

THE
BAKER MEDICAL RESEARCH
INSTITUTE



THIRD
ANNUAL REPORT

1928 - 1929

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PREFACE

In presenting the Third Annual Report, we, as Trustees, desire first of all to express our great grief at the passing of Mr. Baker, our chief, whom we may fitly describe as the soul of our Institute. His presence was a constant encouragement, his scientific imagination was stimulating, and his judgment in the research matters handled by the Institute was unfailingly sound.

We desire also to express our regret at the death early in the year of Mr. H. M. Collins, the Hospital representative on the Board of Trustees. He was extremely regular in his attendance at the meetings when his failing health permitted, and took a keen interest in all the business dealt with, being equally devoted to the interests of the Hospital and of the Trust.

Of the three original Trustees, two have passed away during this year. Their places have been taken by Mr. R. H. Wilkins, formerly understudy to Mr. Collins, and Mr. J. Sutherland, of the Australian firm of Kodak, and as a reconstituted Board we realise that we must press on with high purpose.

The details of the work of the Institute are dealt with in the accompanying report, and they show that important additions to medical knowledge have been made during the year. We have viewed with satisfaction the devotion of the members of the staff to the furtherance of the objects for which the Institute was founded, and in this connection would like to make special mention of the voluntary workers.

We should like to acknowledge our great indebtedness to Messrs. L. C. Morrison, E. H. Flack and E. O'Donnell for the honorary service they have rendered the Institute in the respective capacities of solicitor, auditor and treasurer. The recent death of Mr. Morrison has bereft us of valued and sympathetic co-operation.

(Sgd.) J. F. MACKEDDIE,

Chairman of the Trustees.

The Baker Medical Research Institute

ALFRED HOSPITAL, PRAHRAN, MELBOURNE

The Baker Institute and Pathological Department are under
a unified administration.

TRUSTEES OF THE BAKER INSTITUTE.

DR. J. F. MACKEDDIE, Chairman, Hon. Physician to the Hospital.

R. H. WILKINS, Esq., Member of the Board of Management of
the Hospital.

J. SUTHERLAND, Esq.

E. O'DONNELL, Esq., Hon. Treasurer to the Baker Institute and
the Hospital.

L. C. MORRISON, Esq. (Blake and Riggall), Hon. Solicitor.
(Deceased during the year.)

E. H. FLACK, Esq. (Flack and Flack), Hon. Auditor.

LIEUT.-COL. J. H. P. ELLER, D.S.O., V.D., Secretary to the Trustees.

STAFF OF THE BAKER INSTITUTE.

Medical Personnel:

| <i>(a) Full-time Workers—</i> | <i>Duty.</i> |
|---|--|
| <p>W. J. PENFOLD, M.B., C.M. (EDIN.), B.HY. (DUNELM), M.R.C.S. (ENG.).</p> | <p>Director of the Institute and Hon. Bacteriologist to the Hospital.</p> |
| <p>A. B. CORKILL, M.B., B.S. (MELB.)</p> | <p>Research Biochemist. (Seconded for research work with Dr. Dale, Medical Research Council Laboratories, Hamp- stead, England.)</p> |
| <p>T. A'B. TRAVERS, M.B., B.S. (MELB.) (Resigned)</p> | <p>Biochemical Registrar. (Rout- ine Biochemist of Hospital.)</p> |
| <p>J. A. McLEAN, M.B., B.S. (MELB.)</p> | <p>Successor to Dr. Travers.</p> |
| <p>H. J. G. ESMONDE,* M.D.</p> | <p>Study of Colloidal Lead in Ma- lignant Disease.</p> |
| <p>G. A. KAYE,* M.D., B.S. (MELB.)</p> | <p>Study of pH of body fluids in reference to Pyelitis.</p> |
| <i>(b) Part-time Workers—</i> | |
| <p>J. F. MACKEDDIE,* B.A., M.D., B.S.</p> | <p>In Neurological and Electro- cardiographic Departments.</p> |
| <p>H. L. STOKES,* M.B., B.S. (MELB.), M.R.C.P. (LONDON)</p> | <p>In Electrocardiographic De- partment.</p> |
| <p>CHAS. E. SUTHERLAND, M.B., B.S. (MELB.), M.R.C.P. (LON- DON)</p> | <p>Investigation of methods for the detection and removal of the allergic state.</p> |
| <p>ALFRED J. TRINCA,* M.D., B.S., (MELB.), F.R.C.S. (ENG.), F.C.S.A.</p> | <p>Hon. Consulting Pathologist to the Institute.</p> |
| <p>J. RINGLAND ANDERSON,* M.B., B.S., F.R.C.S. (EDIN.), D.O.M.S. (LONDON)</p> | <p>Various Ophthalmological In- vestigations.</p> |
| <p>KEITH HALLAM,* M.B., B.S. (MELB.)</p> | <p>Study of Chloride Content of Body Fluids.</p> |
| <p>EWEN DOWNIE, M.D., B.S. (MELB.), M.R.C.P. (LONDON)</p> | <p>The Study of Insulin Resis- tance in Infections.</p> |
| <p>SURGEON LIEUT. L. LOCKWOOD*, R.A.N.</p> | <p>Study of Wassermann reac- tion, etc.</p> |

