D A Robertson

THE NEW ZEALAND

JOURNAL

OF

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Contents

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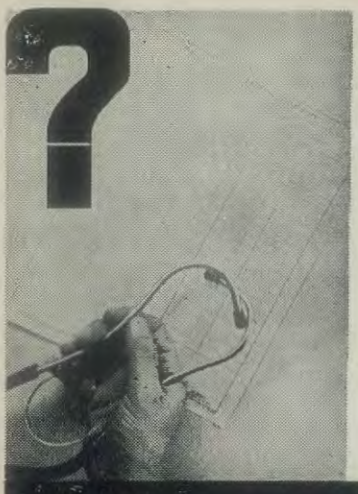

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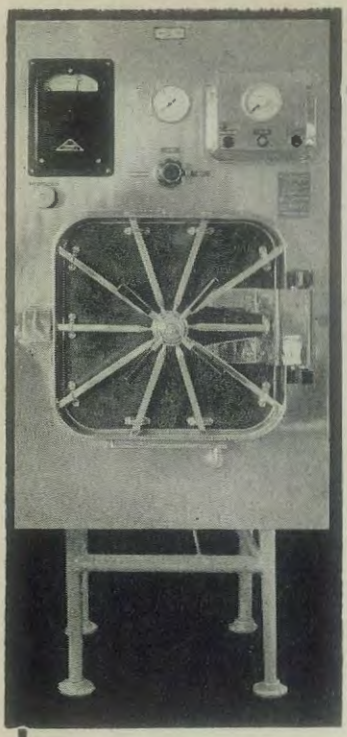

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new reagent system[1] for transaminase (GOT) assay:

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— faster, less complex than Reitman-Frankel colorimetric method[3]

— less subject to error than Karmen ultraviolet method[2]

— without shortcomings of both[1-8]

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These advantages are important to you, your clinicians and your patients. Order TransAc today. 100-test boxes. And for standardizing: Versatol®-E, boxes of ten 3 ml. vials.

1. Babson, A. L.; Shapiro, P. O.;Williams, P. A. R., and Phillips, G. E.: Clin. Chim. Acta *7*:199, 1962. 2. Karmen, A.: J. Clin. Invest. *34*:131, 1955. 3. Reitman, S., and Frankel, S.: Am. J. Clin. Path. *28*:56, 1957. 4. Schneider, A. ., and Willis, M. J.: Clin. Chem. *8*:343, 1962. 5. Bonting, S. L.: J. Clin. Invest. *39*:1381, 1960. 6. Fawcett, C. P.; Ciotti, M. M., and Kaplan, N. O.: Biochim. et Biophys. Acta *54*:210, 1961. 7. Zimmerman, H. J.; Silverberg, I. J., and West, M.: Clin. Chem. *6*:216, 1960. 8. Amador, E., and Wacker, W. E. C.: Clin. Chem. *8*:343, 1962.

For complete information on chemistry and procedure see the TransAc package insert, or write to

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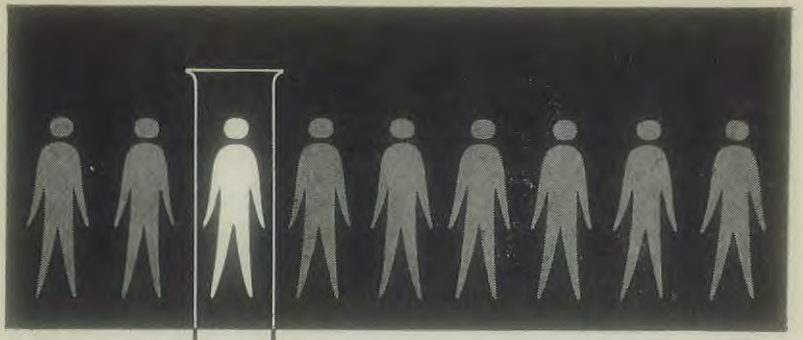

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References: 1. Wilkinson, J. F.; Nour-Eldin, F.; Israels, M. C. G., and Barrett, K. E.: **Lancet** 2:947 (Oct. 28) 1961.
2. Hicks, N. D., and Pitney, W. R.: **Brit. J. Haem.** 3:277, 1957.
3. Langdell, R. D.; Wagner, R. H., and Brinkhouse, K. M.: **J. Lab. & Clin. Med.** 41:637, 1953.

* In addition to its use as a reagent in the Hicks-Pitney test, DIAGNOSTIC PLASMA Warner-Chilcott remains the **normal plasma of choice for quality control** of the one-stage prothrombin time and other coagulation tests. Make sure your supply of DIAGNOSTIC PLASMA Warner-Chilcott is adequate.

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Directions for Contributors

In the interests of uniformity, the following directions should be followed by all contributors to the Journal.

Manuscripts should be typewritten on one side only, of good quality quarto sized paper, be double spaced and with a 1½in margin. They should bear the author's name (male authors give initials, female authors one given name), address, and (if this is different), the address of the laboratory where the work was carried out. The manuscript should take the following form: Introduction; materials and methods; results; discussion and conclusion; summary; acknowledgments; references. Carbon copies are not acceptable. Nothing should be underlined unless it is necessary that it be printed in italics.

ILLUSTRATIONS. Graphs and diagrams are termed 'figures' and should be numbered in the order of their appearance in the text. Figures should be drawn in Indian ink on stout white paper larger than required for the text. Legends to the figures should be typed separately and attached. Illustrations, particularly half tone blocks, should be sparingly used. Half tone blocks are referred to as 'plates' and these again are numbered in sequence and the captions are typed and attached. Elaborate tables should be kept to a minimum but any necessary tables should be typed on separate sheets of paper and numbered in roman numerals.

NOMENCLATURE. Scientific names of micro-organisms should conform with the system adopted in the latest edition of *Bergey's Manual of Determinative Bacteriology* and underlined to indicate that they are to be printed in italics. Collective names for groups of bacteria such as staphylococci, salmonellae, etc., should not be underlined. Abbreviations such as C.S.F. for cerebro-spinal fluid, are only permissible if their meaning is clearly indicated when first introduced. Conventional abbreviations such as ml. for millilitre and cmm. for cubic millimetre are acceptable without explanation. Names of chemical substances should conform to current chemical practice and care should be taken to see that chemical formulae are correct.

REFERENCES: Only papers closely related to the author's work should be quoted. Contributors should study this issue of the Journal for examples of the preferred method of making reference. All references are brought together at the end in alphabetical order and numbered. In the list, references should include (1) Surname followed by the initials of the author(s), (2) Year of publication in brackets (3) Abbreviated title of the periodical according to *World List of Scientific Periodicals* or to *World Medical Periodicals* (underlined), (4) Volume, (5) Page numbers. If there are three or more authors the words *et al* may be added to the name of the first author in the text, but the names of all co-authors must be given in the list. References to books should include (1) Author(s) or Editor(s), (2) Year of publication in brackets, (3) Title (underlined), (4) Edition, (5) Page number referred to, (6) Name of Publisher and Place of Publication.

REPRINTS. Authors may receive a minimum of 50 reprints at cost price. These should be ordered when returning corrected galley proofs.

PROOFS. Whenever time permits, authors will have the opportunity to correct galley proofs before publication. No major alterations will be permitted unless the author is prepared to stand the cost, and proofs must be returned within three days of receipt.

Letters to the Editor

Sir,

May I through the medium of your journal circulate two pieces of information to members of our Institute.

1. Throughout the year laboratories have sent their *Sh.sonne* strains to Dunedin for colicine typing. A further interesting epidemiological possibility has emerged and we should be very grateful if additional strains are sent to us. As they become available it would be most helpful if the sulphonamide and penbritin sensitivity pattern could be included with the other usual information.

2. The practicability of the tetrazolium chloride sensitivity test has been questioned on several occasions since the Tauranga conference and I would make the following observation at this stage. It is very useful to give an early provisional finding within 1½ hours. From any one of the obviously sensitive discs one may proceed to the accurate dilution method thus saving as much as 18 hours. If the Editor gives his approval, further detailed information will be offered for publication in the New Year.

Yours faithfully,
H. C. W. Shott.
October 15, 1965.

Laboratory Crossword Solution (No. 2)

Across: 2 Pepsin; 6. Enzyme; 9. Protein; 11. Esculin; 12. Cholesterol; 15. Wax; 16. Nitrate; 18. Sb; 20. Rheo; 23. Er; 24. Room; 25. Inert; 26. Acetone; 28. Amyl; 29. Use.

Down: 1. Lipid; 2. Phosphatase; 3. Phenol; 4. Ne; 5. Neon; 7. Nuclease; 8. Yellow; 10. Nessler; 13. Law; 14. Inulin; 17. Acetal; 19. Boron; 21. Heat; 22. Amine; 27. Eu.

