

**THE
BAKER MEDICAL RESEARCH
INSTITUTE**



**SIXTH
ANNUAL REPORT
1931-1932**

PREFACE.

In presenting the Sixth Annual Report of the proceedings of the Institute, the Trustees are gratified to think that the work inaugurated by the late Mr. Baker continues to grow. The perusal of the report shows how varied and practical the researches of the workers have been during the past year, and how the Institute is becoming increasingly a nursing ground for the research aspirations of our young Australian graduates in Medicine and Science.

(Signed) J. F. MACKEDDIE,
Chairman of the Trustees.

**The Thomas Baker, Alice Baker, and Eleanor Shaw
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.**

JOHN TURNBULL, Esq. (Blake and Riggall), Honorary Solicitor.

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., CH.M. (EDIN.), B.HY. (DUNELM), M.B.C.S. (ENG.)</p> | <p>Director of the Institute and Hon. Bacteriologist to the Hospital.</p> |
| <p>A. B. CORKILL, M.B., (MELB.)</p> | <p>B.S. Experimental Physiologist and Research Biochemist.</p> |
| <i>(b) Part-time Workers—</i> | |
| <p>J. F. MACKEDDIE,* B.S. (MELB.)</p> | <p>B.A., M.D., Neurological Research.</p> |
| <p>R. A. WILLIS,* (MELB.)</p> | <p>M.D., B.S., D.S.C. Pathological Research with special reference to malignant tumours.</p> |
| <p>H. LAWRENCE STOKES,* B.S. (MELB.), (LONDON)</p> | <p>M.B., M.R.C.P. Clinical Electrocardiographist.</p> |
| <p>CHAS. E. SUTHERLAND,* B.S. (MELB.), (LONDON)</p> | <p>M.B., M.R.C.P. Investigation of methods for the detection and removal of the allergic state.</p> |
| <p>ALFRED J. TRINCA,* (MELB.), F.R.A.C.S.</p> | <p>M.D., B.S. Hon. Consulting Pathologist to the Institute.</p> |
| <p>HUGH C. TRUMBLE,* B.S. (MELB.), F.R.A.C.S.</p> | <p>M.C., M.B. The Investigation of (1) the Nerve Supply and Musculature of Certain Abdominal Viscera, (2) other surgical problems.</p> |
| <p>J. RINGLAND ANDERSON,* (EDIN.), (LONDON),</p> | <p>M.C., M.B., B.S. (MELB.), F.R.C.S. Various Ophthalmological Investigations.</p> |
| <p>ROBERT FOWLER,* (ENG.),</p> | <p>O.B.E., V.D., M.D., B.S. (MELB.), F.R.C.S. Research on Treatment of Carcinoma of Uterine Cervix (in conjunction with League of Nations Cancer Commission).</p> |

Medical Personnel: Part-time (Continued)—

- G. A. KAYE,* M.D., B.S. (MELB.) Analysis of Alfred Hospital cases of Nephritis. Editor of a Monograph on Anaesthetics.
- EWEN DOWNIE, M.D., B.S. (MELB.), M.R.C.P. (LONDON) Investigation of Arterial Disease in Diabetes.
- LEONARD B. COX,* M.D., B.S. (MELB.), M.R.C.P. (EDINBURGH) Study of the Histo-pathology of the Nervous System.
- H. SHANNON*, M.D., B.S. (LONDON), D.P.H. (OXFORD), M.B.C.S. (ENG.), L.R.C.P. (LONDON) Study of various problems in Tuberculosis.
- O. W. TIEGS,* D.SC. (ADELAIDE) Investigation of the Influence of the Sympathetic Nervous System on Muscle.
- T. A'B. TRAVERS,* M.B., B.S. (MELB.), M.R.C.P. (LONDON), D.O.M.S. (LONDON) Curator of the Ophthalmological Section of the Museum.
- C. H. HEMBROW,* M.B., B.S. (MELB.), F.R.C.S. (ENGLAND), F.R.A.C.S. Various surgical investigations.
- M. MUSHIN,* M.B., B.S. (MELB.) Laboratory Investigations in the Diagnosis of Pancreatitis.

Scientific Personnel and Assistants:

(a) Full-time Workers—

- MR. JAS. SUTHERLAND Bacteriologist.
- MR. A. F. DOUTCH Physical Chemist.
- MARGARET E. LONG, M.SC. (MELB.) Biochemist.
- DOROTHY H. IRVING, B.SC. (MELB.) Biochemist.
- HILDRED M. BUTLER, B.SC. (MELB.) Bacteriologist.

ISOBEL M. McPHEE, B.Sc.
(MELB.) Biochemist.

(One half of Miss McPhee's time is spent in hospital service as
Assistant in the Asthma Clinic.)

MR. CHAS. A. E. PRICE* The Determination of the Re-
fractive Index of the Body
Fluids.

