

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

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THIRTEENTH  
ANNUAL  
REPORT

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1938-39



The Baker Institute is dependent for its support on the Thomas Baker (Kodak), Alice Baker, and Eleanor Shaw Benefactions.

The Thomas Baker, Alice Baker, and Eleanor Shaw  
Medical Research Institute.

ALFRED HOSPITAL, PRAHRAN, MELBOURNE.

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R. H. WILKINS, Esq. . . . Member of the Board of Man-  
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DR. A. BASIL CORKILL.

## STAFF.

W. J. PENFOLD, M.B., CH.M. (EDIN.), D.P.H., B.HYG. (DUNELM),  
M.R.C.S. (ENG.), L.R.C.P. (LONDON), Director (retired), now  
Consultant Bacteriologist to the Institute.

A. BASIL CORKILL, M.B., B.S., D.SC. (MELB.), Director.

HILDRED M. BUTLER, B.SC. (MELB.), Bacteriologist (resigned).

A. F. DOUTCH.

JAS. SUTHERLAND (deceased).

E. HAAB, Secretary to Director and Librarian.

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### Whole-time Workers under the National Health and Medical Research Council:

A. H. ENNOR, M.SC., Physiological Research.

CHARLOTTE M. ANDERSON, M.SC., Physiological Research.

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### Routine Hospital Work:

JEAN P. MARKS, PH.C., DIP. BIOCHEM. ANALYSIS (LONDON),  
Biochemist.

JEAN C. TOLHURST, M.SC., Bacteriologist.

A. H. HYAMS, Bacteriologist (Hospital employee).

ONA M. C. KING, B.SC. (MELB.), attached to Asthma Clinic.

**Part-time Workers:**

JOHN A. McLEAN,\* M.D., B.S. (MELB.), M.R.C.P. (LONDON),  
Haematological Research.

H. LAWRENCE STOKES, M.B., B.S. (MELB.), M.R.C.P. (LONDON),  
Honorary Clinical Electrocardiographer.

ROBERT FOWLER, O.B.E., V.D., M.D., B.S. (MELB.), F.R.C.S. (ENG.),  
F.R.A.C.S.

ALFRED J. TRINCA, M.D., B.S. (MELB.), F.R.C.S. (ENG.); F.R.A.C.S.,  
Honorary Consulting Pathologist.

RUPERT A. WILLIS, M.D., B.S. (MELB.), M.R.C.P. (LONDON),  
Research Pathologist to the Institute.

\*Working under a grant from the National Health and  
Medical Research Council.

# The Director's Thirteenth Annual Report TO THE TRUSTEES

of the  
THOMAS BAKER, ALICE BAKER, AND ELEANOR SHAW  
MEDICAL RESEARCH INSTITUTE.

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30th April, 1939.

Gentlemen,

On the 18th May, 1938, the Director, Dr. W. J. Penfold, tendered his resignation on the ground of ill-health. Applications for the position of Director were called for throughout Australia and New Zealand, and on the 15th September, 1938, the writer was appointed.

It is fitting here to pay tribute to Dr. Penfold for his years of devoted work on behalf of the Institute. The present Institute has been developed from a small routine biochemical unit that was established through the foresight of your Chairman in May, 1924. Once this unit, under the direction of the present writer, had proved its value in the routine services of the Hospital, Mr. Thomas Baker offered to provide the cost for its maintenance, and also for its expansion into a research institute. After a London committee had thoroughly considered the question, they unanimously recommended that Dr. Penfold be appointed as Director of the new Institute, and on 24th February, 1927, he took up this position. Dr. Penfold's task was not an easy one. Most of the workers had been engaged on routine work, and had had no experience of research, so that the Director was not only concerned with the formulation of research problems, but also with training various workers in methods of scientific research. The present writer owes Dr. Penfold a debt of gratitude for this training, and also for his help in arranging for him to complete his training under such an eminent research worker as Sir Henry Dale, of the National Institute for Medical Research, Hampstead.