Medical Personnel: Part-time (Continued)—

H. ROY CASH*, L.D.S., B.D.S.C. Study of Dental Caries and
(MELB.) Pyorrhoea.

Scientific Personnel:

(a) Full-time Workers—

MR. JAS. SUTHERLAND Bacteriologist.
MR. A. F. DOUTCH Physical Chemist.
PHYLLIS G. ASHWORTH, M.S.C. Electrocardiographist and
(MELB.) (Resigned) Biochemical Assistant.
S. E. ALLASON, B.S.C. (MELB.) . Successor to Miss Ashworth.
MR. GILBERT PARKER Comparative Bacteriologist.
MR. E. M. BURT Histological Technician.
ANNE M. WISHART, B.S.C.
(MELB.) (Resigned) Serologist.
HILDRED M. BUTLER, B.S.C.
(MELB.) Successor to Miss Wishart.
MR. CHAS. A. E. PRICE* The Concentration of Serum
and the Determination of the
Refractive Index of the
Body Fluids.
IRWIN J. FERRIS Assistant.
JAS. E. PAYNE Assistant.
WM. P. T. SORRELL Assistant.

(b) Part-time Workers—

DOROTHY H. IRVING, B.S.C.
(MELB.) Biochemical Assistant.
(One half of Miss Irving's time is spent in hospital service as
Assistant in the Asthma Clinic.)

Secretarial:

MISS EDITH ROSS Secretary to the Director.

Animal Attendants:

ALEX. GRAY

LEN. SMITH Assistant.

PATHOLOGICAL DEPARTMENT.

Medical Personnel:

(a) Full-time Workers—

| | |
|--|--|
| JNO. FIDDES, M.D., CH.B. (ABERDEEN) | Pathologist to the Hospital. |
| J. A. McLEAN, M.B., B.S. (MELB.) (Transferred to Baker Institute) | Assistant Pathologist and Assistant Curator of the Museum. |
| H. A. PHILLIPS, M.B., B.S. (MELB.) | Successor to Dr. McLean. |

(b) Part-time Workers—

| | |
|--|--|
| PROFESSOR PETER MACCALLUM*, M.C., M.A., M.SC., M.B., CH.B. | Hon. Pathologist to the Hospital. |
| ALFRED J. TRINCA,* M.D., B.S. (MELB.), F.R.C.S. (ENG.), F.C.S.A. | Hon. Curator of the Pathological Museum. |

Scientific Personnel and Assistants:

| | |
|------------------------------|----------------------------------|
| MR. A. HYAMS | Pathological Technician. |
| MR. ADRIAN SERONG (Resigned) | Assistant. |
| MR. A. H. ENNOR. | Successor to Mr. Serong. |
| MR. REGINALD PROSSER | P.M. and Histological Assistant. |
| MR. GLEN BUCKLE | Assistant. |

*Denotes Honorary Workers.

Third Annual Report

OF

The Baker Medical Research Institute

April 30th, 1929.

Gentlemen,—

I would first like to express on behalf of the staff our deep sense of loss occasioned by the death of Mr. Baker. We all felt that he was the pivot round which our Institute moved, and that we had in him a generous friend and wise counsellor, one anxious to support us in our work in every direction likely to be fruitful. Our deepest sympathy goes out to Mrs. Baker and Miss Shaw, with Mr. Baker co-founders of our Institute.

During the year several changes in our staff have occurred, which I would like to bring to your notice.

Dr. Corkill, towards the end of the year, was seconded for duty with Dr. H. H. Dale, of the Medical Research Council Laboratories, London, where he will work under Dr. Dale's direction on some problem of carbohydrate metabolism.

Dr. Downie, who is acting as locum for Dr. Corkill, in the Diabetic Clinic, has joined the staff as a part-time research worker to investigate the problem of insulin resistance in infections.

