal 3 per cent. Inscribed Stock, 1929-1949 ... ..	24,484	7	6			
£25,000 New South Wales Government 3 per cent. Inscribed Stock, 1935 ... ..	24,937	10	0			
£26,100 South Australian Government 3 per cent. Consolidated Stock, 1916 ... ..	24,860	5	0			
£25,000 Cape of Good Hope 3 per cent. Inscribed Stock, 1933-1943 ... ..	23,850	0	0			
£25,000 London and South Western Railway 4 per cent. Preferred Converted Ordinary Stock ... ..	32,000	0	0			
£25,000 Great Northern Railway 3 per cent. Preference Stock, 1898 ... ..	26,000	0	0			
£25,000 Midland Railway 2½ per cent. Preferred Converted Ordinary Stock ... ..	20,375	0	0			
£25,000 East Indian Railway 3 per cent. New Debenture Stock	25,500	0	0			
						250,000 0 0
By INVESTMENTS, JENNER MEMORIAL FUND (at cost)—						
£2,650 Southwark and Vauxhall Water Co. 3 per cent. Debenture Stock "B" ... ..	2,756	10	0			
£2,660 South Eastern Railway 3 per cent. Preference Stock, 1898	2,740	5	0			
£300 11s. Liverpool Corporation 3 per cent Stock ... ..	271	5	11			
						5,768 0 11
By INVESTMENT, SINKING FUND (at cost)—						
£2,848 3s. 0d. 2½ per cent. Consols ... ..						2,505 7 0
(The above Investments, at the market value, 31st December, 1910, show a depreciation.)						
By DEBTORS ... ..						4,297 12 8
By STOCK OF TUBERCULIN, MALLEIN, ANTI-BACTERIAL VACCINES, &c.						369 19 0
By FURNITURE, FITTINGS, SCIENTIFIC APPARATUS AND BOOKS, as per account, 31st Dec., 1908 ... ..						2,746 17 2
By EXPENDITURE ON INSTITUTE BUILDING AT CHELSEA—						
As per Account 31st Dec., 1909, including purchase of freehold site, £6,000 ... ..	60,376	14	5			
Add additions during the year ... ..	10,539	8	8			
						70,916 3 1
By QUEENSBERRY LODGE FARM, ELSTREE—						
Purchase of freehold land and buildings and Expenditure on new buildings, as per Account, 31st Dec., 1909 ... ..	15,694	14	4			
Add additions during the year ... ..	1,358	7	6			
						17,053 1 10
Stock of Animals ... ..	536	19	9			
Stock of Anti-Toxins, Bottles, &c. ... ..	5,597	9	5			
Stable Utensils, Farm Implements and Sheds, as per Account, 31st Dec., 1903 ... ..	138	1	4			
Laboratory Apparatus, as per Account, 31st Dec., 1903 ... ..	466	1	3			
Furniture, as per Account, 31st Dec., 1903 ... ..	215	8	0			
						6,953 19 9
						£387,026 12 4

## TO THE MEMBERS.

have required. In our opinion, such Balance Sheet is full and fair, and properly drawn up so as to exhibit a true given to us and as shown by the books of the Institute.

COOPER BROTHERS & CO.,  
Chartered Accountants.

Auditors.



# The Lister Institute

## Dr. Chelsea Gardens Department.—INCOME AND EXPENDITURE

	INCOME.		£	s.	d.
To Interest and Dividends on Investments	... ..	8,944	19	2	
To Investigation, Diagnosis and Analysis Fees, &c.	... ..	4,305	11	7	
To Sales of Tuberculin, Mallein, Bacterial Vaccines, &c.	... ..	989	19	7	
<i>Add</i> Stock of Tuberculin and Mallein, Bacterial Vaccines, &c., 31st December, 1910	... ..	369	19	0	
		1,359	18	7	
<i>Deduct</i> Stock of Tuberculin and Mallein, 31st December, 1909	... ..	341	0	0	
		1,018	18	7	

£14,269 9 4

## Dr. Elstree Department.—INCOME AND EXPENDITURE

	INCOME.		£	s.	d.		£	s.	d.
To Sale of Antitoxins, &c.	... ..	7,550	4	3					
<i>Add</i> Stock, 31st December, 1910	... ..	5,459	7	0					
		13,009	11	3					
<i>Deduct</i> Stock, 31st December, 1909	... ..	3,965	3	2					
		9,044	8	1					
To Rent of Rooms at Elstree	... ..	38	0	0					

£9,082 8 1

# Preventive Medicine.

PRE ACCOUNT for the Year ending 31st December, 1910.