22nd Annual Conference

HAMILTON

Dates to be announced later

21. Measured in calories.
22. Nitrogen - containing radicle present in proteins.
27. Prefix meaning well, good, easy.

Solution on Page 148.

Branch Reports

DUNEDIN

(Secretary: A. McD. Stewart, Pathology Department, Medical School.)

The Branch held a meeting on August 2, to discuss remits for conference. Sixteen members were present at the Conference at Tauranga, three of whom presented papers.

The Annual General Meeting was held on September 29 and the following office bearers elected:

Chairman: Mr B. W. Main.
Secretary: Mr A. McD. Stewart.
Treasurer: Mr J. Rees.

Committee: Messrs J. Braidwood, D. S. Ford and J. D. R. Morgan.

Prior to the Annual General Meeting, 21 members of the Branch took advantage of the opportunity to visit Speights Brewery.

It is the Branch's responsibility again to organise the South Island Seminar with Mr Taylor, which is planned to be held in Oamaru on March 19, 1966.

A. McD. S.

Annual Subscriptions

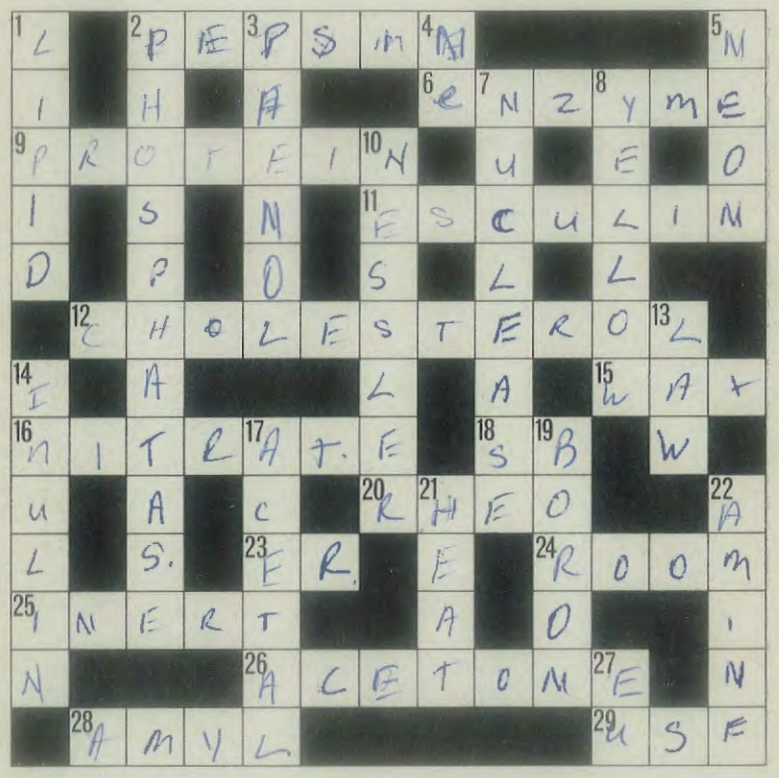
Members are reminded that Annual Subscriptions become due on April 1 each year, and that those who are not financial by September 30 become liable to forfeit their rights as members.

The Treasurer will be pleased to receive subscriptions from members who have overlooked their 1965/66 subscriptions, and if members wish to have their names included in the 1966 list of members, due to be printed in January, they should send their remittances as soon as possible.

Members wishing to resign remain liable for the current year's subscription, but should indicate their intention in a letter to the Secretary in order to escape further liability.

Laboratory Crossword No. 2

Compiled by A.J.L.



Clues Across

2. Digestive aid.
6. 2 across is one.
9. Essential constituent of living tissue.
11. Glucoside from horsechestnut bark.
12. Is synthesised by the liver.
15. Solid hydrocarbon.
16. Salt of an inorganic acid.
18. Metal against wealth.
20. Prefix: to flow.
23. Metal doing wrong.
24. 20°C.
25. Helium, krytpton, etc.
26. Intermediate product in oxidation of fatty acids.
28. An alcohol.
29. Employ.

Clues Down

1. Sudan III stains it.
2. Enzyme which hydrolyses an esterified inorganic acid.
3. Acid obtained from coal tar.
4. Gaseous element.
5. Coloured lighting.
7. Splits nucleic acid.
8. 571-578mμ.
10. Reaction specific for nitrogen.
13. Constant fact.
14. Polysaccharide used to measure glomerular filtration rate.
17. Colourless liquid which is hypnotic.
19. Brown element whose crystals resemble diamonds. (Source of motive power?)

of training, with a view to assessing the progress of training and providing a stimulus to continuous study.

Following the Intermediate examination, to be sat towards the end of the third year of training, as at present, it is proposed that two channels should be open. One year after the Intermediate, the candidate would sit an examination, theory, practical and oral, in one subject. After one further year's training, he would sit, for his Certificate of Proficiency, *either* a second subject, *or* a more advanced examination in the *same* subject. Qualification after a total of five years training is thus preserved, although the Board feels that provision should be made for candidates to sit an examination in the third subject if they wish, with the prospect, it is hoped, of some suitable financial recognition for the additional pass. For the candidate who has opted to take his two examinations in one subject, it may be possible to arrange an even more advanced examination in his subject for the same salary advancement.

The manner in which the new examination system will operate will doubtless be seen within the next few years and, as a start, the Board intends that the first single subject examinations will be held at around the same time as the 1966 C.o.P. examination, for the benefit of candidates who passed the Intermediate examination in 1965. These candidates will sit their second examination late in 1966 in order to complete their qualification by the end of the fifth year of training, but thereafter the year's interval between examinations will establish itself.

Applications and Resignations

The following new members were approved:—

Associates

Burnett, Miss M. H.	Hamilton	Couchman, K. G.	Palmerston Nth.
Cartwright, Mrs P.	Whangarei	Moffatt, P. N.	Wellington

Members

Anthony, M. J.	Ashburton	Lowe, Miss R. M.	Whangarei
Ball, Miss J. A.	Whangarei	McBrearty, Miss C.	Tauranga
Bent, Miss H. J.	New Plymouth	Meadows, Miss J.	Christchurch
Bryce, Miss A. M.	Auckland	Oliver, Miss F. M.	Auckland
Clark, Miss I. A.	Whakatane	Pittman, Mrs P.	Tauranga
Collier, Miss D. J.	Auckland	Reilly, R.	Tauranga
Field, Miss Z. C.	Wellington	Robison, Miss S. E.	Whangarei
Furkert, Miss N. J.	Wellington	Seelye, R.	Tauranga
Green, Miss J. L.	Blenheim	Senior, R.	Taumarunui
Harris, M.	Christchurch	Shone, G. A.	Gisborne
Johnson, I. D.	New Plymouth	Todd, Miss J. K.	Blenheim
Low, Miss Y. S. W.	Auckland	Wiles, N. D.	Taumarunui

The following members were reinstated:—

Associates.

Gibson, W. B. H.	Christchurch	McKenzie, R.	Masterton
Gray, Miss L. J.	Invercargill	Nixon, A. D.	Auckland
Johnston, N. D.	Kaitaia	Peters, M. R.	Tauranga
Jones, Miss A.	Auckland	Weston, G. O.	Auckland

Members.

Bond, Miss D. M.	Auckland	Ricketts, Miss J. C.	Auckland
Caulton, Miss D. T.	Christchurch	Robinson, Miss J. A.	Wellington
Nicholls, Miss J. M.	Hamilton		

Associates.

The following members were elected Associates:—

Braidwood, J. L.	Dunedin	Mitchell, M. A.	Rotorua
Carman, Miss M. G.	Wellington	Patterson, R. J.	Auckland
Cameron, G. L.	Auckland	Pitches, D. J.	Auckland
Collins, A. A.	Dunedin	Pybus, J.	Auckland
Corey, F. L. N.	Christchurch	Snow, P. G.	Dunedin
Culy, Miss P.	Wellington	Stewart, A. McD.	Dunedin
Drummond, J. D.	Dunedin	Taylor, D.	Wellington
Ford, M. R.	Ashburton	Wong Too R.	Auckland

Financial Statement

The Treasurer presented the Balance Sheet and reported that receipts since the beginning of the present financial year and anticipated payments before its close should leave a credit balance of approximately £650.

The possibility that a portion of the Institute's funds should be invested at a more favourable rate of interest was discussed, and the Treasurer was asked to explore the cheque facilities granted to incorporated bodies by trustee savings banks, and to report back to the next meeting.

The Medical Laboratory Technologists Board

Mr Bloore told the Council that in two meetings held over three days in June and July, the Board had made certain firm decisions and formulated a number of tentative plans for the future.

The syllabus has been reprinted, and the standard methods have been revised and approved.

The Board intends to recommend the holding of an annual tutorial workshop, at which some dozen people responsible for training throughout the country will attend, by invitation, a two or three-day meeting the object of which will be to establish uniformity of tutoring on a regional basis.