Mr. Douch, formerly personal assistant to Dr. Corkill, has been appointed Physical Chemist to the Institute.

Dr. Travers, after two years of biochemical work, has left us to study in London for a higher qualification. In addition to the routine biochemical work which fell to his lot, he did some interesting research work on post-anaesthetic acidosis, and investigated the calcium content of the blood in parathyroid deficiency.

Dr. John McLean, formerly Assistant Pathologist of the Hospital, has transferred during the year to the Baker Institute staff to engage in routine biochemical work. He has been succeeded in his position as Assistant Pathologist by Dr. H. A. Phillips.

Surgeon-Lieutenant L. Lockwood, R.A.N., has been seconded for service at the Institute for three half-days weekly to investigate serological and bacteriological problems in reference to venereal disease.

Mr. H. Roy Cash, L.D.S., B.D.Sc., has commenced the study of caries and pyorrhoea. Up to the present time he has been chiefly occupied with a study of the structure of the cementum.

During the year Mr. H. B. Rudduck, B.V.Sc. (Melb.), re-applied to you for permission to investigate certain problems in comparative pathology, more especially black disease, so-called Australian braxy, and lymph adenitis, both diseases of sheep of great economic importance to Australia. After your permission was granted, and when it was found that pressure of University work prevented Mr. Rudduck's continued study of these problems, Mr. Gilbert Parker replaced him on the understanding that Mr. H. S. Rudduck, sen., Veterinarian of this city, provided the salary, while you provided the hospitality of the laboratory. It was felt to be in accordance with the best practice to encourage the study of problems of comparative pathology in conjunction with those of human disease.

Miss Phyllis Ashworth resigned during the year to take up duty at the Fairfield Infectious Diseases Hospital as Assistant to Dr. Kelsey. She was succeeded by Miss S. E. Allason.

Miss Anne Wishart, formerly Serologist of the laboratory, also relinquished her appointment in order to be married, and was succeeded by Miss Hildred Butler.

Mr. Adrian Serong, personal assistant to Dr. Fiddes, resigned to commence a medical course at the University. He has been succeeded by Mr. Hugh Ennor.

Mr. Alex. Gray has been provided with a full-time assistant to enable him to cope with the work in the animal house.

ROUTINE WORK.

A resume' of the routine work for the year is given in the following table:—

ROUTINE WORK FOR YEAR ENDED 30TH APRIL, 1929.

Pathological Department—

| | |
|--|-------|
| Post-Mortem Examinations | 209 |
| Examinations of Sputum for T.B. | 785 |
| Micro. Examinations of Urine | 1,568 |
| Micro. Examinations of Pleural and Peritoneal Fluids | 72 |
| Blood Examinations | 339 |
| Pus Examinations | 63 |
| Micro. Sections—Post-Mortem | 386 |
| " " Paraffin Method, Surgical | 1,039 |
| " " Frozen Method, Surgical | 882 |
| Guinea-pig Inoculations | 29 |
| | 5,372 |

Biochemical Department—

| | |
|--|-------|
| Test Meals | 407 |
| Blood Ureas | 581 |
| Urea Concentration Tests | 407 |
| Blood Sugar Estimations | 733 |
| Cerebro-spinal Fluids | 168 |
| Basal Metabolic Rate Estimations | 108 |
| Fouchet Tests | 44 |
| Van den Bergh Tests | 39 |
| Occult Blood Tests | 64 |
| Miscellaneous | 146 |
| | 2,697 |

Electrocardiograms 395

Bacteriological Department—

| | |
|--|-------|
| Wassermann Tests | 1,618 |
| Diphtheria Examinations | 1,277 |
| Examinations for Gonococci, etc. | 946 |
| Blood Cultures | 146 |
| Sundry Cultures | 267 |
| Vaccines | 121 |
| Investigations for Typhoid and Dysentery | 142 |
| Widal Tests | 76 |
| Pneumococcal Typing | 120 |
| Inoculations | 1,003 |
| Miscellaneous | 70 |
| | 5,786 |