Dr. Penfold's retirement was a great loss to the bacteriological research section, and this unit of the Institute has been

further weakened by the untimely death of Mr. James Sutherland and the departure of Miss Hildred Butler to take up an important position at the Women's Hospital. It became necessary to transfer Miss Jean Tolhurst to the control of the Routine Bacteriological Section. Previously Miss Tolhurst had collaborated with Dr. Penfold on a research concerned with the production of a Welchii toxoid for the immunisation of man against gas gangrene. They had produced an effective alum precipitated toxoid, and had commenced some work designed to prepare a combined B. welchii and tetanus toxoid for the immunisation of man against gas gangrene and tetanus. In spite of the transference of Miss Tolhurst, this work is still proceeding, with Dr. Penfold in his capacity of consultant bacteriologist to the Institute. Investigations have been facilitated by a grant from the National Health and Medical Research Council to provide for a technical assistant for Miss Tolhurst.

In view of the foregoing and for other reasons it became necessary to reconsider the organisation of the Institute, and the writer submitted a report to the Trustees of the Baker Benefactions. It was suggested that the research activities of the Institute be built around three essential units—i.e., Physiology, Biochemistry, and Bacteriology. The first of these units was already present, but the development of the other two required the appointment of an organic chemist with training in biochemistry and a research medical bacteriologist. In view of the Institute's financial commitments for routine work, it was doubtful whether sufficient money was available for the above scheme. However, the Benefactions Trustees, after approving of the present Director's report, granted an extra £1000 for this year. This, gentlemen, will enable me to initiate the research scheme outlined to you.

Enquiries were made for suitable men to fill the positions of Organic Chemist and Research Bacteriologist, but none were available in Australia. In our search for and choice of a research bacteriologist we have had the invaluable assistance of Professor Ward, of Sydney, Dr. Kellaway, of the Walter and Eliza Hall Research Institute, Sir John Ledingham and Sir Henry Dale, of London. Following a report from the latter two gentlemen, you approved of the appointment of Dr. Ernst Singer. Dr. Singer was formerly Professor of Bacteriology at the University of Prague, and Director of the Department of Hygiene and Bacteriology. His researches have covered a wide field, and he has done some very fundamental investigations on chemotherapeutic processes. With these qualifications he should prove a great asset to the Institute.



In addition you have approved of the appointment of Dr. Paul Fantl as Organic Chemist. Dr. Fantl received his training at the University of Vienna, and has had a very wide experience in chemical research, particularly in relation to biochemistry.

Although, for the reasons stated above, the Institute has for the latter portion of the year been without a bacteriological research team, the physiological section has been engaged in active work.

The work of the Institute has been greatly assisted by grants to various workers from the National Health and Medical Research Council, and I wish to thank this body for their assistance.

Mr. A. H. Ennor, after completing his science course with honours, returned to the Institute, and submitted a thesis on the functions of the suprarenal cortex in relation to carbohydrate metabolism for the Master of Science degree. This he obtained with first class honours, and in addition he shared the exhibition in biochemistry.

Dr. Geoffrey Kaye, the organising editor of "Practical Anaesthesia," the first Monograph of the Baker Institute, has recently returned from America after investigating recent developments in anaesthetic technique. Since many important advances have been made since this monograph was first published, Dr. Kaye, in collaboration with the Anaesthetic Staff of the Hospital, is completely rewriting the text, and it is hoped to have the new edition published within a few months.

### **The Library.**

Our thanks for gifts of literature are due to the following: Mr. Robert Fowler, F.R.C.S.; the Mayo Clinic, Rochester, N.Y.; the Rockefeller Institute; l'Institut Pasteur d'Algérie; New York Academy of Medicine; Graham Research Department of the University College Hospital, London; Middlesex Hospital Medical School; Connaught Laboratories, University of Toronto; South African Institute for Medical Research, Johannesburg; Lister Institute, London; Henry Lester Institute, Shanghai; the Medical Research Council, London; the Commonwealth Health Department; the Science Museum Library, London; the Walter and Eliza Hall Institute; Department of Pathology, Cambridge University; the London Hospital; Bayer Pharma Pty. Ltd.; and Hoffmann-La Roche & Co. Pty. Ltd.