To obtain an even standard of setting and marking of papers, the Board intends to produce a brochure on examinations, for the guidance of examiners.

The next Intermediate examination will be held in November/December, 1965, and all eligible candidates (those who commenced training before May 1, 1963) will be given the option to sit then or in March/April, 1966. The examination, which will consist of three three-hour papers, the production of certified syllabuses and orals, to be held in Auckland, Wellington and Christchurch, will be the last at which candidates will be sitting in March. All future examinations will be held in November/December, the reason for the choice offered next year being that it was felt desirable in view of the relatively short notice given to training laboratories.

The special Certificate of Proficiency examination for candidates who failed a subject in the May examinations will be held at Wellington in November/December. This will consist of theory, practical and oral examinations.

The 1966 Certificate of Proficiency examination will be the last under the present system. Owing to the large number of candidates sitting, there will be no practical papers, but candidates will be expected to produce their certified syllabuses, and the orals will be lengthy, with the same team of examiners travelling around the examination centres.

For the future, the Board has decided to stabilise the examination system for a period of from three to five years. This will entail an alteration to the present system, which it is hoped will be an improvement; while the long-term object is to enable the Board to devote its attention to devising a satisfactory training system that will meet the requirements of the rapidly advancing scope of medical laboratory technology. When such a system of training has been drawn up, the whole question of examinations will again be re-examined, but in the interim period the Board envisages single subject examinations for candidates who have passed the Intermediate.

All examinations will be held in November/December each year.

The Intermediate will consist of three three-hour theory papers, the submission of the certified syllabus, the completion of thirty practical assignments in the candidates' own laboratories and an oral examination. The assignment book in use at Auckland Hospital is being considered as a basis for the drawing up of ten suitable practical assignments in each subject. A suggestion for possible consideration is that regional tutors might set a local examination 1-1½ years after the commencement

for the Medical Technologist; Simplified Micro Determination of Serum Albumin; Techniques — Laboratory Tips — from Readers; Phagocytosis as a Host Defence Mechanism.

Volume 27, No. 3. May-June 1965.

Contents: Recognition and Identification of the Genus *Herellea B. anitratum* and B5W; Listeria; Chemical Estimation of Uric Acid in Biologic Fluids; Practical Methods of Sweat Analysis.

Rev. Vierne med. Volume 16, No. 1. January-April 1965.

S. Afr. J. med. Lab. Technol. Volume 11, No. 1. March 1965.

Contents: Intermediate Syllabuses; International Newsletter.

Volume 11, No. 2. June 1965.

Contents: Programme of the Blood Transfusion Congress, Transplacental Haemorrhage, Intermediate Physics Syllabus.

Tonic. Volume 3, No. 2. 1965.

What's New

PARAFILM - M: A New Mouldable Plastic Laboratory Film.

Parafilm M is a moisture-resistant, thermoplastic self-sealing film for scientific laboratory work. It can be moulded to the tops of test tubes, flasks, culture tubes and petri dishes and provides the ideal closure to protect contents from evaporation or contamination during refrigeration, incubation or storage at room temperature.

Further details from: Biological Laboratories Ltd., Private Bag, Northcote.

Council Notes

A Council meeting was held at the St. Amand Hotel, Tauranga, on August 4, 1965. Present were : Mr H. G. Bloore (in the Chair), Miss J. Mattingley and Messrs C. W. Cameron, J. Case, M. McL. Donnell, E. K. Fletcher, H. E. Hutchings, R. T. Kennedy, J. D. R. Morgan and D. J. Philip.

Meals for Laboratory Staff on Overtime

There has never been any entitlement for medical laboratory technologists to receive free meals when their duties prevent them from leaving the hospital, and the recent ministerial decision to revoke the privilege for other hospital workers is not therefore an injustice against technologists. The Council noted a reply from the Department of Health to this effect, and decided to make a formal application through the Salaries Advisory Committee for satisfactory provisions to be made.

The Watson Victor Award

The first winner of the new £5 5s 0d Watson Victor Award for the top candidate in the Certificate of Proficiency Examination was reported to be Mr E. M. Johnston, of Auckland. When the single subject examinations begin in 1966, Watson Victor Ltd. have indicated their intention to award the prize to the top candidate in Chemical Pathology, and the Secretary will seek sponsorship of awards in Haematology and in Microbiology from other commercial concerns.

Hospital Services Tribunal

The President reported that there had been one further meeting of the combined committee since the May Council meeting, and that the detailed proposals requested by the Minister had been prepared.

Indemnity for Medical Laboratory Technologists

A letter from the Secretary of the N.Z. Society of Pathologists indicated that after considerable inquiry and discussion by the society, it seems that there is no possibility of gaining indemnity through Hospital Boards in the event of threatened criminal proceedings for negligence. The Society has received repeated assurances that a criminal action was a most unlikely event, and the costs of legal representation at an inquest would not be great.

Scientific Leadership; The Laboratory Team; Creative Safety; Automated Mass Testing; Equipment Procurement; Animal Services at NIH; Laboratory Developments; Custom Instrumentation; The Scientist and the Computer.

Volume 3, No. 4. May 1965.

Contents: Planning the Electron Microscope Laboratory; Planning, Equipping and Staffing Pesticide Residue Laboratories; Sources of Business Information; Time Averaging Opens New Horizons for N.M.R.; Precision Gas Mixtures.

Volume 3, No. 5. July 1965.

Contents: Achieving Balance in Laboratory Technical Services; Trained Scientific Assistants; Promotion of the Skilled Scientific Worker; Training in Gas Chromatography; Breakthrough in Identifying GC Effluent Fractions; Put an Automated Big-column GLC Separations "Factory" to Work in Your Laboratory; Gas Chromatography Technical Data Directory.

Lab World.
Volume 16, Nos. 4, 5, 6, 7, 8. April, May, June, July, August 1965.

Med. Surg. (Baroda). Volume 5, No. 3. March 1965.

Med. Technol. Aust. Volume 7, No. 2. April 1965.

Contents: Ten Pasteurella Strains from Human Infections; Observations on the Permeability of Acrylic Museum Jars.

Volume 7, No. 3. July 1965.

Contents: Giemsa Stain for the Diagnosis of Bovine Babesiosis; Notes on the Technique of Urine Tests Employed in Clinical Practice.

Microbiologia (Buc.) Volume 10, No. 1. January-February 1965.

Selected contents: Adenoviral Infections; Antibacterial Action of Furoxone, Investigations *in vitro*;* Contributions to the Study of the Incidence of Dysenteric Aetiology in Acute Digestive Disorders*; Data Concerning the Association between the Genus *Geotrichum* and various Enterobacteria*; Pathogenicity of Haemolytic Strains of *Escherichia coli*;* Study of the Serotype 124:72 (B_{17}) Strains of *Escherichia coli* Isolated from Enteritis-Affected Children and Adults*; Cases of Leptospirosis in a Country District*; Changes of Some Serum Enzymes in Anicteric Epidemic Hepatitis in Children*; Comments with Regard to Bacteria of the *Shigella* Isolated in 1963 in the Sighisoara Country.
* English summary.

Volume 10, No. 2. March-April 1965.

Selected contents: Inhibitors of Influenza Vaccines; Diversity, Multitude and Constancy of Types in the *Proteus* Group, Caused by the Demarcation Phenomenon*; Contributions to the Study of the Epidemiology of Streptococcal Infections*; Genetics of Phase Variation in *Salmonella* — A Theoretic Pattern*; Changes in the Electrophoregram in Experimental Leptospirosis of the Guinea-Pig*; Contributions to the Serologic Study of Animal Leptospirosis in the Iassi Region*; Study of Bacterial Dissemination in Experimental Animals under Hypoxia Conditions*; Morbilliform Eruption in a Case of Infection with Pararickettsia*; Incidence of *B. cereus* in Cooked Food*; Contributions to the Cultivation of *M. tuberculosis;* Technique of DNA Extraction of *Esch. coli* M.
* English Summary.

Volume 10, No. 3. May-June 1965.

Contents: This issue is devoted to a symposium on Hydatidosis and Trichinosis. (No English summaries).

New Istanbul Contr. clin. Sci. Volume 7, No. 4, October 1964.
Volume 8, No. 1. 1965.

Selected contents: Preliminary Studies on the Action of Desoxyribonucleic Acid on Normal and Leukaemic Leukocytes; Paper Chromatography of Cardiotonic Digitalis Glycosides; Acute Promyelocytic Leukaemia.

N.Z. Hospital. Volume 17, No. 5, 6. May, July 1965.

Offic. J. Amer. med. Technol. Volume 27, No. 2. March-April 1965.

Contents: Microbiology — Infection and Immunity; Useful Information

with HFR Strains of *Salmonella abony* and *Escherichia coli;* Studies of the Immune Response *in Vitro.*

Aust. J. biol. Sci. Volume 18, No. 3. June 1965.
Volume 18, No. 4. August 1965.