Total 14,250

- JOHN A. MCLEAN, M.B., B.S., and JOHN FIDDES, M.D. :
 "Two Cases of Sudden Death: (a) From Rupture of the Aorta; and (b) From Rupture of an Abdominal Aneurism," published in the "Medical Journal of Australia," 15th June, 1929.
- W. J. PENFOLD, M.B., C.M., B.HY., M.R.C.S., and CHAS. A. E. PRICE:
 "The Refractive Index of the Cerebro-spinal Fluid," presented at the meeting of the Alfred Hospital Clinical Society, February, 1929.
- W. J. PENFOLD, M.B., C.M., B.HY., M.R.C.S., and A. B. CORKILL, M.B., B.S. :
 "Report of a Case of Typhus-like Fever," published in the "Medical Journal of Australia," 8th September, 1928.
- W. J. PENFOLD, M.B., C.M., B.HY., M.R.C.S. :
 "The Baker Institute and the Laboratory Service of the Alfred Hospital," published in the "Medical Journal of Australia," 8th December, 1928.
- W. J. PENFOLD, M.B., C.M., B.HY., M.R.C.S., and HILDRED BUTLER, B.SC., and A. HYAMS :
 "Experimental Infections with Haemolytic Streptococci and their Control by Serum." In preparation.
- W. J. PENFOLD, M.B., C.M., B.HY., M.R.C.S., and JAS. SUTHERLAND :
 "The Movement of the Particles of Colloidal Lead (Blair Bell's) under the Influence of Light." In preparation.
 "The Problem of the Urinary Carrier." In preparation.
- CHAS. E. SUTHERLAND, M.B., B.S., M.R.C.P. :
 "Asthma: Some Aspects of our Present Knowledge," published in the "Medical Journal of Australia," 15th December, 1928.
- CHAS. E. SUTHERLAND, M.B., B.S., M.R.C.P., and JOHN FIDDES, M.D. :
 "Experimental Study of Asthma," communicated to the Alfred Hospital Clinical Society, February, 1929.
- T. A'B. TRAVERS, M.D., B.S., and E. M. BURT :
 "Post-anaesthetic Acidosis," presented at the Alfred Hospital Clinical Society, February, 1929.
- T. A'B. TRAVERS, M.D., B.S. :
 "The Blood Calcium in a Case of Tetany." In the press.
- A. J. TRINCA, M.D., F.R.C.S. :
 "Surgical Treatment of Osteitis Deformans," published in the "Medical Journal of Australia," 4th May, 1929.
 "Fat Necrosis of the Female Breast." In the press.

- JOHN A. MCLEAN, M.B., B.S., and JOHN FIDDES, M.D. :
 "Two Cases of Sudden Death: (a) From Rupture of the Aorta; and (b) From Rupture of an Abdominal Aneurism," published in the "Medical Journal of Australia," 15th June, 1929.
- W. J. PENFOLD, M.B., C.M., B.HY., M.R.C.S., and CHAS. A. E. PRICE :
 "The Refractive Index of the Cerebro-spinal Fluid," presented at the meeting of the Alfred Hospital Clinical Society, February, 1929.
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 "Report of a Case of Typhus-like Fever," published in the "Medical Journal of Australia," 8th September, 1928.
- W. J. PENFOLD, M.B., C.M., B.HY., M.R.C.S. :
 "The Baker Institute and the Laboratory Service of the Alfred Hospital," published in the "Medical Journal of Australia," 8th December, 1928.
- W. J. PENFOLD, M.B., C.M., B.HY., M.R.C.S., and HILDRED BUTLER, B.SC., and A. HYAMS :
 "Experimental Infections with Haemolytic Streptococci and their Control by Serum." In preparation.
- W. J. PENFOLD, M.B., C.M., B.HY., M.R.C.S., and JAS. SUTHERLAND :
 "The Movement of the Particles of Colloidal Lead (Blair Bell's) under the Influence of Light." In preparation.
 "The Problem of the Urinary Carrier." In preparation.
- CHAS. E. SUTHERLAND, M.B., B.S., M.R.C.P. :
 "Asthma: Some Aspects of our Present Knowledge," published in the "Medical Journal of Australia," 15th December, 1928.
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 "Post-anaesthetic Acidosis," presented at the Alfred Hospital Clinical Society, February, 1929.
- T. A' B. TRAVERS, M.D., B.S. :
 "The Blood Calcium in a Case of Tetany." In the press.
- A. J. TRINCA, M.D., F.R.C.S. :
 "Surgical Treatment of Osteitis Deformans," published in the "Medical Journal of Australia," 4th May, 1929.
 "Fat Necrosis of the Female Breast." In the press.

The following remarks may be helpful in summarising the findings of our various research workers during the year:—

Mr. Trinca has shown: (1) That fat necrosis of the female breast is not rare, as is usually supposed, but comparatively frequent; (2) that it is not necessarily traumatic in origin, nor yet an independent lesion; but, (3) that it is associated with breast carcinoma, and he suggests that it may be a defensive mechanism against the cancer cell.