MR. E. M. BURT Histological Technician.

GLEN BUCKLE Assistant.

JAS. E. PAYNE Assistant.

W. P. T. SORRELL Assistant.

(b) Part-time Workers—

PHYLLIS G. ASHWORTH,* B.Sc. The Comparison of the Kline
(MELB.) and Wassermann Tests.

MRS. W. G. DUFFIELD* Records Officer for Asthma Re-
search.

MR. D. B. SMITH,* B.E.E., A.M.I.E. Electro-physiological Investi-
(AUST.) gation.

Secretarial:

MISS EDITH ROSS Secretary to the Director and
Librarian to the Institute.

Animal Attendants:

ALEX. GRAY

LEN. SMITH Assistant.

CHAS. STEWART Assistant.

PATHOLOGICAL DEPARTMENT.

Medical Personnel:

(a) Full-time Workers—

R. A. WILLIS, M.D., B.S., D.Sc.
(MELB.) Pathologist to the Hospital.

B. O. JONES, M.B., B.S. (MELB.) Assistant Pathologist.

(b) *Part-time Workers*—

PROFESSOR P. McCALLUM,* Hon. Pathologist to the Hos-
M.C., M.A., M.SC. (N.Z.), M.B., pital.
CH.B., D.P.H. (EDIN.)

ALFRED J. TRINCA,* M.D., B.S. Hon. Curator of the Pathologi-
(MELB.), F.R.C.S. (ENG.), cal Museum.
F.R.A.C.S.

F. M. READ,* M.B., B.S. (MELB.) Assists the Curator of the
Museum.

Scientific Personnel and Assistants:

MR. A. HYAMS Bacteriologist.

MR. A. H. ENNOR. Assistant.

MR. REGINALD PROSSER P.M. and Histological Assis-
tant.

GORDON LEY Assistant.

GILBERT WIGNALL Assistant.

MR. ARTHUR STEELE* Assistant.

*Denotes Honorary Workers.

Sixth Annual Report

OF THE

Baker Medical Research Institute

30th April, 1932.

Gentlemen,—

In reviewing the vicissitudes of the Institute during the past year, it is a pleasure to be able to state that we have not lost the services of any member of our permanent staff. The Institute, on the other hand, has been enriched by the accession to the ranks of its honorary workers of Dr. Tiegs, Associate Professor of Zoology of the University of Melbourne. He has very generously spent much of his valuable time in experimental work at the Institute, bringing to our assistance an expert knowledge of zoology and physiology, enabling him, in association with Dr. Corkill, to do some extremely valuable and difficult work.

It has been one of the great regrets of the medical profession in Melbourne that the association between the Departments of the University and the staffs of the Hospitals has been insufficiently developed. We hope that the Baker Institute may be one means of furthering this association.

We should like to offer our congratulations to our valued colleague, Dr. R. A. Willis, Pathologist of the Hospital, who has just recently been awarded the Degree of Doctor of Science by the University of Melbourne for several pieces of research work of a very high order of merit.

Mr. Robt. Fowler, F.R.C.S., has temporarily left the service of the Institute and the Hospital in order to study the progress of Gynaecology abroad, with special reference to the treatment of malignant disease of the uterus by means of radium.

Dr. T. a'B. Travers has rejoined the staff of the Institute in an honorary capacity, and is occupying himself with building up an Ophthalmological Section of our Pathological Museum.

This section will be representative of all the various diseases of the eye, and will be a valuable instrument for the teaching of these diseases.

Mr. C. H. Hembrow, F.R.C.S., has contributed for the first time to our transactions by investigating positional abnormalities in appendicitis. As a member of the Clinical Staff of the Hospital, we welcome him into our circle of scientific workers.

During the year the Cambridge University Press has published a monograph by Dr. J. Ringland Anderson on the subject of "Detachment of the Retina." It is an exhaustive treatment of the subject, which has been favourably reviewed in the English, German and Indian medical press. Because of its excellence, the book is being translated into German, a great compliment to its Australian author.

After carefully collecting all the recent literature dealing with advances in anaesthesia, the anaesthetists of the Hospital have written the first Baker Institute monograph. Dr. Geoffrey Kaye acted as organising editor in the preparation of the work. We trust that this will only be the prelude to a series of Institute monographs, for at the moment several other such publications are contemplated. It is felt that when a worker has substantially added to his subject, it is good for him and for the Institute that he should revise the whole subject and fit into it his own findings. This activity of the Pasteur Institute has been a great benefit for many years past, and we in Australia should imitate it in reference to those subjects to which we have devoted our special attention. Methods and results of blood culture, the surgery of the abdominal sympathetic nervous system, lipiodol in pulmonary and neurological diagnosis, the metastatic spread of malignant disease are subjects, all of which could be handled extremely efficiently in monographic form by members of our Institute.