Canad. J. med. Technol. Volume 27, No. 2. April 1965.
Contents: The Use of Special Stains in the Diagnosis of Acute Leukaemia: A Review of Six Cases of Anti-M; An Unusual Isolation of Actinomyces: Improved Isolation of *Staphylococcus pyogenes* Using 10% Salt Meat Broth; Accelerated Electrophoresis.
Volume 27, No. 3. June 1965.
Contents: Selective Media for *Staphylococcus aureus;* Technique Rapide d'Identification des Bacteries; Histological and Cytological Demonstration of Enzymes; Modified Gough Technique for Making Macrosection Lantern Slides; The Complement Fixation Inhibition Test.

Filter. Volume 37, No. 2. June 1965.
Contents: Licensing in California Medical Laboratories; Guide for the use of Laboratory Assistants in Clinical Laboratories; Interlaboratory Evaluation of Urograph; Genetics, Sensitization and Safety; The Method for Determination of Serum Alkaline Phosphatase.

J. med. Lab. Technol. Volume 22, No. 2. April 1965.
Contents: Biochemical Changes in the Blood of the Newborn; Plasma Viscosity in Clinical Laboratory Practice; Reproduction of Pathological Specimens in Methyl Methacrylate for the Pathology Museum; The Arrangement of Complex Manifolds for Automated Chemical Analysis; A Cold Box for the Transport of Blood Samples for pH Estimation.
Volume 22, No. 3. July 1965.
Contents: Pyelonephritis — A Study of Bacteriological Techniques; The Production of Pigment by *Staphylococcus pyogenes;* Determination of Serum Haptoglobin Concentration: A Simple, Rapid Gel Filtration Method; Improving the Efficiency of a Laboratory Autoclave; Rapid Preparation of Stained Cytological Smears for Microscopy; Report on the International Committee for Standardization in Haematology of the European Society of Haematology — Recommendations for Haemoglobinometry in Human Blood.

Lab. Dig. Volume 28, No. 1. July-August 1964.
Contents: Incidence of Dohle Bodies in Physiologic and Pathologic Conditions; Plasma and Whole Blood Glucose and Urea Nitrogen.
Volume 28, No. 2. September-October 1964.
Contents: Measurement of Enzyme Activity — Its Present Role in Clinical Diagnosis; Methods of Counting Punctate Erythrocytes.
Volume 28, No. 3. November-December 1964.
Contents: Calcium and Phosphorus Levels of Aged Sera and of Heparinized Plasma; The Atherogenic Index; Protective Action of *Bacillus subtilis* on X-Irradiated Mice; Some Problems in Cholera; Rigid Corrosion Preparations of the Human Tracheobronchial Tree.
Volume 28, No. 4. January-February 1965.
Contents: Normal and Abnormal Human Haemoglobins; Serum Calcium by EDTA; Correction for Hyperbilirubinemia in the Determination of Serum Cholesterol.
Volume 28, No. 6. May-June 1965.
Volume 29, No. 1. July-August 1965.
Contents: Technicians be Alert; Abstracts; Index.

Lab. Management. Volume 3, No. 2. March 1965.
Contents: Taming the Data Monster; Planning for Flexibility; The Industrial Laboratory; National Institutes of Health; Controlled Concentration Gradient; Breakthrough in Electrophoresis.
Volume 3, No. 3. April 1965.
Contents: National Institutes of Health (NIH) — What is it? NIH

this country, in accordance with Section 3 (4) of the Professions Supplementary to Medicine Act, 1960:

> "The Certificate of Proficiency granted by the Department of Health of New Zealand after training and examinations conducted by the New Zealand Medical Laboratory Technologists Board."

The Board hopes that you will keep it informed of any modifications made in the training and qualification.

R. WAKE.
Senior Administrative Assistant for the Registrar.

The attitude of the Institute of Medical Laboratory Technology in Britain is that holders of the Certificate of Proficiency, although eligible for State Registration, are entitled to apply only for ORDINARY MEMBERSHIP of the Institute. This is the grade of membership applicable to people who have passed the Intermediate Examination of the I.M.L.T.

The Library

List and Contents of New Periodicals Received

Librarian: D. S. FORD, Pathology Department, Medical School, Dunedin.

Amer. J. med. Technol. Volume 31, No. 3. May-June 1965.
Contents: Medical Technology Today; Controlling the Variables of Immunoelectrophoresis of Serum Proteins; The Central File for Rare Donors and Frozen Blood Program of the American Association of Blood Banks; A Quality Control Program for the Protein Bound Iodine Procedure; An Experiment in Programmed Instruction (Teaching Machine); Changing Demands of Science and Technology; A System of Relative Unit Values for the Routine Laboratory; Development of a Multiple Closure System for Test Tubes; A Quantitative Method for Measuring Fibrinolytic Activity in Humans; The Teaching Supervisor as Leader.

Volume 31, No. 4. July-August 1965.
Contents: Immunofluorescent Studies of Shigella in Infants and Young Children; Veterinary Specimens as Teaching Aids in Parasitology; Urine Lactic Dehydrogenase; The Effect of Anti-heparin Drugs on Human Blood; The Treatment of Sputum by Ultrasonic Sound for the Cytologic Diagnosis of Cancer of the Lung; Simultaneous Screening for Urinary Occult Blood, Protein, Glucose and pH; Embedding Specimens in Clear, Transparent Plastic; Thirty-five Years of Medical Technology; Hydrogen Sulfide Production by Herellea; An Economical Closed Blood Culture System; Screening of Specimens for Salmonella and Arizona by Stabbing Bismuth Sulfite Agar; A Simplified Method for Preparation of Loeffler's Slants.

Arch. Inst. Past. hellen. Volume 10, No. 1-2. 1965.
Contents: Frequence de Types de *Shigella* isolees en Grece; Essais de Colicinetypie de *Shigella* isolees en Grece; Sensibilite aux antibiotiques et au Sulfamides de *Shigella* en Greece; Les Biotypes de *Shigella sonnei* isolees en Grece; Compte Rendu d'Activite du Centre National de *Shigella;* Influence Favorable de la Transfusion des Plaquettes Congolees sur le Test d'Adhesivite des Plaquettes *in Vivo.*

Ann. Med. exp. Biol. Fenn. Volume 43, No. 1. 1965.
Selected contents: Comparison of Three Methods in the Assay of Factor VIII Level of Post-Exercise Plasma; Interspecies Crossing Experiments

down here that most authors tend to omit as being too elementary, and yet one cannot help but feel that the trainee will benefit, for example, from being acquainted with the apprehension of a patient having to submit to venepuncture; or from being told the derivation of the word haematocrit.

On the other hand, the style will be irritating to many an experienced technologist. "Haematology for Half-wits" occasionally occurred to me as a more suitable title, and I felt that the repetition of an illustration depicting an incorrectly filled counting chamber to be quite unnecessary in the chapter on red cell counting, when it had already appeared, a few pages earlier, in the chapter on white cell counting. However, if we discount the value of half the illustrations we still have a hundred that serve some purpose. In what other book, for example, will you find a picture of all the materials you will need to perform a venepuncture, even down to the requisition form!

There are plenty of faults. The chapter on haemoglobin estimation includes detailed descriptions of no less than ten methods, and yet there is not a single word on their relative value (and some of them are dreadfully archaic), nor a mention of calibrating the instrument or using a standard. Westergren's E.S.R. technique is performed using a solid anticoagulant and, talking of anticoagulants, EDTA is mentioned, but save for a reference to its being the best for platelet counts, it is relegated to a position second to oxalate, which is the standard anticoagulant throughout the text.

The five chapters on blood grouping techniques are a disgrace: the book would have been a great deal better without them. In a footnote to a description of the mechanism leading to haemolytic disease of the newborn due to rhesus antibodies, the author says, "In the vast majority of cases the foetus is Rh positive and the mother is Rh negative. However, cases have been recorded where the reverse is true, the foetus being Rh negative and the mother Rh positive." One is led to the conclusion by such an untrue statement, that his knowledge of the entire concept is rather hazy, and when he reveals, a few pages further on, that the employment of controls in the Coombs' test is an optional matter, one is altogether convinced that he is not qualified to write on this subject at all!

At the end of the book are thirty-or-so pages of American Registry-type questions of a multiple selection and yes/no variety, which the trainee may find useful.

I often think that the text-books we advise our trainees to use leave out too many seemingly trivial details. This one certainly makes good that deficiency, but unfortunately it neglects to proceed much beyond trivia, and wastes a good deal of valuable space giving the most precise instructions for performing techniques that no self-respecting technologist would want to use at any time. It is a useful supplement to the examination candidate's literary diet, but it is along way from being suitable as the whole meal. J.C.