Cr.

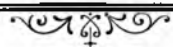
EXPENDITURE.							£	s.	d.
By Rates, Taxes and Insurance	...	...	...	...	...	...	565	5	0
By Salaries and Wages of Staff	...	...	...	...	...	...	7,452	7	5
By Stationery, Printing, Postage and Advertising	...	...	...	...	...	...	277	8	5
By Office Expenses and Sundries	...	...	...	...	...	...	180	13	0
By Travelling Expenses	...	...	...	...	...	...	13	9	7
By Auditors' Fee	...	...	...	...	...	...	21	0	0
By Gas and Water	...	...	...	...	...	...	268	1	2
By Electric Light and Power	...	...	...	...	...	...	137	10	10
By Fuel	...	...	...	...	...	...	128	8	6
By Director's Laboratory Expenses, including General Apparatus	...	...	...	...	...	...	221	9	4
By Bacteriological Laboratory Expenses, including Apparatus	...	...	...	...	...	...	377	9	8
By Water and Bio-chemical Laboratory Expenses	...	...	...	...	...	...	157	4	8
By Furniture	...	...	...	...	...	...	33	18	7
By Culture Media	...	...	...	...	...	...	119	18	11
By Animals	...	...	...	...	...	...	677	5	2
By Animal House Expenses	...	...	...	...	...	...	290	11	9
By Repairs and Alterations to Buildings and Apparatus	...	...	...	...	...	...	260	1	7
By Library Expenses	...	...	...	...	...	...	125	9	11
By General Stores	...	...	...	...	...	...	163	8	7
By Protozoological Expenses, including Apparatus	...	...	...	...	...	...	100	19	10
By Bad Debts	...	...	...	...	...	...	5	4	7
By Interest on Loan from Bankers	...	...	...	...	...	...	338	18	8
By Sinking Fund ( $\frac{1}{2}$ % per annum on £64,916 3s. 1d., Cost of Buildings)	...	...	...	...	...	...	324	11	7
							12,240	16	9
By Balance, being Excess of Income over Expenditure Transferred to Capital Fund (see Balance Sheet)	...	...	...	...	...	...	2,028	12	7
							£14,269	9	4

ACCOUNT for the Year ending 31st December, 1910.

Cr.

EXPENDITURE.							£	s.	d.
By Rent, Taxes and Insurance	...	...	...	...	...	...	123	14	3
By Salaries and Wages	...	...	...	...	...	...	1,891	6	4
By Animals—									
Stock 31st December, 1909	...	...	...	...	...	460	15	7	
Purchased during the year ending 31st December, 1910	...	...	...	...	...	403	15	2	
						864	10	9	
<i>Deduct</i> —Sales during the year ending 31st December, 1910	...	...	...	...	...	51	19	6	
Stock, 31st December, 1910	...	...	...	...	...	536	19	9	
						588	19	3	
							275	11	6
By Forage	...	...	...	...	...	...	918	4	6
By Stables and other Expenses, including Utensils	...	...	...	...	...	...	9	18	2
By Farm Expenses, including Furniture	...	...	...	...	...	...	25	1	5
By Gas, Water and Fuel	...	...	...	...	...	...	218	3	2
By Postages and Telegrams	...	...	...	...	...	...	24	15	1
By Laboratory Expenses, including Cost of Bottles, Chemicals and Apparatus	...	...	...	...	...	...	498	15	1
By Travelling Expenses	...	...	...	...	...	...	7	5	1
By Farm General Stores	...	...	...	...	...	...	41	16	4
By Farm Office Expenses and Printing	...	...	...	...	...	...	42	6	1
By Repairs and Alterations	...	...	...	...	...	...	217	10	2
By Sinking Fund ( $\frac{1}{2}$ % per annum on Estimated Cost of Buildings)	...	...	...	...	...	...	69	1	10
							4,363	9	0
By Balance, being excess of Income over Expenditure transferred to Capital Fund (see Balance Sheet)	...	...	...	...	...	...	4,718	19	1
							£9,082	8	1

SCIENTIFIC PAPERS PUBLISHED FROM THE LABORATORIES OF  
THE INSTITUTE DURING THE YEAR.