Mr. Gordon Ley, who was in charge of the media room, has, unfortunately, been absent through illness for nine months during the past year, but he is rapidly recovering, and we trust that he will soon be able to resume his duties. We have missed his devoted service.

Mr. Arthur Steele joined the staff of the Institute in a voluntary capacity to assist in our general work, and to refresh his knowledge of laboratory medicine. He has just recently been appointed to a position under the Bendigo City Council.

ROUTINE WORK.

The routine work carried out by the Institute during the past year is indicated in the following table. The number of examinations made is slightly in excess of the previous year, the Honorary Staff of the Hospital not having found that they could economise in this direction, as desired by the Board of Management.

ROUTINE WORK FOR YEAR ENDED 30th APRIL, 1932.

Pathological Department:

Post-Mortem Examinations	233
Examinations of Sputum for T.B.	671
Micro. Examinations of Urine	1,336
Micro. Examinations of Pleural and Peritoneal Fluids	89
Blood Examinations	380
Pus Examinations	80
Micro. Sections—Post Mortem	706
" " —Paraffin	1,124
" " —Frozen	72
Guinea Pig Inoculations	61
	4,752

Biochemical Department:

Test Meals	357
Blood Urea Estimations	595
Urea Concentration Estimations	346
Blood Sugar Estimations (Single)	694
Blood Sugar Curves	98
Cerebro-spinal Fluid Examinations	97
Basal Metabolic Rate Estimations	52
Fouchet Tests	26
Van den Bergh Tests	32
Occult Blood Tests	80
Laevulose Efficiency Tests	7
Diastase Tests	29
Blood Calcium Tests	10
Urine Tests for Sugar, etc.	69
Blood Cholesterol Estimations	9
Miscellaneous	10
	2,511

Electrocardiograms 290

Bacteriological Department:

Wassermann Tests	2,363
Gonococcal Complement Fixation Tests	91
Diphtheria Examinations	1,643
Examinations for Gonococci, etc.	2,240
Dark-ground Examinations	54
Blood Cultures	127
Sundry Cultures	274
Vaccines	95
Investigations for Typhoid and Dysentery	316
Widal Tests	44
Other Agglutination Tests	50
Pneumococcal Typing	11
Sundry Smears	29
Inoculations	962
Miscellaneous	3
	<hr/>
	8,302
Total	<hr/> 15,855

RESEARCH WORK.

The work published during the year or in course of preparation for publication is as follows:—

(The papers are arranged in the alphabetical order of the names of authors.)

J. RINGLAND ANDERSON, M.C.; M.B., B.S. (Melb.); F.R.C.S. (Edin.); D.O.M.S. (London); F.R.A.C.S.:

“Detachment of the Retina,” Cambridge University Press, 1931.

“Some Problems in Strabismus.” Appeared in the “Australian and New Zealand Journal of Surgery,” Vol. I, December, 1931, page 291.

“Anterior Retinal Dialysis.” In the press.

P. G. ASHWORTH, B.Sc., and DOROTHY H. IRVING, B.Sc.:

“A Comparison of the Kline and Wassermann Tests.” Appeared in the “Medical Journal of Australia,” 2nd January, 1932, page 14.

A. B. CORKILL, M.B., B.S. (Melb.):

“The Influence of Insulin and Adrenaline on Carbohydrate Metabolism.” Appeared in the “Medical Journal of Australia,” 17th October, 1931, page 477.

“A Note on an Alleged Action of Orally Administered Insulin.” Appeared in the “Medical Journal of Australia,” 26th December, 1931, page 816.

"The Clinical Significance of Plasma Phosphorus, Cholesterol, Chloride and Serum Calcium Estimations." Appeared in the "Medical Journal of Australia," 9th January, 1932, page 60.

"The Influence of Insulin on the Liver Glycogen of the Common Grey Opossum (*Trichosurus*)." In the press.

"The Influence of Toxaemia on Carbohydrate Metabolism." In the press. As an Essay, awarded the Armytage Prize by the University of Melbourne.

LEONARD B. COX, M.D., B.S. (Melb.); M.R.C.P. (Edinburgh):

"The Relation of Sluder's Neuralgia to the Trigeminal Nerve, and to other Facial Neuralgias." Appeared in the "Medical Journal of Australia," 27th February, 1932, page 292.

"Ganglioneuroma of the Cerebrum, with an Additional Case." Appeared in the "Medical Journal of Australia," 12th March, 1932, page 347.

"An Examination of the Cytology of the Glioma Group, with especial reference to inclusion cells." In preparation.

"Sixty Intracranial Tumours, with Observations Concerning Their Incidence, Exact Nature, Location, Duration and Removability." In preparation.

EWEN DOWNIE, M.D., B.S. (Melb.); M.R.C.P. (London):

"Adherent Pericardium Treated by Cardiolysis." Appeared in the "Australian and New Zealand Journal of Surgery," Vol. I., No. 2, September, 1931, page 213.