State Registration in Great Britain

The following letter, received by the Secretary of the Institute from the Council for Professions Supplementory to Medicine in Great Britain, will be of interest to technologists who intend to proceed to Britain after qualification:—

Dear Mr Morgan,

Medical Laboratory Technicians Board

I am pleased to inform you that the Medical Laboratory Technicians Board at its meeting on May 11, 1965, and as a result of information made available to it, approved for the purpose of State Registration in

The introductory preamble should prove especially helpful to the tutor technologist who wishes to make an appraisal of the many methods of growing anaerobes. In contrast, chapters three and four tend to over-simplify the differentiation between the variety of Clostridia; in fact the evaluation of the merits of egg-yolk-milk, half antitoxin plates suggests that clear-cut results are always so easy to obtain. This simply is not true in practice.

The section dealing with the toxicology of anaerobes provides great stimulus for those who take a special interest in immunological response, providing a much clearer understanding of the clinical and laboratory approach to the typing of such strains.

For the more academically inclined, the classification of the streptococci is well set out and the association between the anaerobic streptococci and the genus *Fusiformis* are given their rightful prominence.

Throughout New Zealand, in particular, this text book should provide each laboratory with a much needed reference to the practice of anaerobic culture. H.C.W.S.

Essentials of Practical Microtechnique. The late A. E. Galigher and E. N. Kozloff, Ph.D. Lea & Febiger Philadelphia, 1964. 484 pages, 60 illustrations. Price in U.S. $10.00.

A revised and enlarged version of a book with the same title published in 1934.

This is a solid book of much worth, and although written by biologists, without reference to human pathology, its scope is such that it well deserves consideration by the medical technologist. Several methods of examining tissues, including smear techniques, sectioning of paraffin or nitrocellulose embedded material, and the preparation of ground sections of bone are given. The section on fixing agents is extremely comprehensive, and gives a better theoretical consideration of their action than is usually given by writers in this field; similarly, the chapters devoted to the embedding and sectioning of paraffin blocks is very thorough. No description of automatic tissue processing or the use of vacuum embedding ovens is given, but it is likely that these are of less use in the Zoology department than in the hospital laboratory.

Theoretical consideration is given of the mode of action of stains and of the importance of hydrogen ion concentration on their effectiveness. The description of natural dye formulae and uses is comprehensive, and that of synthetic dyes reasonable. However, the methods given for their use do not include techniques for many tissue elements of importance to the pathologist; such things as amyloid, haemosiderin and melanin are never mentioned, and comment on mucins and reticulin is minimal.

From the medical technologist's point of view, the absence of discussion and techniques concerned with pigments, the nature of mucins and lipids, and in particular the periodic acid-schiff reaction is an unfortunate omission.

However, despite these limitations the detail and quality of the comments that are made stand out clearly, and it would be unfair for a medical technologist to be hypercritical of a textbook intended for a laboratory in a somewhat different field.

Not a book for the medical laboratory shelf, but well worth reading and should be available in the library. B.G-J., D.T.

Hematology for the Medical Technologist. Third Edition. Charles E. Seiverd. Lea & Febiger, Philadelphia, 1964. 643 pages, 180 figures and 23 colour plates. Price in U.S. $12.00.

This book is presented in the form of a training manual, with an opening chapter devoted to its use by the trainee. Techniques are dealt with in simple steps and printed in bold type, and each chapter contains basic information for the reader, written in simple prose. Much is written

For electron microscopy the tissues are either fixed in 6.5% glutaraldehyde then post-fixed in osmium tetroxide, or fixed directly in 2% buffered osmium tetroxide prior to embedding in Araldite. D.T.

A Silver Stain for Deoxyribonucleic Acid. Korson, R. (1964), *J. Histochem.* **12**, 875.

Fresh frozen cryostat or formalin fixed paraffin sections are hydrolysed with 1 M citric acid for 30 minutes at 60°C., then treated with methenamine silver for 60 minutes at 60°C. to demonstrate DNA. The slides resemble a Feulgen reaction in black. D.T.

MICROBIOLOGY

Penicillinase-resistant Penicillins and Cephalosporins. Barber, Mary and Watesworth, Pamela (1965), *Brit. med. J.*, **ii**, 344.

The antibacterial activities of five penicillinase-resistant penicillins and two cephalosporins are compared. Against staphylococci one of the cephalosporins shows higher activity than any one of the other antibiotics tested in the presence of serum, but there is no significant difference between the other compounds. The two cephasporins show greater activity than ampicillin against many strains of coliform bacilli. H.C.W.S.

A typical Mycobacteria in Western Australia. Carruthers, K. J. M. and Edwards, F. G. B. (1965), *Amer. Rev. resp. Dis.*, **91**, 887.

Information relating to the isolation, virulence and drug-susceptibility of some 480 strains of a typical mycobacteria is given as a result of a four-year investigation. Seventy-four per cent. were classified as Batty bacilli. The authors concluded that the majority of strains isolated gave pattern of low virulence and high resistance to the standard antituberculous drugs. H.C.W.S.

An Improved Niacin Test. Marks, J. (1965), *Tubercle, Lond.*, **46**, 65.

A convenient technique is described for distinguishing between *M. tuberculosis* and other mycobacteria by the biological assay of niacin produced during subculture. Results are usually obtained in eight days. The method is possible without the use of cyanogen bromide and enables results to be obtained with dysgonic strains. H.C.W.S.

Detection of Staphylococcal Antibodies by Gel Diffusion. Standing, D. M. (1964), *J. clin. Path.*, **17**, 517.

A simple Elek-Ouchterlony gel-diffusion method for the detection of anti-alphathaemolysin and anti-leucocidin antibodies is described. The results showed that gel-diffusion methods compared favourably with haemagglutination methods for the detection of anti-leucocidin, but the conventional method is quicker and more accurate for estimation of anti-alpha haemolysin.

Determination of Potential Pathogenicity of Staphylococci Elston, H. R. and Fitch, D. M. (1964), *Amer. J. clin. Path.*, **42**, 426.

Occasionally staphylococci are recovered from material which is normally sterile and the role of such strains may be in doubt, even though the conventional coagulase and mannite fermentation tests are negative. The relationship between strains rich in deoxyribonuclease and pathogenicity has been explored. The authors appear confident that a test devised to detect such enzyme activity may provide yet a further criterion of pathogenicity. H.C.W.S.

Book Reviews

Anaerobic Bacteriology in Clinical Medicine, 2nd Edition. A. Trevor Willis, M.D., B.S. (Melb.), Ph.D. (Leeds), M.C.Path., M.C.P.A. Butterworths, London 1964, 234 pages.

Seldom is it possible to incorporate simple historical information, adequate references and up-to-date technical know-how in one text book, but the author of this work has done much towards the accomplishment of such a task.

the control and experimental platelet counts. The result is expressed as a percentage of the control count and the range encountered in a series of twelve normal individuals, aged from 20-49, varied between 91 and 78%.

Megaloblastic Anaemia in Premature Infants. Gray, O. P. and Butler, E. Blanche. (1965), *Arch. Dis. Childh.*, **40**, 53.

The common anaemia in premature infants is iron deficiency anaemia, but megaloblastic anaemia can also occur and three such cases are reported in the present article.

Megaloblasts, transitional cells, normoblasts, macrocytes and macro-ovalocytes were seen in blood films and buffy coat preparations among the three cases. Some of the normoblastic cells were atypical with eccentric nuclei or double nuclei, and a few contained Howell-Jolly bodies. WBC changes were prominent in only one case; this infant had occasional multisegmented polymorphs.

It is now the authors' practice to examine the buffy coat of every premature infent with a haemoglobin below 9g./100ml., and when it is not conclusive to proceed to marrow biopsy. J.H.

Prenatal Sex Prediction of the Foetus. Bafana, F. V. (1965), *Ind. J. med. Sci.*, **19**, 126.

Examination of blood films from 38 cases showed that the sex of the foetus could be predicted by changes in the maternal neutrophil appendages. In 29 of these cases the results were correct; in the 9 incorrectly predicted cases there was eosinophilia. As compared to the normal number of drum-sticks and other nuclear appendages, it was observed that the number of appendages in the maternal neutrophils increased consistently when the foetus was a female. A decrease was found when it was a male. These changes were not apparent until after the sixth month of pregnancy. In every case 500 neutrophils were counted.

The present study confirms the findings of Vereschagin and his co-workers (1959). J.H.

HISTOLOGY

Staining *Mycobacterium leprae* in Paraffin Sections by the Gomori Methenamine Silver Method. Sutter, E. and Roulet, F. C. (1965), *Stain Tech.*, **40**, 49.

A slightly modified methenamine-silver method is described which will demonstrate *M. leprae* in paraffin sections even when the blocks and tissues are over 10 years old and the micro-organisms appear to have lost their acid-fastness. The organisms are stained black and easily recognized. D.T.