Inadvertently an acknowledgment of the receipt of the "Communications de l'Institut Sérothérapeutique de l'Etat Danois" was omitted from last year's annual report, and we take this opportunity of expressing our thanks to Professor Madsen, and acknowledging the valuable help which we obtained from it.

## BACTERIOLOGICAL SECTION.

### Staff.

Dr. W. J. Penfold (Consultant). Miss J. C. Tolhurst.  
Miss H. M. Butler (resigned). Mr. A. Hyams.

### Gas Gangrene and Tetanus.

By a modification of Watson and Wallace's method of concentrating diphtheria toxin with acetic acid, it has been possible to produce a concentrated *B. welchii* type A toxin with a minimum lethal dose of from 0.001 to 0.0002 c.c. for the mouse intraperitoneally. This concentrated material can be converted into toxoid by incubation in the presence of formalin, or a toxoid can be made from a culture filtrate and then concentrated. Concentrated toxins yield coarse alum precipitates, and more suitable immunising precipitates have been obtained by diluting highly concentrated toxins with freshly prepared culture filtrates, and converting them to toxoid in the usual way.

Preliminary experiments have been carried out on the combination of tetanus alum-precipitated toxoid with *B. welchii* alum-precipitated toxoid. These are prepared separately and mixed before injection. The best results were obtained when the *B. welchii* toxoid was made from a concentrated toxin. Thanks are due to Dr. F. G. Morgan, Director of the Commonwealth Serum Laboratories, for generous supplies of tetanus toxin for experimental work, and for various cultures we have received at different times.

### Haemolytic Streptococci.

Miss Butler has used Ward and Rudd's cultural test for the differentiation of group A haemolytic streptococci in the study of 150 strains isolated from human infections. This test, as originally published, did not prove very satisfactory. The

cultural methods described by these authors have, however, proved of value in establishing a correlation between the severity of infection and the characters of the infecting strain.

Strains, which on isolation grew as mucoid variants, were from severe infections. With other colonial variants, characters other than colony form had to be considered in order to establish the desired correlation.

#### **Publications.**

H. M. BUTLER:

"The Precipitin Test Applied to Melbourne Haemolytic Streptococci." "The Medical Journal of Australia," 24th September, 1938, page 501.

"The Value of Ward and Rudd's Cultural Test for the Differentiation of Group A Haemolytic Streptococci." "The Medical Journal of Australia," 26th November, 1938, page 903.

#### **Papers in Preparation.**

W. J. PENFOLD, JEAN C. TOLHURST, and DOUGLAS WILSON:

"The Concentration of *B. welchii* Toxin."

"Combined Immunisation Against Gas Gangrene and Tetanus."

#### **Routine Bacteriology.**

Since taking over the control of this department Miss Tolhurst has undertaken the complete revision of all the routine methods. In collaboration with Professor Woodruff, of the University of Melbourne, a critical examination of the methods used for the gonococcal complement fixation test is being made. In response to numerous requests for cultures from suspected tuberculous material a satisfactory routine method has been evolved. In this connection Dr. Reginald Webster, Pathologist to the Children's Hospital, has given valuable assistance. The inclusion of new media for the isolation of typhoid and dysentery bacilli, together with more comprehensive agglutination tests, is under consideration. By close co-operation with the honoraries of the Hospital, Miss Tolhurst has also given great assistance in the treatment of bacterial infections by sulphanilamide or allied drugs.