"Diabetic Coma." Appeared in the "Medical Journal of Australia," 23rd January, 1932, page 131.

"Diabetic Gangrene." Appeared in the "Australian and New Zealand Journal of Surgery," Vol. I., No. 4, March, 1932, page 393.

"Vascular Disease, with Special Reference to Diabetes Mellitus." Appeared in the "Medical Journal of Australia," 30th April, 1932, page 612.

"Observations on Glucose Tolerance in Cases of Recovered Pancreatitis." In the press.

MABEL G. FLANLEY, B.S. (Washington):

"The Scope of Diet Therapy." Appeared in the "Medical Journal of Australia," 12th September, 1931, page 326.

ROBT. FOWLER, O.B.E., V.D.; M.D., B.S. (Melb.); F.R.C.S. (Eng.); F.A.C.S., F.R.A.C.S.:

"The Treatment of Uterine Cancer." Appeared in the "Medical Journal of Australia," 5th September, 1931, page 283.

C. H. HEMBROW, M.B., B.S. (Melb.); F.R.C.S. (England); F.R.A.C.S.:

"Some Anomalous Forms of Appendicitis." In the press.

MARGARET E. LONG, M.Sc. (Melb.), and EWEN DOWNIE, M.D., B.S. (Melb.); M.R.C.P. (London):

"Pruritus Vulvae in Relationship to Intermittent Glycosuria." Appeared in the "Medical Journal of Australia," 13th June, 1931, page 721.

"Observations on Disturbances of Glucose Tolerance During the Course of Infections." In the press.

J. F. MACKEDDIE, B.A., M.D., B.S. (Melb.):

"Lipiodol in Neurological Diagnosis." Appeared in the "Medical Journal of Australia," 22nd August, 1931, page 221.

"Lipiodol and the Lungs." Appeared in the "Medical Journal of Australia," 7th November, 1931, page 569.

ISOBEL M. MCPHEE, B.Sc. (Melb.), and G. A. KAYE, M.D., B.S. (Melb.):

"Some Observations on the Prognosis in Acute Nephritis." In the press.

M. MUSHIN, M.B., B.S.:

"Urinary Diastase in Acute Pancreatitis." In the press.

W. J. PENFOLD, M.B., CH.M., B.Hyg., M.R.C.S., and HILDRED M. BUTLER, B.Sc.:

"Blood Cultures in the Work of a General Hospital." Appeared in the "Medical Journal of Australia," 26th March, 1932, page 429.

"The Serum Treatment of Experimental Streptococcal Infection." In the press. To appear in the "Medical Journal of Australia," 21st May, 1932.

W. J. PENFOLD, M.B., CH.M., B.Hyg., M.R.C.S.; HILDRED M. BUTLER, B.Sc., and IAN JEFFREYS WOOD, M.D.:

"The Aetiology of Erythroedema, with Special Reference to Blood Culture." In the press.

W. J. PENFOLD, M.B., CH.M., B.HYG., M.R.C.S., and C. A. E. PRICE:

“The Refractive Index of the Bile.” In preparation.

W. J. PENFOLD, M.B., CH.M., B.HYG., M.R.C.S., and JAS. SUTHERLAND:

“The Effect of the Gamma Rays of Radium and of X-Rays on Blair Bell’s Colloidal Lead.” Appeared in the “Medical Journal of Australia,” 25th July, 1931, page 98.

W. J. PENFOLD, M.B., CH.M., B.HYG., M.R.C.S.; JAS. SUTHERLAND, and A. HYAMS:

“Typhoid Carrier Treated by Cholecystectomy.” In preparation.

W. J. PENFOLD, M.B., CH.M., B.HYG., M.R.C.S.; JAS. SUTHERLAND, and C. A. E. PRICE:

“Observations on the Bile in Disease of the Gall Bladder.” In preparation.

H. SHANNON, M.D., B.S. (London); M.R.C.S. (Eng.); L.R.C.P. (London); D.P.H. (Oxford):

“A Comparison of the Vernes and Wassermann Tests.” In preparation.

“Anatoxic Tuberculin.” In preparation.

ALFRED J. TRINCA, M.D., B.S. (Melb.); F.R.C.S. (Eng.); F.R.A.C.S.:

“Open Operation in the Treatment of Simple Fracture of the Tibia.” In preparation.

“The Use and Abuse of Draining Tubes in Peritonitis, with a Report of Cases.” In preparation.

HUGH C. TRUMBLE, M.C.; M.B., B.S. (Melb.); F.R.C.S. (Eng.); F.R.A.C.S.:

“Made-to-Order Splints: The Technique of Construction and Field of Application.” Appeared in the “British Journal of Surgery,” Vol. XIX., No. 74, October, 1931, page 292.

“The Surgical Treatment of Constipation.” Appeared in the “Medical Journal of Australia,” 3rd October, 1931, page 405.