Iron Haematoxylin Chelates: I. The Weil Staining Bath. Berube, G. R., Powers, Margaret M. and Clark, G. (1965), *Stain Tech.*, **40**, 53.

After varying the procedure for preparing the Weil myelin stain in respect to pH, concentration, etc., the following method for preparing the stain is recommended: Mix equal parts of a 0.25% solution of ripened haematoxylin, prepared from a 10% solution and 1% ferric ammonium sulphate, and use immediately. Staining temperature is preferably 5°C but room temperature may be used. Higher temperatures are contra-indicated. D.T.

An Improved Biopsy Technique for Light and Electron Microscopic Studies of Human Skeletal Muscle. Price, H. M., Howes, E. L. Jnr., Sheldon, D. B., Hutson, O. D., Fitzgerald, R. T., Blumberg, J. M. and Pearson, C. M. (1965), *Lab. Invest.*, **14**, 194.

A technique is described for taking muscle biopsies using a new type of surgical clamp which is designed to prevent the muscle tissue from retracting once it has been clamped and dissected free. For light microscopy the tissue can be fixed, while still held in the clamp, in 10% formalin or 6.5% buffered glutaraldehyde prior to paraffin embedding.

values has been established (37-95) and anticipated results in the various conditions have been obtained.

The method is simple, reproducible and gives highly consistent results.

A Rapid Simple Method for Agar Gel Electrophoresis of Hemoglobin. Brangle, R. W., Cawein, M. J. and Lappat, E. J. (1965), *Amer. J. clin. Path.*, **43**, 497.

The electrophoretic identification of some abnormal haemoglobins is impossible on filter paper, notably haemoglobin SD which migrates as homozygous S. The use of agar gel is known to be a satisfactory method of separation, but this method describes a simple and rapid technique for carrying this out on microscope slides. The patterns are discernible within ninety minutes, and a permanent, easily-filed record is obtained.

Fibrinolysin Activity Test: A Simple Screening Laboratory Procedure for the Differentiation of Fibrinolysin and the Defibrination Syndrome. Carrera, Ana E. (1965), *Amer. J. clin. Path.*, **43**, 594.

In the presence of strong fibrinolytic activity, clotting and lysis may be simultaneous. By allowing clotting to take place at 4°C it is possible, in cases of fibrinolysis, to produce a firm clot, which will undergo lysis on being transferred to the 37°C waterbath. The procedure makes the differential diagnosis between fibrinolysis and the defibrination syndrome relatively simple.

A Fully Automated System for the Simultaneous Determination of Whole Blood Red Cell Count and Hemoglobin Content. Sturgeon, P. and McQuiston, Dorothy T. (1965), *Amer. J. clin. Path.*, **43**, 517.

Using the *AutoAnalyzer* it has been shown possible to perform simultaneous red and white cell counts and haemoglobin estimations on as many as forty blood specimens per hour. The entire operation is automatic, and subject to the regular calibration of the instrument, reproducibility is substantially better than with conventional techniques.

Laboratory Studies on Patients Receiving Anticoagulant Therapy. Shaw, S., Pegrum, G. D. and Wolff, S. (1965), *J. clin. Path.*, **18**, 327.

An investigation into the laboratory control of anticoagulant therapy is presented. One stage prothrombin time levels were used to control therapy, and these were compared with parallel estimations by Thrombotest and with levels of the coagulation factors. Thrombotest was found to have no major advantage over thromboplastin and, although this technique has the merit of enabling standardisation of control of anticoagulant therapy from one laboratory to another, it has again been shown that the original recommended therapeutic range was set unrealistically high.

International Committee for Standardisation in Haematology of the European Society of Haematology: Recommendations and Requirements for Haemoglobinometry in Human Blood. (1965), *J. clin. Path.*, **18**, 353.

These are the recommendations of the Internal Committee for Standards in Haematology, resulting from the discussion and conclusions of scientific symposia on haemoglobinometry held at Lisbon in 1963 and in Stockholm in 1964, and from a meeting of a technical committee held in Stockholm on September 2, 1964, to discuss problems associated with the production of a standard solution.

Simple Method for the Estimation of Platelet Adhesiveness. Caspary, E. A. (1965), *J. clin. Path.*, **18**, 384.

This method, which requires no special equipment, is claimed to be simple and reproducible. The test is performed by mixing 1.0 ml. of blood and 0.5 ml. of platelet-free plasma in two siliconed bottles, inserting a coverslip in one and mixing both bottles on a rotating mixer for 90 minutes. Platelet counts are taken from both bottles at the end of this period and platelet adhesiveness is calculated from the ratio of

Effects of nitrous oxide and halothane on the measurement of blood acid-base parameters was studied.

Neither of these anaesthetics affected measurement made with the micro-Astrup apparatus. Error in estimating plasma Carbon dioxide content using the Volumetric (and presumably the manometric) Van Slyke apparatus were in the order on 25% if the CO_2 was not absorbed with sodium hydroxide. J.L.B.

A Rapid Technique for the Preparation of Cell-free Blood Serum and Plasma. Nishi, H. (1965) *Clin. Chim. Acta,* **11,** 290.

The use of commercially available polystyrene granules, specific gravity 1.04 is described. When added to the blood prior to centrifuging the granules pack to form an inert separator between the cells and serum or plasma. This allows decanting rather than aspiration of the serum or plasma.

The granules were shown not to interfere with any of the common blood analyses. J.L.B.

A Revised Automated Procedure for Urea Nitrogen. Moore, J. J. and Sax, S. M. (1965), *Clin. chim. Acta,* **11,** 475.

The proposed method is an adaptation of the manual procedure of Coulcombe and Faureau. Their modification of the diacetyl monoxime reaction obeys Beer's Law, is sensitive to low concentrations of urea and substitutes an aqueous dilution of phosphoric acid for the corrosive ferric alum reagent. The present BUN manifold can be utilised; 550 $m\mu$ interference filters are substituted for the 480 $m\mu$ filters. J.H.

Outline Chemical Tests of the Stool for Occult Blood: An Evaluation. Irons, G. V. and Kirsner, J. B. (1965), *Amer. J. med. Sci.,* **249,** 247.

Characteristics of the "ideal test" have been well defined, but, unfortunately, such a test is not yet available. Clinical results indicate that no chemical test is infallible and that the guaiac reagent is grossly inadequate, missing approximately 50% of the gastrointestinal lesions present. The more sensitive procedure utilising benzidine base, following a 3-day period of dietary restriction, seems preferable. J.H.

Use of a Screening Procedure for Blood Urea Nitrogen. McNair, R. D. (1965), *Clin. Chem.,* **11,** 74.

In this study the urea nitrogen was determined on heparinised plasma from 240 patients by a test strip procedure (Urograph) at the time the specimen was received. The plasma was then refrigerated and the urea nitrogen determined within 24-48 hours (using diacetyl monoxime) by an automated method.

The test strip procedure was found to accurately differentiate normal and abnormal urea nitrogen levels and to be a satisfactory screening procedure. It is essential that the manufacturer's directions regarding glassware and all steps in the procedure be followed exactly. Claims that very accurate results may be obtained by following the recommended techniques and measurements were not investigated. J.H.

Rapid Screening Test for Serum Phenylalanine. Hanson, D. J. (1965), *Amer. J. med. Sci.,* **249,** 682.

This is a report of a very simple method which requires a minimum of equipment. The method utilises a chromatographic system; the solvent with incorporated ninhydrin permits the separation of the phenylalanine from other amino acids in serum. A 3 lambda sample of serum was employed. J.H.

HAEMOTOLOGY

An Improved Histochemical Method for the Demonstration of Leukocyte Alkaline Phosphatase Activity. Rutenburg, A. M., Rosales, C. L. and Bennett, J. M. (1965), *J. Lab. clin. Med.,* **65,** 698.

This method of demonstration and estimation of leucocyte alkaline phosphatase activity uses naphthol AS phosphate. A range of normal

CHEMICAL PATHOLOGY

Observer Error in Dextrostix Estimations of Blood Sugar. MacKay, N. and Neilson, J. McE. (1965), *Lancet*, **ii**, 269.

267 *Dextrostix* estimations were compared with conventional laboratory results for the same blood sample and there was found to be a tendency for *Dextrostix* to underestimate the blood sugar. J.L.B.

The Effect of Various Conditions and Substances in the Results of Laboratory Procedures. Wirth, W. A. and Thomson, P. L. (1965), *Amer. J. clin. Path.*, **43**, 579.

This paper presents, in tabular form, the effect of chemical and physical factors on the results of chemical determinations in the laboratory. The authors say that the data is by no means complete, but consider it helpful in explaining unexpected laboratory results and in anticipating erroneous or misleading reports. J.L.B.