During the year ended the 30th April, 1939, the following routine bacteriological work was carried out for the Hospital:—

Wassermann Tests . . . . .	1,749
Gonococcal Complement Fixation Tests ..	236
Blood Cultures . . . . .	107
Sundry Cultures . . . . .	463
Vaccines . . . . .	210
Investigations for Typhoid and Dysentery	98
Agglutination Tests . . . . .	59
Pneumococcal Typing . . . . .	16
Sundry Smears . . . . .	43
Examinations for Gonococci . . . . .	2,344
Dark Ground Examinations . . . . .	26
Pregnancy Tests . . . . .	58
Miscellaneous . . . . .	2
	Total .. 5,411

### PATHOLOGICAL SECTION.

Dr. Willis has continued his researches on the pathology of tumours, and has published the following papers from the Institute:—

R. A. WILLIS:

“A Diffuse Leptomeningeal Tumour in a Child; with Comments on ‘Sarcomatosis’ of the Meninges.” “Journal of Pathology and Bacteriology,” Vol. 47, 1938, page 253.

“Some Aspects of the Pathology of Bone Tumours of Interest to Radiologists.” “Medical Journal of Australia,” 29th October, 1938, page 717.

“The Experimental Study of Tissue Transplantation and its Bearing on Surgery.” To appear in the “Australian and New Zealand Journal of Surgery.”

R. A. WILLIS and E. K. TURNER:

“Paraplegia due to Metastasis from a Symptomless, Almost Invisible Bronchial Carcinoma.” “Medical Journal of Australia,” 19th November, 1938, page 866.



## PHYSIOLOGICAL AND BIOCHEMICAL SECTION.

Staff.

Dr. A. B. Corkill.

Mr. A. H. Ennor.

Miss C. M. Anderson.

### Fructose Metabolism.

The studies on fructose metabolism, referred to in last year's report, have been completed, and it has been shown that the peripheral tissues cannot, to any appreciable extent, directly utilise this hexose. Balance studies were made on the spinal eviscerated preparation receiving a continuous intravenous infusion of fructose. It was shown that the fructose infused could be accounted for by that present in the blood and that found in the muscle tissues. In addition, we do not consider that the accumulation of blood lactic acid, found after the intravenous infusion of considerable quantities of fructose, represents a true phase of the intermediate metabolism of this hexose. It was found that either fructose or glucose could be infused in the eviscerated preparation at rates of 600-800 mg. per hour without producing any increase in the blood lactic acid. When these quantities were exceeded, definite rises in the blood lactic acid occurred.

In other experiments, fructose was introduced into a loop of the dog's intestine. Blood samples were taken from the venous return of the loop and also from the systemic circulation. Although the analyses showed that fructose was being actively absorbed, no increase in blood lactic acid was observed. It has been suggested that the rapid and sustained rise in the respiratory quotient found after the ingestion of fructose is due to a "blowing off" of CO<sub>2</sub> from increased lactic acid production, but our results do not support this view.

Davidson et al. have shown that the intravenous injection of fructose depresses the glucose tolerance curve of rabbits, and Fletcher and Waters have demonstrated the same phenomenon in dogs. The latter observers consider that the increased utilisation of glucose under the above conditions is due rather to accelerated liver glycogen formation than to increased peripheral utilisation.

Our own experimental data are not entirely in accord with this view, since we have shown that under certain conditions the peripheral utilisation of glucose can be definitely increased by the intravenous injection of fructose. Control experiments were made on the eviscerated preparation receiving

a continuous intravenous infusion of glucose. When the blood glucose had attained a steady level, insulin was injected and blood glucose estimations made at half-hourly intervals for two hours. In other experiments fructose, in addition to glucose, was administered, and in all instances the fall in blood glucose was much greater than in the control series. Since, in these experiments, the glucose disappearing from the blood stream can be accounted for by oxidation and storage as muscle glycogen, we must conclude that fructose increases the peripheral utilisation of glucose.

The Pulfrich photometer that was presented to the Institute by Dr. Rowden White has been of great value in the estimations of blood and tissue fructose.

### **The Effect of the Anterior Pituitary Gland on Tissue Metabolism.**

Mr. Ennor, who rejoined the staff in December, 1937, has been working on problems associated with tissue metabolism. At the beginning of this year he joined forces with Miss Anderson to form a team for the investigation of the action of the anterior pituitary gland on various aspects of metabolism. Miss Anderson has already had considerable experience in the preparation of anterior pituitary gland extracts, so that this collaboration should be productive of good work.