In reference to the disease Osteitis Deformans, he has observed that (1) repair of fractures is unusually rapid in this condition, (2) a local recovery from the disease occurs in the neighbourhood of the fracture, and (3) surgical trauma and other surgical treatment have their field of usefulness in treating osteitis deformans.

Drs. Sutherland and Fiddes have investigated the action of ephedrine, and have found that it will not prevent nor remove the bronchial spasm induced in guinea-pigs by the administration of histamine, though Dr. Sutherland has found ephedrine to be of distinct value clinically.

Drs. Fiddes and McLean have concluded from their study of carcinomatosis of the peritoneum that many cases hitherto reported as endothelioma or mesothelioma were in reality carcinomatous, the primary focus of the disease having been difficult to locate.

Dr. Fiddes and the writer have studied the isolated mammalian heart taken from animals poisoned by diphtheria toxin, and have found that its reaction to cardiac stimulants and depressants was similar to that of the normal heart, whether these drugs acted on the intrinsic nervous mechanism alone or on the cardiac musculature. The weakness and irregularity found in the diphtheria poisoned heart were entirely removed by adrenalin, which caused the heart to beat with the rhythm and force that a normal heart would show under the influence of the same drug. Stimulation of the vagus in the intact diphtheria poisoned animal caused the usual inhibition of the heart, while atropin entirely abolished this effect. Zondek found a depressor substance in the sera of diphtheria-toxin poisoned animals. Search has been made for this substance in the serum of animals moribund of diphtheria toxin, but no trace of it has been discovered. No evidence has been found that this substance plays any part in death from cardiac failure in diphtheria.

Drs. King and Fiddes have written a valuable monograph on Endrometrisis, dealing with its clinical and pathological aspects.

Dr. Geoffrey Kaye has, during the year, studied the diurnal variations of the reaction of the urine, and has investigated the relationship between the acidity of the stomach and the alkalinity of the urine. He has also investigated the effect of drugs and diet on urinary reaction, and has shown that the acidity of the urine during the night is essentially an expression of starvation acidosis which can be removed forthwith by the taking of nitrogenous food. His work has been extremely devoted and stimulating, and for it he has been awarded the Armytage Prize for Medical Research by the University of Melbourne.

In addition to this work on the reaction of the urine, Dr. Kaye has introduced a simplified apparatus for the intratracheal administration of anaesthetics. This apparatus offers to the general practitioner several advantages over the previous designs.

Mr. Chas. A. E. Price and the writer have found that the refractive index of the cerebro-spinal fluid is extremely constant in health, and that a deviation of more than eight units in the fifth place of decimals from the normal average indicates disease. The index has been found uniformly raised in uraemia and in uraemia complicated with diabetes and in diabetic coma. The frequency of a raised index in meningitis and tumour of the brain or spinal cord has been confirmed. The value of the refractive index for checking up the chemical examination of the cerebro-spinal fluid has been shown. It has been found that the algebraical sum of the refractive effects of the chemical deviations from the normal added to 1.33510 gives a figure which agrees closely (within eight to twelve units in the fifth place) with the observed index, always provided that the chemical analysis has been correctly carried out. Mr. Price is also continuing with his work on serum concentration.

Dr. J. A. McLean has studied the cells in a case of infectious mononucleosis, and has come to the conclusion that they arise from the reticulo-endothelium of the lymph glands and spleen, and that they are quite distinct from the lymphocytes. These studies were made by supravital staining methods. Dr. McLean believes the cell to be identical with McJunkin's lymph-endotheliocyte. It was found that supravital staining was extremely useful as a supplementary method in the classification of the acute leukaemias.

In addition to this work, Dr. McLean has been making investigations of the changes of the blood cells occurring in lead poisoning, and also estimating the blood volume in this disease. Apparently no studies have been made hitherto on this latter subject.

Miss Butler, Mr. A. Hyams and the writer have made an extensive comparison of different sera in the control of experimental streptococcal infections in mice, the available sera on the local market having only occasional slight effects in a curative direction. Miss Butler and the writer have also commenced to study in detail an aerobe, capable of producing malignant oedema, which seems to be related to Klein's Bacillus (1891).

Mr. Sutherland and the writer have continued to work on the preparation and properties of colloidal lead, and it is hoped that at an early date a resume' of our results of the treatment of cancer cases by lead may be available for publication.