Quantitation of Serum Haemoglobin Binding Capacity (Haptoglobin level) using Cellutose Acetate Membrane Electrophoresis. Valeri, C. R., Bond, J. C., Fowler, K. and Sobucki, J. (1965) *Clin. Chem.*, **11**, 581.

100-150mg./100ml. of Haemoglobin is added to the serum and after incubation the serum is electrophoresed in phosphate buffer pH7.0, ionic strength 0.05, for 90 minutes. The strip is then dried and stained in 0-dianisidine-acetate-hydrogen peroxide mixture. This was done by floating the strip on the stain.

After 10 minutes the strip is rinsed in distilled water. Finally the strip is scanned.

The method will measure methaemalbumin in addition to the haptoglobins. J.L.B.

Automated Flurometric Method for Determination of Serum Calcium. Hill, J. B. (1965) *Clin. Chem.*, **11**, 122.

0.1ml. samples analysed at 60 per hour on Autoanalyser, using fluorimeter module and calcein.

Results compare favourably with the Clark-Collip method. Standard Deviation on Commercial Control Sera was around 0.22. Method not suitable for urine. J.L.B.

A Simple and Rapid Method for Estimating 3, 4-Dihydroxyphenethylamine (Dopamine), 3, 4-Dihydroxyphenylalanine (Dopa) and Homovanillic Acid (H.V.A.) with "Two Solutions" Paper Electrophoresis—Eichhorn, F. and Rutenberg, A. (1965) *Clin. Chem.*, **11**, 562.

Untreated urine electrophoresed on paper for either 3hrs or overnight, depending on resolution required. The anode bath contains 0.75% v/v Acetic Acid, while the Cathode bath contains 2.5% v/v Acetic acid. Voltage used is 340.

The strips are finally dried and then stained with diazotised p-nitroanaline.

Quantitation is by visual comparison with standards, or elution followed by photometric estimation. J.L.B.

A Sensitive Method for the Determination of Haemoglobin in Plasma. Vangett, G. and Valente, D.; (1965) *Clin. Chim. Acta*, **11**, 442.

A highly sensitive, simple method is described, using the benzidine-hydrogen peroxide reaction. Careful blood collection using heparin as an anticoagulant, gave a range of 0.03 to 0.89mg./100ml. (mean 0.41) in 31 healthy subjects.

These figures are significantly lower than usually quoted. J.L.B.

Effects of Gaseous Anaesthesia on Blood Carbon Dioxide Measurements. Ogilvie, R. R. and Howie, G. F. A. (1965), *J. Clin. Path.*, **18**, 364.

Selected Abstracts

Contributors to this issue: R. D. Allan, J. L. Braidwood, J. Case, J. Hannan, H. C. W. Shott and D. Tingle.

BLOOD BANKING

The Use of a Proteolytic Enzyme of *Streptomyces griseus* (Protease G) in Blood Banking — A Preliminary Report. Buchanan, D. I. and Dierich, K. P. (1965), *Transfusion (Philad.)*, **5**, 11.

Protease G is an enzyme obtained as a by-product in the manufacture of streptomycin and appears to compare favourably with ficin as a means of making cells agglutinable in saline by incomplete antibodies. The enzyme treatment of the cells is accomplished by mixing one part of a 0.1% solution of the enzyme with 18 parts of a thrice-washed 5% suspension of cells, incubating for ten minutes at 37°C. and then washing twice.

The 0.1% solution of protease G remains active for up to four weeks at 4°C and for many months frozen solid at —20°C. Activating substances, such as are often added to papain solutions will inactivate or destroy protease G, but the enzyme is adequately effective without the addition of other substances.

A Training Program in Blood Banking for Medical Technologists. Lukeman, J. M. and Skvorak, M. J. (1965), *Milit. Med.*, **130**, 415.

An effective, comprehensive curriculum for training medical laboratory technologists in blood banking is presented. The programme consists of lectures, demonstrations and practical exercises totalling 160 hours, associated with repeated oral and written examinations and observation of practical proficiency.

Antibody Detection Using Bromelin: Report of a case. Sister Marian Gerard (1965), *Amer. J. clin. Path.*, **43**, 487.

This is a report of a case in which anti-c, detected by the bromelin test but not by indirect antiglobulin, was the cause of a haemolytic transfusion reaction. Following the reaction, the antibody became demonstrable by the antiglobulin technique.

Auto-agglunation in Albumin. Powell, D. E. B. and Rees, C. (1965), *J. clin. Path.*, **18**, 212.

An example of the albumin auto-agglutinating phenomenon was found in the serum of a man dying from carcinoma of the stomach with liver secondaries. It is postulated that the factor responsible is a protein (probably globulin) and that it may have had its origin in the diseased liver.

Evaluation of the Alhumin Antiglobulin Technic in Antibody Detection. Stroup, Marjorie and MacIlroy, Mija (1965) *Transfusion, Philad.*, **5**, 184.

By suspending the test cells in bovine albumin solution in the indirect antiglobulin technique, the sensitivity of the test is enhanced and the incubation time can be shortened, it is claimed, to fifteen minutes without loss of sensitivity.

The Use of Serum Enzyme Determinations to Detect Anicteric Hepatitis. Prince, A. M. and Gershon, R. K. (1965), *Transfusion, Philad.*, **5**, 120.

The distribution of transaminase values in a series of 1,906 sera drawn from clinically normal individuals was analysed statistically.

It is suggested that the elimination of blood donors having SGPT levels greater than 25 units may result in the exclusion of 90% of cases of anicetric hepatitis.

1956/57	G. W. McKinley	H. T. G. Olive L. Reynolds	M. McL. Donnell	J. P. Walsh	H. G. Bloore J. J. Cannon F. L. N. Corey A. M. Murphy
1957/58	L. Reynolds	A. M. Murphy H. T. G. Olive	M. McL. Donnell	J. P. Walsh	H. G. Bloore F. L. N. Corey Miss L. Evans T. E. Tanner (J.)
1958/59	L. Reynolds	H. G. Bloore H. T. G. Olive	M. McL. Donnell	J. P. Walsh	G. Cameron Miss L. Evans H. E. Hutchings M. Lynch (J.)
1959/60	L. Reynolds	H. G. Bloore H. T. G. Olive	H. E. Hutchings	D. J. Philip	G. Cameron Miss L. Evans M. McL. Donnell M. Lynch (J.)
1960/61	H. T. G. Olive	H. G. Bloore M. McL. Donnell	H. E. Hutchings	D. J. Philip	G. Cameron Miss J. Mattingley Miss P. Scarf (J.) J. Walker
1961/62	H. T. G. Olive	H. G. Bloore M. McL. Donnell	H. E. Hutchings	D. J. Philip	G. Cameron Miss J. Mattingley Miss J. O'Grady (J.) J. Walker
1962/63	H. T. G. Olive	M. McL. Donnell H. E. Hutchings	J. D. R. Morgan	D. J. Philip	H. G. Bloore G. R. George Miss J. Mattingley Miss J. O'Grady (J.)
1963/64	H. G. Bloore	M. McL. Donnell G. R. George	J. D. R. Morgan	D. J. Philip	Miss D. Bond (J.) H. E. Hutchings R. T. Kennedy Miss J. Mattingley
1964/65	H. G. Bloore	M. McL. Donnell Miss J. Mattingley	J. D. R. Morgan	D. J. Philip	C. W. Cameron (CH.) E. K. Fletcher (DN.) H. E. Hutchings (WN.) R. T. Kennedy (AK.)
1965/66	H. G. Bloore	M. McL. Donnell Miss J. Mattingley	J. D. R. Morgan	D. J. Philip	C. W. Cameron (DN.) F. M. Hilder (CH.) H. E. Hutchings (WN.) R. T. Kennedy (AK.)