It was thought worth while, from the results of other investigations in this Institute, to investigate the action of anterior pituitary gland extracts on the tissue enzyme glyoxalase. In preliminary work a modified manometric technique for the estimation of reduced glutathione (GSH) was evolved. This method has the advantage that no standard enzyme solution is necessary. It depends on the fact that GSH acts as the specific activator of glyoxalase in the conversion of methyl glyoxal to lactic acid. The estimation is carried out in two steps. Firstly, the tissue extract containing bicarbonate is allowed to react with methylglyoxal in the Warburg apparatus. The CO<sub>2</sub> evolution in ten minute intervals is recorded, and a figure which is termed the Normal Rate is obtained. Another portion of the extract is taken, and GSH removed by oxidation. To this extract varying amounts of GSH are added, and the mixture set up in the Warburg apparatus. Readings are taken as in the first stage of the experiment, and by referring the Normal Rate to the values found with different amounts of GSH, the GSH of the original untreated extract can be calculated. The values found with this method closely agree with those calculated by the iodate titration technique.

Originally it was intended to study the effect of the administration of anterior pituitary gland extracts on the liver glyoxalase system, but it was found that the extreme variations encountered amongst normal animals precluded any comparative studies. However, some interesting observations were made concerning the action of pituitary extracts on tissue GSH. Such extracts were found to produce as much as 50 per cent. reduction in the liver GSH of rabbits. The greatest effect was produced by the crude saline one, but when this was further fractionated, all the fractions possessed some action in decreasing the liver GSH.

Studies on the mechanisms concerned with the oxidation of GSH have been made on liver extracts. If these are prepared from the livers of rabbits that have received injections of anterior pituitary extract, a marked inhibition of GSH oxidation during aeration is observed.

Experiments were also commenced to study various aspects of tissue metabolism in dogs made diabetic by the injection of large quantities of crude saline pituitary extracts, according to the method of Young. Progress in these latter investigations has been delayed through an unsuspected and hitherto unreported complication. The anterior pituitary glands had always been collected from the abattoirs as soon as possible after the slaughtering of the cattle, and they were then immediately frozen. In addition all practical precautions as to cleanliness were observed. It was therefore rather disconcerting to find that after two or three injections of extract the dogs became seriously ill, refusing food, and dying on about the fourth day. Blood cultures revealed a Gram negative organism belonging to the *Pasteurella* group. Broth cultures of this organism were extremely toxic to guinea-pigs, rabbits, and mice.

For some time we were at a loss to ascertain the exact source of the organism. Topley and Wilson, in "The Principles of Bacteriology and Immunity" (1936), state that *Pasteurella* organisms are sometimes carried in the nasopharynx, and that the same may occur in cattle. At this stage it was thought possible that the organism might gain access to the gland during its extraction. However, from a recent abstract of some work by Sanders in Florida it would appear that *Pasteurella* organisms may occur in the blood, nasopharynx and tissues of cattle showing no symptoms of disease, and having no gross lesions. In agreement with our findings, Sanders states that the organism is highly toxic to

rabbits, the lethal dose being 0.001 c.c. of a twenty-four hour bouillon culture.

It is felt worth while to record our experience with this complication, so that other workers who contemplate the preparation and use of anterior pituitary extracts might be acquainted with the possibility of such an occurrence. In our earlier work the cattle were free from any *Pasteurella* infection, and it is puzzling to find that now most of the cattle seem to be infected. So far no satisfactory method has been evolved to rid the glands of the contamination and yet retain their full diabetogenic activity. It has been possible to prepare *Pasteurella*-free extracts from acetone-dried glands kept at 0°, but considerable loss of activity occurs.

The physiological work carried out some time ago in this department by Dr. Noel Heath, and which formed part of his thesis for the D.D.Sc. degree, has now been published separately.