“The Fable of the Loaded Caecum.” Appeared in the “Medical Journal of Australia,” 27th February, 1932, page 301.

“A Method of Fixation of the Hip-Joint by Means of an Extra-articular Bone Graft.” Appeared in the “Australian and New Zealand Journal of Surgery,” Vol. I., No. 4, March, 1932, page 413.

“A Note on the Lateral Position.” In the press.

R. A. WILLIS, M.D., B.S., D.Sc. (Melb.):

“Latent Primary Tumours.” Appeared in the “Medical Journal of Australia,” 30th May, 1931, page 653.

“Metastatic Tumours of the Thyreoid Gland.” Appeared in the “American Journal of Pathology,” Vol. VII., No. 3, May, 1931, page 187.

“Metastatic Tumours in the Intestines.” Appeared in the “Australian and New Zealand Journal of Surgery,” Vol. I., No. 1, June, 1931, page 41.

“Some Aspects of the Pathology of Uterine Carcinoma.” Appeared in the “Medical Journal of Australia,” 5th September, 1931, page 293.

“A Bacillary Disease of the Blue-Tongued Lizard (*Tiliqua Scincoides*).” Appeared in the “Medical Journal of Australia,” 30th January, 1932, page 149.

“Mitosis in the Hepatic Metastates of Malignant Tumours.” Appeared in the “Journal of Pathology and Bacteriology,” Vol. XXXV., No. 1, January, 1932, page 11.

“A Monstrous Twin Embryo in a Lizard, *Tiliqua Scincoides*.” Appeared in the “Journal of Anatomy,” Vol. LXVI., Part 2, 1932, page 189.

“‘Sarcoma’ and ‘Endothelioma.’” In preparation.

“Metastatic Carcinoma of Bones, with Severe Anaemia.” In preparation.

“An Unusual Carcinoma of the Skin.” In preparation.

The chief results obtained by the various workers are briefly indicated as follows:—

The monograph on “Detachment of the Retina,” by Dr. Anderson, is the first to appear in the English language on this subject. It summarises the available information regarding the causes and treatment of this hitherto almost incurable disorder. It discusses fully the new “Gonin” treatment, which is successful in quite a large number of cases. Research work which has been done at the Baker Institute on the subject is incorporated to some extent in the monograph, but will be more

fully referred to in a German edition of the book, which is being prepared at present. This edition will give the results of the treatment as applied to patients at the Alfred Hospital.

Dr. Anderson has also written on the loss of vision associated with squint; he has dealt with the cause of the condition and its treatment. His paper on "Anterior Retinal Dialysis" deals with a neglected, though relatively common, form of retinal tear. This form of tear in the retina can now be successfully treated by modern means.

For the last eight months Dr. Corkill and Dr. Tiegs, Associate Professor of Zoology of the University of Melbourne, have collaborated in investigating physiological problems arising in connection with the actions of sympathetic nerves. Some very interesting information has been elicited on the question of fatigue in striated muscle. The fact that sympathetic stimulation can relieve this fatigue (Orbeli phenomenon) has been definitely confirmed. This phenomenon can be demonstrated either with or without perfusion of the experimental animals, which in all instances have been frogs. Using the frog's gastrocnemius muscle, the Orbeli effect has been repeatedly demonstrated, and, in addition, adrenaline admitted to the perfusing fluid in a strength of 1-1,000,000 has been found almost invariably to improve the strength of contractions in the fatigued muscle. This latter phenomenon has been denied by Wastl, but the experiments of Drs. Corkill and Tiegs clearly establish the validity of this action of adrenaline. This effect has been demonstrated with an adrenaline dilution of 1-400,000,000, but this strength seems to be the extreme limit at which the phenomenon can be demonstrated. It would appear that skeletal muscle is much less sensitive than cardiac muscle, since a definite improvement in the force of the isolated frog's heart has been observed with a strength of 1-2,000,000,000 adrenaline. Further investigations have been carried out, the results of which seem to indicate that the phenomenon produced in fatigued muscle by sympathetic stimulation is due to an effect produced on the motor end plate. Thus, in certain experiments, the frog's sartorius muscle was used, and electrical stimulation carried out alternately through the nerve free end (direct muscle-stimulation), and indirectly through the ventral roots. At the onset of fatigue the sympathetic chain at the level of the seventh ganglion was stimulated and a typical Orbeli effect demonstrated, in the contractions due to ventral root stimulation. The contractions due to direct muscle stimulation were unaffected. Certain other experiments, planned to demonstrate a humoral basis for phenomena dependent upon sympathetic nerve stimulation, are in progress. A technique has been developed in

which the suitably prepared frog is perfused through the aorta, while the fluid emerging from the anterior abdominal vein is led, by means of a fine cannula, into the isolated heart of another frog. Sympathetic stimulation in the first frog has, in several experiments, caused an augmentation of the contractions in the isolated heart. However, further work is necessary before the validity of such experiments can be definitely demonstrated.