Mr. Sutherland and the writer are also investigating the urinary carrier problem. Many patients, after recovery from disease, continue to carry the infecting agent in the urine, and up to the present no means of sterilising the urine and getting rid of the infecting agent has been found. The effects of various factors in influencing the bacterial population of the urine are being investigated.

Dr. Hallam has given two half days per week to his research into the blood chlorides, and has got an extremely useful method for their accurate and ready estimation. He is taking this time from a busy practice, and his devotion is keenly appreciated.

Drs. Mackeddie and Stokes have studied a large number of electrocardiograms from patients. A valuable series of tracings is being collected which will form the subject of scientific communications at a later date. The lead treatment of cancer does not appear to have had any effect on the electrocardiograms of the patients.

Mr. H. B. Rudduck recommenced the study of Australian braxy in this laboratory during the year 1927-28. The work had been suspended when evidence had accumulated during the previous year suggesting that liver fluke infection was an essential condition precedent to the development of this disease; it was widely thought that the treatment of fluke infestation would solve the problem. Recent evidence, however, has been brought forward to show that black disease is spread in areas without fluke infestation, and this has caused the laboratory to return again to its study, for it is of immense economic importance to Australia. The organism found in the liver of sheep dying of black disease has been grown, and an effort is being made to obtain a potent toxin from the organism. Up to the present the minimum quantity of the toxin which has been found to be fatal to guinea-pigs has been 1/15th of a cc. Various strains are being examined to see if any of them will yield a much stronger toxin. Successful specific immunisation against the disease requires that a strong toxin should be available for use.

Lymph adenitis, another disease of sheep, has been investigated, and a series of strains of the causative organism has been examined to get a strong toxin producer. Up to the present the toxins that have been obtained have been weak, the minimum lethal dose being one-tenth of a cc. This work on comparative bacteriology is in the hands of Mr. Gilbert Parker, whose salary is paid by Mr. Rudduck, while laboratory facilities are provided by yourselves. It is hoped that Mr. Parker's work may produce results which will be of economic advantage to Australia. It is very desirable to have work on comparative bacteriology going on side by side with that on human bacteriology. The experience of the one subject can be transferred fruitfully to the other, and a constant interchange of ideas in the two fields of work should be encouraged.

The work of Dr. Corkill and Mr. Douch on Vinca therapy in diabetes suggests that this reputed cure is of no real service in the disease. It does not appear to be able to reduce the blood sugar in any type of diabetic patient, nor yet can it regularly modify the raised blood sugar curve obtained in animals to which adrenalin has been administered. It seems to act as a laxative, and probably the good results that some diabetic patients have experienced from its use are to be explained on this ground.

The great value of Yatren in the treatment of dysentery, which has been described in the German literature, has been confirmed by Dr. Corkill in work on this drug in the Alfred Hospital.

RELATIONSHIP WITH OUTSIDE BODIES.

We would first like to acknowledge our debt for help received during the past year from the University.

Professor Laby was good enough to lend us Grayson test plates with rulings up to 120,000 to the inch, by means of which we have been able to control the resolution of our microscopes and to give valuable demonstrations in this subject to students.

We have had the advantage of the advice of Mr. J. S. Rogers, M.Sc., on the best methods for estimating the dispersion of pathological fluids; we seem now to have a method which is accurate and readily applicable, and from which we hope to obtain interesting results. Apart from the small amount of work done in Germany on the dispersion of body fluids, the subject has been greatly neglected.

We would like to acknowledge our indebtedness to Professors Osborne and Young, of the Physiological and Biochemical Departments, for sympathetic help in our work, and especially for the loan of a Pulfrich refractometer.

During the past year Professor MacCallum has been represented in the laboratories by Mr. E. S. J. King, F.R.C.S., who has spent one morning a week teaching the students practical pathology on Professor MacCallum's behalf.

At the request of the Repatriation Department, we have given it a little help in the determination of the basal metabolic rates in military patients.

We have also worked in touch with the Navy Department on the question of the diagnosis of syphilis and other problems in venereal disease, and for this work Surgeon Lieutenant L. Lockwood has been seconded by Surgeon Captain L. Darby, of the Navy Department, for three half days per week for work in this laboratory.

In connection with the State Public Health Department, we are endeavouring to promulgate an educational campaign with a view to the reduction of the diabetic mortality in the State of Victoria; the details of this scheme are outlined in the section of this report dealing with education.

The Institute would like to acknowledge its indebtedness to the Melbourne City Council and to Mr. Wheaton, head of the Heffernan Lane Sub-station, who were very helpful in supplying us with electrical current of any amperage or voltage that we desired for the making of colloidal lead for the treatment of cancer.