#### Publications.

A. B. CORKILL and J. F. NELSON:

"A Note on the Estimation of Glutathione." "Australian Journal of Experimental Biology and Medical Science," 16, 133, 1938.

"Concerning the Metabolism of Fructose." "Australian Journal of Experimental Biology and Medical Science." In the press.

A. H. ENNOR:

"The Manometric Estimation of Glutathione in Tissue Extracts." "Australian Journal of Experimental Biology and Medical Science." In the press.

"The Influence of Anterior Pituitary Extracts on the Content and Rate of Oxidation of Glutathione in Tissues." Ibid. In the press.

NOEL E. E. HEATH:

"A Consideration of General Anaesthesia for Dental Surgery." "Medical Journal of Australia," 8th October, 1938, 594.

"Certain Aspects of Anaesthesia and Analgesia for Dental Surgery." "Australian Journal of Dentistry," February, 1939, page 39.



## ROUTINE BIOCHEMISTRY.

Officer-in-Charge: Miss J. P. Marks.

A considerable increase in the work of this department has taken place during the last year. There has been an increased demand for alkali reserve estimations, and the recording of the fourth lead in electrocardiograms.

In association with Dr. Davis, a critical examination of the urea clearance test is being made. Controversy still exists concerning the value of oral administration of urea for this test, and in order to form a definite opinion on this point a large number of clearance tests are being performed on normal and other individuals. It is felt that in interpreting the clearance test, especially if urea is given, one should have precise information concerning the rate and duration of the rise of urea in the blood. For this purpose it is proposed to perform a considerable number of blood urea curves after the oral administration of 15 and 30 grams of urea. Miss Marks and Dr. Davis are also attempting to correlate the urea clearances with urea concentration tests and the amount of urea excreted in three hours. These investigations are of considerable importance, and when completed should be of value in assessing renal function.

In association with Dr. Sewell, Miss Marks is comparing the results of fractional test meals carried out with the ordinary gruel meal with those found after alcohol. Their object is to ascertain which method gives results most clearly in keeping with the clinical condition.

The following routine biochemical work has been carried out for the Hospital during the year ending the 30th April, 1939:—

Fractional Test Meals . . . . .	487
Blood Urea Estimations . . . . .	585
Urea Concentration Estimations . . . . .	285
Urea Clearance Tests . . . . .	206
Blood Sugar Estimations . . . . .	384
Glucose Tolerance Tests . . . . .	187
Cerebro-spinal Fluid Examinations . . . . .	332
Basal Metabolic Rate Estimations . . . . .	130
Fouchet Tests . . . . .	67
van den Bergh Tests . . . . .	73
Benzidene Tests . . . . .	172
Diastase Tests . . . . .	34
Blood Calcium Estimations . . . . .	21

Benedict Tests . . . . .	588
Acetone Estimations . . . . .	624
Lange Colloidal Gold Reactions ..	169
Blood Cholesterol Estimations .. ..	9
Laevulose Tolerance Tests .. . . .	3
Miscellaneous . . . . .	137
	— 4,493
Electrocardiograms . . . . .	584
	—
Total ..	5,077

## CLINICAL RESEARCH.

### Haematology.

Dr. John McLean has continued a study of red cell volume determinations by haematocrit method, and has published results of this investigation in "The Medical Journal of Australia." In a series of fifty-five normal persons, values for mean corpuscular volume, mean corpuscular haemoglobin, and mean corpuscular haemoglobin concentration were substantially the same as values obtained in England and America. In a study of sixty-three various blood diseases it was found that the method afforded a ready means of differentiation between hyperchromic macrocytic and hypochromic microcytic anaemias. Dr. McLean is making a further investigation of blood diseases by study of bone marrow smears obtained by sternal puncture. He has performed sternal puncture in ninety cases of blood diseases, and the results indicate that the method is of use in the diagnoses of obscure cases, and in particular in distinguishing pernicious anaemia from a group of aplastic anaemias in which the blood picture is that of a hyperchromic macrocytic anaemia similar to that of pernicious anaemia.