Dr. Cox has continued to work on the subject of Sluder's neuralgia. In a case under his care the sensory trigeminal root was resected in three stages, but no relief of pain occurred until the third stage of the process of resection had been completed. Then the cornea became anaesthetic. He concluded that the Sluder's syndrome in this case resulted from an infection in the area of distribution of the naso-ciliary division of the fifth nerve. The relation of this neuralgia to other facial neuralgias has been discussed by him, and the possibility of sensory fibres occurring in the so-called motor nerves of the eye muscles has been considered.

Dr. Cox has also been occupied with the microscopic structure of cerebral tumours, having examined already over 50 examples of gliomata. He has attempted to discriminate between those cells which are truly neoplastic and those cells which have been included in the process of invasion of the cerebral tissue. He is busy preparing a further paper on 120 intracranial tumours, with observations concerning their incidence, nature, location, duration, and the possibility of their being removed.

He has examined two cases of erythroedema with a view to finding characteristic changes in the spinal cord and peripheral nerves. This work has not given positive results, but will be continued as further material becomes available.

Dr. Downie has continued his work in reference to vascular disease in diabetes and diabetic coma. He has made a survey of the effects of the Diabetic Scheme that was introduced by the Institute three years ago. From a comparison of the diabetic mortality statistics of Victoria and New South Wales, we find that the proportion of diabetics under fifty years of age dying in Victoria has diminished to a much greater extent than is the case in New South Wales.

He has also studied, in conjunction with Miss Long, the disturbances of glucose tolerance occurring in the course of infections.

Mrs. Duffield has analysed the results of treatment in about 900 cases of asthma, in connection with the Asthma Clinic. The results of this investigation are not yet ready for publication.

Mr. Hembrow, F.R.C.S., has shown in one case that the signs and symptoms of appendicitis were misleading in so far as they occurred on the side opposite to that on which the appendix was situated.

Miss McPhee and Dr. Kaye have analysed the records of the acute nephritics treated in the Hospital during the last ten years. They have called these patients up for clinical and biochemical investigation, thus obtaining valuable information on the prognosis of the disease.

Dr. Mushin has shown that the measurement of urinary diastase is almost an infallible guide to the presence of acute pancreatitis in patients having signs of acute upper abdominal disease. This test has been discredited to a certain extent in England, and to a greater extent in America, but Dr. Mushin has been able to show that this is undeserved, for if it is carried out in the first sixty hours after the onset of the disease, it is an extremely valuable diagnostic agent. The treatment of this condition, too, has improved during recent years owing to the introduction of decompression of the common bile duct. In view of the value of this treatment, early definite diagnosis marks real progress.

Dr. Mackeddie has continued his work on lipiodol in neurological and pulmonary diagnosis. His two articles which appeared in the "Medical Journal of Australia," are accompanied by a fine collection of illustrative X-ray photographs, some of which have been republished by French writers.

Miss Butler and the writer have published during the year the results of their investigations on the serum treatment of experimental streptococcal infections. The outstanding result went to show that these sera, even the most modern anti-toxic or anti-bacterial, whether produced in America, England or Australia, were frequently fatal to the infected animals. The occasional benefit which has been claimed for them in the literature is admitted, but the work under discussion tends to show that they should be tested against a large number of strains, and if this be done it is confidently asserted that their detrimental influence will be readily detected. Whether this evil influence occurs in the case of the human subject or not, it is premature to say, but an effort is being made to repeat the work in other species of animals, and if it should be easily demonstrable in these other species, then we may assume that it applies to man also. In the meantime, antistreptococcal sera are not used to any extent in the Hospital in the treatment of human cases.

Miss Butler, Dr. Ian Jeffreys Wood and the writer have also studied the aetiology of erythroedema, or pink disease, which

occurs not infrequently in Australian children. The cause of this disease is still obscure. The particular phase of the work undertaken was to examine fifteen cases by blood culture methods, from the third to the twentieth week of the disease, some cases being subjected to blood culture no less than six times. It was found that as a rule no organisms grew in the blood cultures, but by the use of a new medium, Kendall's K medium, recently developed in Chicago, it was found that three cases gave positive blood cultures on four occasions. The organisms were all extremely slowly growing, having no power to ferment even glucose. Two of them were serologically similar, if not identical, although they came from separate cases. Arrangements are now being made to continue this study, especially in the direction of investigating the tonsils of these children, for it may well be that they are the portal of entry of the infection. The relationship of the cultures obtained to the causation of the disease has not yet been ascertained.

Miss Butler and the writer have also developed the Hospital blood culture work on its technical side, so that one in every three cases submitted to blood culture gives a positive result, which is an enormous help in the diagnostic work of the Hospital.