- ARKWRIGHT, J. A. ... .. DIPHtheria CARRIERS. *British Medical Journal*, II., 1910.
- BAINBRIDGE, F. A. ... .. THE AETIOLOGY AND EPIDEMIOLOGY OF PARATYPHOID FEVER AND "FOOD-POISONING." *Proc. Royal Society of Medicine*, February, 1911.
- BAINBRIDGE, F. A., AND DUDFIELD, R. AN OUTBREAK OF GASTRO-ENTERITIS CAUSED BY B. PARATYPHOID B. *Journal of Hygiene*, Vol. XI., 1911.
- BAINBRIDGE, F. A., AND O'BRIEN, R.A. ON PARATYPHOID BACILLI. *Journal of Hygiene*, Vol. XI., 1911.
- BOSANQUET, W. C. ... .. BRIEF NOTES ON THE STRUCTURE AND DEVELOPMENT OF SPIROCHAETA ANODONTAE KEYSSELITA. *Quarterly Journal of Microscopical Science*, Vol. LVI., 1911.
- BRADLEY, C. H. BURTON ... .. OBSERVATIONS ON LEUCOPROTEASE AND "ANTI-LEUCOPROTEASE." *Journal of Hygiene*, Vol. X., 1910.
- CANDY, R. H., ... .. HOSPITAL MORTALITY, 1751-1901, WITH SPECIAL REFERENCE TO  
AND GREENWOOD, M., JUNR. FRACTURES AND ACUTE LOBAR PNEUMONIA. (In the Press).
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AND MARTIN, C. J. Vol. XL., 1910.
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AND MARTIN, C. J. AND THE READINESS WITH WHICH THEY BITE MAN. *Journal of Hygiene*, Vol. XI., 1911.
- COOPER, E. A. ... .. THE BACTERICIDAL ACTION OF CRESOLS AND ALLIED BODIES. *British Medical Journal*, 1911.
- DEAN, H. R. ... .. AN EXAMINATION OF THE BLOOD SERUM OF IDIOTS BY THE  
WASSERMANN REACTION. *Proc. Royal Society of Medicine*, July, 1910.
- DEAN, H. R. ... .. COMPARISON OF THE ORIGINAL WASSERMANN METHOD WITH SOME  
OF ITS MODIFICATIONS. *British Medical Journal*, II., 1910.
- DEAN, H. R. ... .. RECOGNITION OF B. TYPHOSUS BY COMPLEMENT FIXATION. *British Medical Journal*, II., 1910.
- DEAN, H. R. ... .. STUDIES IN COMPLEMENT FIXATION WITH MEMBERS OF THE TYPHOID  
AND PARATYPHOID GROUP. *Proc. Royal Society of Medicine*  
(in the Press).
- DUDFIELD, R. ... .. (See BAINBRIDGE, F. A., and DUDFIELD, R.)
- FRY, W. B. ... .. (See PLIMMER, FRY and RANKEN).

- FUNK, CASIMIR ... .. SYNTHESIS OF DL. 3 : 4 DIHYDROXYPHENYLALANINE. *Journal of the Chemical Society*, 1911.
- GREENWOOD, M., JUNR. ... .. ON THE SPREAD OF EPIDEMIC PLAGUE THROUGH DISTRICTS WITH SCATTERED VILLAGES. Part II., STATISTICAL ANALYSES OF DATA RESPECTING EPIDEMICS OF PLAGUE IN THREE DISTRICTS OF THE PUNJAB. *Journal of Hygiene*, Vol. X. 1910.
- GREENWOOD, M., JUNR. ... .. ON THE RELATION BETWEEN PROXIMITY TO RAILWAYS AND FREQUENCY OF PLAGUE EPIDEMICS. *Journal of Hygiene*, Vol. XI., 1911.  
(See also CANDY, R. H., and GREENWOOD, M., JUNR.).
- GREENWOOD, M., JUNR., ... .. A BIOMETRIC STUDY OF PHAGOCYTOSIS WITH SPECIAL REFERENCE AND WHITE, J. D. C. ... TO THE "OPSONIC INDEX." *Biometrika*, Vol. VII., 1910.
- HARDEN, A. ... .. RECENT RESEARCHES ON ALCOHOLIC FERMENTATION. *Journal of the Institute of Brewing*, Vol. XVI., 1910.
- HARDEN, A., AND MACLEAN, H. ... .. ON THE ALLEGED PRESENCE OF AN ALCOHOLIC ENZYME IN ANIMAL TISSUES AND ORGANS. *Journal of Physiology*, Vol. XLII., 1911.
- HARDEN, A., AND NORRIS, D. ... .. THE DIACETYL REACTION FOR PROTEIUS. *Journal of Physiology*, 1911 (in the Press).
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