Dr. McLean intends to apply the above methods of blood examination to an investigation of moderate anaemia of undetermined origin. It is proposed to examine the blood of all new patients attending Dr. McLean's Out-patient Clinic, and in particular the influence of dietetic deficiency as a cause of anaemia will be studied.

Dr. McLean has also investigated the effect of a blood plasma concentrate on a case of haemophilia. There was no significant change in blood coagulation time following intramuscular injection of the concentrate. An extract of yellow bone marrow has been prepared at the Baker Institute to be used in treatment of cases of agranulocytosis. So far no cases

have been available for treatment, but Dr. McLean demonstrated in a case of aplastic anaemia associated with neutropenia that there was a temporary increase in leucocytes following injections of the bone marrow extract.

#### **Publication.**

J. A. McLEAN:

“Haematocrit Determinations in Normal and Abnormal Blood.” “Medical Journal of Australia,” 5th November, 1938, page 770.

#### **Foetal Physiology.**

Mr. Fowler has conducted experiments which tend to confirm the reported “breathing movements” of fetuses while still in the uterus. A pregnant guinea-pig was anaesthetised, and the abdomen opened under Ringer’s solution. One horn of the uterus was opened and a foetus extracted. No movements were observed at the time, but some minutes after the amniotic sac had been removed, the foetus was seen to be inhaling and exhaling the Ringer’s solution. In the amniotic sac of a foetus in the other horn of the uterus, India ink was injected. The incisions were then closed. Next day the pig was killed, and the remaining fetuses were removed. The lungs of that foetus which had been exposed to the India ink were found to be blackened. On sectioning, particles of India ink were seen in the bronchioles.

Attempts have been made to find whether the human placenta is permeable to horse serum. Horse serum was injected into the mother, and next day foetal serum was collected. This was tested in two ways. One method was to set up in an isolated organ-bath one uterine horn from a guinea-pig previously sensitised to horse serum, and to test the response of the uterus to a dose of foetal serum. A positive result would have been indicated by an anaphylactic reaction due to the foetal blood containing horse serum. It was found that the maximum sensitivity of the guinea-pig uteri was of the same order as the maximum possible concentration of the horse serum in the foetal blood, and the negative results were inconclusive.

The second method was a precipitin test. The foetal serum was mixed with the serum of a rabbit which had been immunised against horse serum. Unfortunately the maternal serum reacted, and it was not possible to draw conclusions from the reaction of the foetal serum.

## ASTHMA CLINIC.

The past year has shown an increase in the number of routine tests on new patients attending the Asthma Clinic. Skin sensitivity tests have been carried out on 740 patients. Of these patients, 564 have been given a series of scratch tests, about 40 in number, and 176 have been tested by the intradermal method to four or six groups of allergens.

This year mixtures of extracts for specific therapy have been prepared at the Hospital, and 56 of these mixtures have been supplied. One hundred and forty-seven preparations (vaccines or protein extracts) have been dispensed for patients receiving treatment outside the Hospital.

One hundred and twenty-seven tuberculin tests (Mantoux, von Pirquet, and Vollmer patch) have been done during the year. Lately the tuberculin patch test has been carried out as a routine on all children admitted as in-patients. It is also being done in parallel with Mantoux and von Pirquet tests for children, and is showing good confirmation of the results.

Mr. Douth and Miss King have continued their work on the histamine-histaminase reaction along lines indicated in the last report. Recent overseas publications have caused a modification of our ideas regarding the utility of this work. It is now felt that, having regard to our available facilities, no further extensive research in the matter is justified.

## PREPARATION OF INTRAVENOUS SOLUTIONS FOR HOSPITAL USE.

During the year the Honorary Medical Staff of the Hospital considered that some improvement in the preparation of intravenous solutions was necessary. The Institute was asked to submit a report on the most satisfactory methods suitable for economic and efficient application in this Hospital. Following the Director's report, a sub-committee of the Honorary Staff recommended to the Hospital Board that effect be given to the suggestions. The Board agreed to this, and appointed a worker to be trained in the Institute. Mr. Douth has given a considerable amount of his time to training this worker and arranging the necessary facilities. Solutions are now in routine use, and with the appreciation of their value intravenous therapy has increased to a marked degree. The Institute has agreed to supervise the preparation of all solutions, and act in an advisory capacity.