Mr. Price and the writer have been investigating the refractive index of the bile. When an X-ray examination suggested that the gall bladder could not effectively concentrate the bile, the bile removed at operation was found, on examination, to be concentrated extremely well, that is to say, the X-ray estimation of concentration did not agree with the refractometric. This work will be continued, as we have reason to think that the determination of the refractive index of the bile by the surgeon in the operating theatre will give immediately valuable information on the functional activity of the gall bladder before its removal.

Mr. Hyams and the writer have continued to work on chronic ulcerative colitis. The treatment of many of these cases by means of Barger's vaccine has given very marked improvement, of which the permanency cannot yet be determined.

Mr. Sutherland and the writer have been investigating the bacteriology of the biles and gall bladders removed at operation. Some of these have been extremely interesting. One gall bladder, for example, was removed from a patient probably responsible for two epidemics of typhoid fever. The bile from this gall bladder contained over 100,000 typhoid bacilli per cubic centimetre. Another gall bladder was found infected with *Bacillus paratyphosus* A. The history in this case was that of an enteric infection during the war, since which time apparently the patient has been a reservoir of infection, without, as

far as we are aware, infecting any of his neighbours. A large number of sections of the gall bladder wall have been cut, to show the nature of the disease and the infecting organisms present. *Bacillus welchii* was also found in the bile of one gall bladder which was gangrenous at the time of operation. This strain was toxic, and pathogenic for animals, and we are inclined to believe it was the cause of the gall bladder necrosis present, and of the death of the patient.

Mr. Sutherland has also worked with Mr. Fowler, F.R.C.S., in endeavouring to investigate whether anaerobic bacteria were present in large myomata at the time of their removal from the uterus. This operation is sometimes followed by septicaemic infection with anaerobes. The results suggest that if the whole tumour be incubated in a suitable medium, and if the technique of its removal from the body and its placing in the medium is satisfactory, then it will not be found infected.

Mr. Sutherland also investigated an epidemic of jaundice occurring in sheep in the Riverina. Unfortunately, the cause of the disease still remains a mystery.

In collaboration with Mr. Furnell, F.R.C.S., Mr. Sutherland has investigated different media for the growth of *Trichomonas vaginalis*. Various media were tried, but the best results were obtained with Locke's solution, to which 5% citrated blood serum was added. His investigations have confirmed those of Wenyon.

Dr. Shannon has carried out the Vernes Test in over 1000 sera taken in the ordinary course of Hospital work, and has compared the results obtained by this test with those obtained by the Wassermann method. This comparison does not lead us to suppose that the Vernes Test is going to help us in any way in the Hospital. The Wassermann Test is conducted in the Hospital on a quantitative basis, which gives a fairly accurate guide to the surgeon as to the value of any treatment of syphilis which he is undertaking.

Dr. Shannon has also endeavoured, in conjunction with the writer, to diminish the toxicity of tuberculin, with a view to the production of an anatoxic tuberculin, but the data obtained up to the present are insufficient to enable us to say whether such a tuberculin can be produced or not. What we desire is a tuberculin which is not toxic in the tuberculous, but which is immunising. This work is being continued.

Dr. Sutherland has continued his investigations on the methods of treatment of asthma and the search for new substances which may cause it or hay fever in Victoria, and the study of methods for detecting the hypersensitive state. This

investigational work has been done chiefly in the Clinic, while in the laboratory he has been engaged in the study of methods for preventing anaphylaxis and for estimating the histamine-destroying properties of serum. Since histamine is readily produced in the body, and is known to produce the experimental asthma of animals, any light thrown upon the power of the blood to destroy the substance must be of value.

Mr. Trinca, F.R.C.S., studied the value of open operation in the treatment of simple fractures of the tibia, from which he concluded that the accurate reduction of these fractures, with their subsequent correct union, must be preceded by the direct removal of the tissues interposed between the ends of the bony fragments. He has also investigated the use and abuse of drainage tubes in peritonitis. During the past two to three years a consecutive series of cases of peritonitis, arising from various sources, has been treated without the use of drainage tubes, and in this series no deaths occurred. He concludes that drainage is unscientific and actually harmful.

Mr. Trumble, F.R.C.S., has continued his study of the anatomy and physiology of the lower abdominal sympathetic, and investigated the bearing of his findings on the surgical treatment of aggravated constipation. His results have been applied by him in the actual treatment of the human subject with very marked benefit. The simple section of the hypogastric nerves seems to render the drastic treatment advocated by Arbuthnot Lane quite unnecessary.

Mr. Trumble has also investigated a function which has apparently not previously been studied, namely, the function which permits of the storage of faeces until such time as defaecation may occur. When this function is deranged, he shows that the inherent peristaltic mechanism of the gut causes the frequent passage of small masses of faeces. He has investigated the mechanism underlying this derangement and the possibility of constructive surgical work on the sympathetic system which might be of great use in nervous derangements of the rectum and bladder.