The generosity of the Felton Bequest Committee has also been helpful to the Institute during the past year in so far as it made available £100 for the purchase of urgently needed bacteriological literature.

The State Cancer Committee has suggested that the laboratories in which cancer research should be done should include our Institute. An abstract of the cancer research work that has been done by the workers of the Institute was provided for the State Cancer Committee.

Serum which agglutinated *Bacillus proteus* X19 and *Bacillus proteus* Kingsbury was forwarded to Dr. Wm. Jas. Wilson, Professor of Public Health in the University of Belfast, a British authority on typhus, asking him if he considered the serum was from a genuine case of typhus or not, and what significance was to be attached to the agglutination found by the laboratory. He obtained positive agglutination results with the same organisms, but was not able to give us a definite opinion on the point we raised, and, therefore, forwarded the serum to the Lister Institute, where it was examined by Dr. Felix, who came to the conclusion that the Australian disease that we handled was not genuine typhus.

Sir Morley Fletcher, Secretary of the Medical Research Council of England, has continued to supply us with the transactions of the Council, which come in the form of immensely valuable brochures on the most varied subjects of medical research. When the writer was in England Sir Morley Fletcher remembered with warm regard the help that Mr. Baker had given to some of the Council's workers in providing certain research facilities. When it became necessary, therefore, to send a representative of the laboratory abroad, we naturally turned to the Medical Research Council for help. We approached Dr. H. H. Dale, of Hampstead, through Sir Morley Fletcher, to see if it would be convenient for him to accept as a colleague for one year Dr. Corkill, Biochemist of this Institute. The Institute was gratified at Dr. Dale's and Sir Morley Fletcher's willingness to accede to this request, and Dr. Corkill was seconded for one year's work at the Medical Research Council's laboratories in London. This strengthening of the bonds linking our Institute to the Research Council will, we hope, have far-reaching value to us and to medical research.

EDUCATIONAL.

Teaching.

The laboratory service of the Hospital has endeavoured to provide more teaching for students and post-graduates than has been the case heretofore. For example, the medical students of the fourth year have had about 45 lecture demonstrations in laboratory medicine and clinical pathology before the commencement of their University lectures this year. The lectures have been given by Drs. Fiddes, King, Corkill, McLean and the writer, each Lecturer giving one lecture weekly.

Before the examination at the end of the fourth year a pathological and bacteriological tutorial and revising class was conducted by Mr. Trinca and the writer. Last year four out of the first six places in the subject of Pathology were held by Alfred Hospital men, though they numbered only seven candidates out of 64.

Fifth and sixth year men receive instruction in pathology from Mr. Trinca, Dr. Fiddes and Dr. McLean, and in the biochemical and bacteriological aspects of clinical pathology from the staff of the Baker Institute.

Teaching of post-graduates has also been undertaken by the laboratories, in conjunction with the Post-Graduate Committee of the B.M.A. and the Alfred Hospital Old Residents' Association.

A big scheme of education in the diabetic problem is being launched from the Institute. This has been rendered necessary by the fact that though a remedy has been found for diabetes, the national mortality from the disease has not been favourably influenced since the remedy was introduced six years ago. Two booklets have been written, one for the medical men of the State, and one for the education of the diabetic patients. These booklets have been examined by the staff of the Alfred Hospital, and have been approved by them as likely to be helpful. In addition, it is proposed to send lecturers to every sub-division of the British Medical Association in the State of Victoria to arouse the interest of medical men in this problem to see whether it is not possible to reduce the diabetic mortality. Diabetics who come into hospital in a state of coma now usually recover and go out in good health, but the maintenance of their good health requires careful attention to diet and the administration of insulin. This requires a little supervision by some suitable medical and nursing authority, which is not at present sufficiently exercised, with the result that many unnecessary deaths occur.

The State Health Department, the Trustees of the Baker Institute, the staff of the Alfred Hospital and the British Medical Association are in agreement that a concentrated, well-organised effort should be made to reduce the mortality from this disease and all these authorities are supporting the scheme of the Baker Institute, which the late Mr. Baker undertook to finance to the extent of £1000. This is a large public health experiment that has never been carried out successfully in any country in the world, and it is hoped that Victoria may lead the way in the successful handling of this matter.

PROGRESS IN EQUIPMENT DURING THE YEAR.

A General Electric Company refrigerator, automatically regulated, has been provided during the year at a cost of approximately £250. This is of immense value to us in preventing bacterial growth occurring in biological materials during the time that they are under examination.