## ALFRED HOSPITAL CLINICAL SOCIETY.

In the past the first meeting of the year has been allotted to the Baker Institute for the presentation of scientific papers. This year a departure from this procedure was made, and the staff presented a number of lecture demonstrations at the Baker Institute. The following programme was given:—

- (1) The Scientific Basis of the Standardisation of Therapeutic Substances—Dr. A. B. Corkill, Mr. A. H. Ennor, and Mr. A. F. Douth.
- (2) The Isolation and Significance of Haemolytic Streptococci—Miss H. M. Butler.
- (3) Demonstration of Haematological Methods—Dr. J. A. McLean.
- (4) The Administration of Sulphanilamide Compounds—Miss J. C. Tolhurst.
- (5) Mistakes that may be made in Routine Biochemical Investigations—Miss J. Marks and Miss C. M. Anderson.

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The financial statement for the year is appended.

A. B. CORKILL,  
Director.

**THE THOMAS BAKER, ALICE BAKER AND ELEANOR SHAW MEDICAL RESEARCH INSTITUTE**  
**Financial Statement for Year, 1st January to 31st December, 1938.**

	RECEIPTS.		EXPENDITURE
To Credit Balance, 1st January, 1938 ..	£439	16 0	By Medical Salaries .. .. £2,275 2 6
„ Thomas Baker, Alice Baker and Eleanor Shaw Benefactions .. ..	6,284	9 2	„ Other Salaries and Wages 4,128 1 5
„ Grants—			£6,403 3 11
Alfred Hospital . . . . .	£500	0 0	„ Drugs, etc . . . . .
Commonwealth Department of Health	301	5 0	„ Instruments and Glass-ware . . . . .
		801 5 0	„ Special Maintenance ..
„ Donations and Bequests—			„ Furniture and Equipment
J. R. Hartley Estate	£100	0 0	„ Fuel and Lighting .. . .
Melbourne Post-Graduate Committee	2	2 0	„ Insurance . . . . .
		102 2 0	„ Repairs . . . . .
„ Interest—			„ Library . . . . .
Australian Consolidated Loan . . . . .	637	10 0	„ Printing and Stationery
Alfred Hospital . . . . .	41	4 5	„ Travelling . . . . .
		678 14 5	„ Sundries . . . . .
„ Proceeds of Sale of Monographs .. . .	44	1 6	2,135 7 6
„ Proceeds of Sale of Equipment and Sera . . . . .	62	15 10	£8,538 11 5
„ Proceeds of Sale of Reprints . . . . .	4	5 2	„ Credit Balance at 31st December, 1938
„ Medical Fees . . . . .	394	12 7	273 10 3
		£8,812 1 8	£8,812 1 8

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

Melbourne, 13th September, 1939.

**FLACK & FLACK,**  
 Honorary Auditors



### MONOGRAPH ACCOUNT

To Receipts—		By Expenditure—	
1933-4 .. . . . . .	£108 5 10	1933-4 .. . . . . .	£108 5 10
1934-5 .. . . . . .	124 13 0	1934-5 .. . . . . .	20 17 5
1935-6 .. . . . . .	57 14 7	1935-6 .. . . . . .	10 6 5
1936 .. . . . . .	4 12 6	1936 .. . . . . .	251 17 6
1937 .. . . . . .	55 3 3	1937 .. . . . . .	25 13 6
1938 .. . . . . .	44 1 6	1938 .. . . . . .	Nil
	£394 10 8		£417 0 8
„ Balance Overdrawn by Monograph ..	22 10 0		
	£417 0 8		£417 0 8

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**Spectator Publishing Co. Pty. Ltd., Printers, Melbourne.**

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