Mr. Smith has investigated with great keenness the bulk of the recent literature dealing with the injury of man and animals due to electrical currents, and has prepared a critical summary of this literature. His own investigational work is just in its infancy, but will doubtless yield useful results.

Dr. Willis has continued his work on the spread of malignant disease. He has now investigated about 300 cadavers, with the idea of determining the mode of spread of malignant disease to and in each tissue of the body, in addition to which he has

studied two thousand references dealing with this subject. At present he is writing what will be probably the most authoritative monograph on the subject that has appeared in any language.

RELATIONSHIPS WITH OUTSIDE BODIES.

Blood culture work has been done by the Baker Institute for the Children's and Women's Hospitals. This work has, especially in the case of pink disease, given results which may be of great value, and which have already been dealt with.

The University Departments have again been uniformly helpful to us.

Mr. Wilkie, of the Zoological Gardens, has kindly maintained monkeys for us, which Mr. Trumble, F.R.C.S., has required from time to time in his work.

During a portion of this year the Metropolitan Farm has very kindly grazed our horse, pending our being ready to resume its immunisation.

GIFTS.

The Felton Bequest's Committee very kindly supplied £100 to the Institute to be used in support of the work of Dr. Downie on the Diabetic Scheme, the results of which will be referred to later.

The Vernes apparatus, kindly donated last year by Dr. Shannon, has been in constant use for various precipitin tests.

Miss Lang has announced her intention of endowing a Physiological Unit in memory of her brother, Mr. Alex. Lang. This will be an immense advantage for the work of Dr. Corkill and Professor Tiegs, for the present quarters are extremely cramped. It will also enable greater accommodation to be given to several other departments.

Gifts of literature must again be acknowledged from Professor Fraser, of St. Bartholomew's Hospital, London; Dr. Fitzgerald, of the Connaught Laboratories, Toronto; Professors Banting and Best; Dr. White, Director of the Serum Institute, Massachusetts; Dr. W. H. Park, Director of the New York Public Health Laboratory; Professors Boycott and Bulloch, of the University College and London Hospital respectively; the Mayo Clinic; Professor Kendall, of the North-Western University of Chicago; Professor Madsen, Director of the Serum Institute, Denmark; Sir Spencer Lister, Director of the Institute of Medical Research,

EDUCATIONAL.

The fourth year students were given a course of lectures in pathology and bacteriology, and did better than the average in their examination at the end of the fourth year.

Post-graduate lectures have also been given, and during Health Week articles were written by several members of the Institute staff for publication in the daily press.

Dr. Gault and Mr. Clarke, of the Australian Navy, have come to work with us to go through a course of hospital laboratory training.

UNIVERSITY DISTINCTIONS.

Annually for the last four years the Armytage Prize for Medical Research has been won by a Baker Institute worker. The prize winners have been:—For 1929, Dr. Geoffrey Kaye; 1930, Dr. John McLean; 1931, Dr. Ewen Downie; 1932, Dr. A. B. Corkill.

FINANCE.

During the year the expenditure of the Institute was approximately 21% less than that of the previous year. The Hospital was unable to make any payment for the routine work carried out for it after November, 1931. The situation has required reductions in salary, and prevented the adequate recognition of work well worthy of your special commendation. The financial statement is appended.

(Signed) WILLIAM JAS. PENFOLD,

Director.

To the Trustees of the Baker Institute,
Alfred Hospital,
Pahran.

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

Financial Statement, 1st April, 1931, to 31st March, 1932.

RECEIPTS.		PAYMENTS.	
To Balance at 31st March, 1931	£2,859 0 10	By Medical Salaries	£2,391 14 0
„ The Thomas Baker (Kodak), Alice Baker and Eleanor Shaw Benefactions	£4,000 0 0	„ Other Salaries and Wages	3,247 9 4
„ Sundry Donations	108 17 0		£5,639 3 4
„ Medical Fees	165 2 3	Less, Salary Adjust- ment	75 0 0
„ Proceeds Sale of Equip- ment	99 16 8		£5,564 3 4
„ Interest	348 7 7	„ Drugs, etc.	114 17 6
	<u>4,722 3 6</u>	„ Instruments and Glass- ware	197 11 3
		„ Experimental Apparatus	589 11 10
		„ Furniture and Fittings	16 5 1
		„ Fuel and Lighting	135 5 2
		„ Sundries	80 7 1
		„ Insurance	20 9 9
		„ Repairs	9 17 5
		„ Library	312 6 9
		„ Printing and Stationery	69 18 5
		„ Travelling Expenses ..	15 7 1
			<u>1,561 17 4</u>
			£7,126 0 8
		„ Balance	455 3 8
			<u>£7,581 4 4</u>
	<u>£7,581 4 4</u>		
To Balance at 31st March, 1932, Cash in Bank	£455 3 8		

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

E. H. FLACK, Hon. Auditor.
Melbourne,

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