A crush has been provided, so that the making of experimental sera in the horse is now possible. We are proposing to start this work with the production of an anti-streptococcal serum, streptococcal septicaemias and other streptococcal infections being extremely frequent in the hospital.

A hydrogen ion apparatus has been provided, capable of giving correct readings to the third place of decimals. It has been supplied by the Cambridge Scientific Instrument Company at a cost of approximately £60.

An increase has been made in our animal house accommodation with a view to making us, as far as possible, self-supporting in respect of animals. We are extremely anxious not to introduce into our stocks animals which may be carriers of the infecting agents of epidemic disease.

A beautiful new cabinet to accommodate about 10,000 microscopic slides has also been provided.

The great need of the Institute, however, is extra accommodation. So many people attached to the Hospital are anxious to have opportunities for research on urgent hospital problems that undue crowding occurs, and that privacy which is so conducive to fruitful thought is difficult to obtain. Mr. Baker offered to build an upper floor to the Institute if a reasonable measure of support were likely to be provided by either the State or Federal Governments, but this was not forthcoming at the time that these Governments were approached. In view of the proposal of Dr. Argyle, however, to institute a Victorian Cancer Research Fund, portion of the work of which fund would be done at the Baker Institute, an opportunity for extension of the Institute may shortly arise.

FINANCE.

The expenditure of the Institute during the past year has been £7,591/12/10, £829/10/- less than was spent during the previous year. The amount spent on equipment has greatly diminished, but increments to salaries of various workers have been rendered necessary by reason of greater usefulness of the workers to the Institute and by arbitration awards.

Under the provisions of Mr. Baker's will, the continued financial support of the Institute from his estate is assured so long as the quality of the work merits that support.

(Sgd.) W. J. PENFOLD,

Director.

To the Trustees of the Baker Institute,

Alfred Hospital,

Prahran.

6/5/29.

THE THOMAS BAKER, ALICE BAKER AND ELEANOR SHAW MEDICAL RESEARCH INSTITUTE.

Financial Statement, 1st April, 1928, to 31st March, 1929.

RECEIPTS.

| | | | |
|--|---------|----|-------|
| To Balance at 31st March, 1928 | £12,020 | 4 | 9 |
| " Cash Received from Founders | £3,000 | 0 | 0 |
| " Interest | 388 | 18 | 0 |
| " Sundry Donations | 107 | 0 | 0 |
| " Medical Fees | 83 | 6 | 0 |
| " Sales | 92 | 8 | 6 |
| | | | <hr/> |
| | 3,671 | 12 | 6 |

To Balance at 31st March, 1929—
Cash at Bank £8,100 4 5

£15,691 17 3

We have audited the above Statement, and certify it to be correct.

22nd July, 1929.
FLACK & BLACK, Hon. Auditors.

EDWARD O'DONNELL, Hon. Treasurer.

(Sgd.) J. F. MACKEDDIE } Trustees.
J. SUTHERLAND, }
R. H. WILKINS, }

PAYMENTS.

| | | | |
|---|---------|----|----|
| By Medical Salaries | £2,883 | 6 | 8 |
| " Other Salaries and Wages | 2,917 | 12 | 1 |
| | <hr/> | | |
| Less, Salary Adjustment | 5,800 | 18 | 9 |
| | 241 | 13 | 4 |
| | <hr/> | | |
| | 5,559 | 5 | 5 |
| Drugs | 186 | 12 | 7 |
| " Instruments and Glass-ware | 530 | 11 | 10 |
| " Research Material | 442 | 0 | 5 |
| " Buildings, Furniture and Equipment | 248 | 6 | 6 |
| " Fuel and Lighting | 115 | 15 | 8 |
| " Insurance | 5 | 13 | 8 |
| " Repairs | 4 | 12 | 9 |
| " Library | 214 | 7 | 9 |
| " Printing and Stationery | 90 | 7 | 5 |
| " Travelling— | | | |
| Sundry | £6 | 3 | 4 |
| Dr. Corkill (single passage to England) | 125 | 0 | 0 |
| | <hr/> | | |
| " Sundries | 131 | 3 | 4 |
| | 62 | 15 | 6 |
| | <hr/> | | |
| | 2,032 | 7 | 5 |
| | <hr/> | | |
| " Balance | £7,591 | 12 | 10 |
| | 8,100 | 4 | 5 |
| | <hr/> | | |
| | £15,691 | 17 | 3 |