21 Years of Service

Office-bearers of the Institute Since 1945

	President	Vice-presidents	Secretary	Treasurer	Council
1945/46	E. L. F. Buxton	N. J. Ellison J. J. G. Peddie	Miss E. Winstone	Miss E. Winstone	V. J. Hawke G. W. McKinley D. Whillans
1946/47	E. L. F. Buxton	N. J. Ellison J. J. G. Peddie	S. O. Jarratt	S. O. Jarratt	D. H. Adamson G. W. McKinley D. Whillans
1947/48	E. L. F. Buxton	G. W. McKinley D. Whillans	D. H. Adamson	D. H. Adamson	N. J. Ellison S. O. Jarratt J. H. A. Ward
1948/49	N. J. Ellison	E. L. F. Buxton D. Whillans	S. O. Jarratt	D. H. Adamson	M. O. Ekdahl G. W. McKinley H. T. G. Olive
1949/50	N. J. Ellison	E. L. F. Buxton D. Whillans	G. W. McKinley	D. H. Adamson	J. A. Samuels H. T. G. Olive Miss J. Byres
1950/51	N. J. Ellison	E. L. F. Buxton D. Whillans	G. W. McKinley	H. T. G. Olive	M. O. Ekdahl J. A. Samuel D. H. Adamson
1951/52	D. Whillans	E. L. F. Buxton I. Saunders	G. W. McKinley	H. T. G. Olive	Miss J. Byres S. O. Jarratt J. A. Samuel
1952/53	D. Whillans	D. H. Adamson E. L. F. Buxton	G. W. McKinley	H. T. G. Olive	D. H. Adamson S. O. Jarratt J. T. Murray
1953/54	D. Whillans	D. H. Adamson E. L. F. Buxton	G. W. McKinley	R. J. Patterson	J. A. Samuel L. Reynolds F. Rush-Munro J. A. Samuel Miss P. Scott
1954/55	G. W. McKinley	D. H. Adamson J. A. Samuel	M. McL. Donnell	R. J. Patterson	as in 1952/53.
1955/56	G. W. McKinley	D. H. Adamson N. J. Ellison	M. McL. Donnell	J. P. Walsh	H. G. Bloore L. Reynolds F. Rush-Munro Miss P. Scott H. G. Bloore A. M. Murphy L. Reynolds Miss P. Scott

I.A.M.L.T. Congress, 1966 at Berlin

The next International Congress of the I.A.M.L.T. will be held between August 28 and September 2, 1966, in West Berlin. The hosts will be the German Society of Medical Laboratory Technology, and they are hoping to be able to provide visitors with a good social programme as well as an assortment of scientific papers and demonstrations.

On the last day, a round table discussion is planned, for teachers only, on the subject of training for teachers of medical laboratory technologists, and it is hoped that one speaker from each country will be able to give a report on this subject in his own particular country.

The Registration Fee for the Congress, if paid before May 1, 1966, is U.S. $10.00 and for late registrations the fee is U.S. $15.00. The Congress dinner will cost U.S. $5.00.

Any person interested in attending the Congress should get in touch with the following address:—

I.A.M.L.T. Office,
Viktoria-Luise-Platz 6,
1 Berlin 30,
Germany.

A Record of Twenty-one Conferences

Year	Conference	Host City	Dates	Roll
1945	1st	Wellington	August 7 and 8	20
1946	2nd	Palmerston North	August 3 and 4	30
1947	3rd	Christchurch	July 18 and 19	31
1948	4th	Auckland	July 30 and 31	49
1949	5th	Wellington	July 29 and 30	48
1950	6th	Dunedin	August 17 and 18	41
1951	7th	New Plymouth	August 16 and 17	43
1952	8th	Hamilton	August 7 and 8	50
1953	9th	Christchurch	July 16 and 17	56
1954	10th	Wanganui	July 15 and 16	55
1955	11th	Auckland	July 28 and 29	53
1956	12th	Dunedin	August 23 and 24	54
1957	13th	Palmerston North	July 4 and 5	66
1958	14th	Wellington	July 17 and 18	58
1959	15th	Invercargill	July 2 and 3	63
1960	16th	Christchurch	June 30-July 1	82
1961	17th	New Plymouth	June 15 and 16	78
1962	18th	Auckland	July 12 and 13	72*
1963	19th	Dunedin	August 22 and 23	89
1964	20th	Wellington	June 18 and 19	102
1965	21st	Tauranga	August 5 and 6	122

* The official roll at the 1962 Conference in Auckland is known to have been incomplete.

Papers Read at the 1965 Annual Conference

BACTERIOLOGY FORUM (Chairman: Dr T. H. Pullar)

The Isolation of Monosporium apiospermum *from Cases of Otomycosis in New Zealand.* F. Rush-Munro (Auckland).

Antibiotic Sensitivity Testing. H. C. W. Shott (Dunedin).

Faecal Parasites. M. D. McCarthy (Dunedin).

Preliminary Biochemical Differentiation of Salmonella Species. Rosemary Allen (Ruakura).

Discussion Topics:

Interference Phase Contrast Microscopy, Margaret J. Buchanan (Rotorua).

Some Observations on the Isolation of Haemophilus vaginalis. D. C. Smith (Tauranga).

BIOCHEMISTRY FORUM (Chairman: Mr T. E. Miller)

The Estimation of Calcium and Magnesium by Atomic Absorption. J. Pybus (Auckland).

Occupational Health: Procedures, Progress and Potential of a New Laboratory. D. A. McArthur (Wellington).

Protein Fractionation. I. C. Lyon (Lower Hutt).

Semi-automation in Chemical Pathology. J. L. Braidwood (Dunedin).

Sodium Levels as an Assessment of Water and Salt Depletions. E. K. Fletcher (New Plymouth).

Discussion Topic:

Observations on the Clinical Chemistry Survey 1964. I. Symonds (Wellington).

IMMUNOLOGY FORUM (Chairman: Mr A. Fischman)

Auto-antibodies. K. G. Couchman (Palmerston North).

Some Technical Aspects of Immunoelectrophoresis. R. Douglas.

Discussion Topics:

Recent Advances in Immunology.

Should Hospital Laboratories Have Separate Immunology Departments?

HAEMATOLOGY FORUM (Chairman: Mr J. Case)

Techniques of Chromosome Studies. Diana Chambers (Auckland).

Microbiological Assay of Folic Acid Activity. J. T. Holland (Auckland).

A Family History of Hereditary Elliptocytosis. H. E. Hutchings (Palmerston North).

Trade Displays at the 1965 Conference

Biological Laboratories Ltd.
Burroughs Wellcome & Co. (N.Z.) Ltd.
Dental and Medical Supply Co. Ltd.
Dominion Dental Supplies Ltd.
H. T. Frost Ltd.
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Edwin A. Piper Ltd.
Potter & Birks (N.Z.) Ltd.
Scientific and Laboratory Equipment (N.Z.) Ltd.
Townson & Mercer (N.Z.) Ltd.
William R. Warner & Co. Ltd.
Watson Victor Ltd.
George W. Wilton & Co. Ltd.

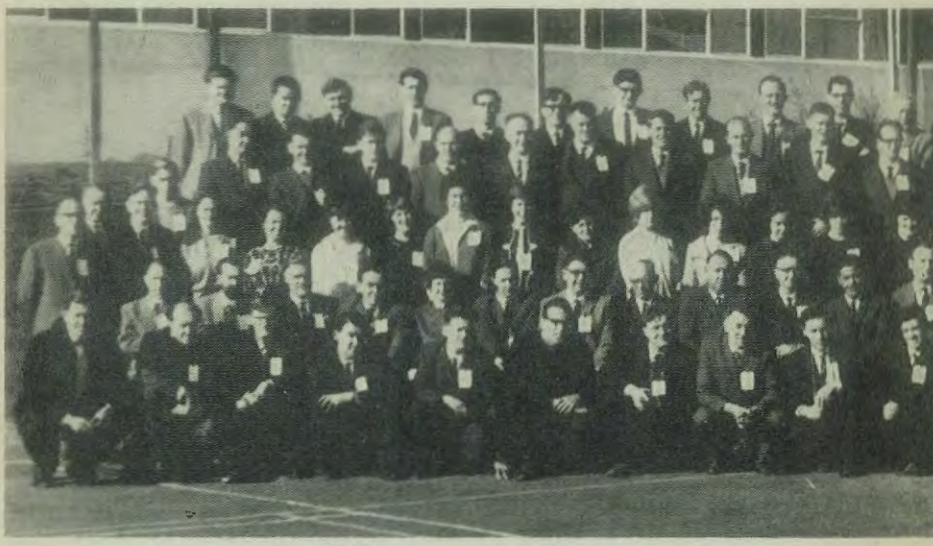
The Conference Committee acknowledges indebtedness to the following:—

Biological Laboratories Ltd for Matches.
Potter & Birks (N.Z.) Ltd. for Alka Seltzer tablets.
Watson Victor Ltd. for Sponsorship of Conference folder.
W. D. & H. O. Wills for Gold Leaf cigarettes.
Tauranga Hospital Board for Hospitality.

1965 — Tauranga

K. G. Couchman, G. D. C. Meads, G. S. Elliott, R. Wood, C. Blackshaw, ye, H. E. Hutchings, D. C. Smith. **Second row** (seated): D. Tingle, n, H. J. Clark (Chairman of the Tauranga Hospital Board), Dr M. G. llan, T. J. Lewis, C. W. Cameron, R. T. Kennedy, D. Whillans, W. G. C. P. Thompson, D. S. Ford, L. G. Cross, Diana Chambers, Gillian Walton, dy Nicholls, Lynette Douglas, Beverly Gamlin, Jose Law, Pam Pittman, osemary Rusbatch, Gae Stewart, N. Davies, M. E. Thomson, Shirley G. Reeve, R. Wales, D. A. I. Fisher, A. Johnston, F. M. Rush-Munro, 3. N. Smith, D. F. Mitchell, D. F. Henry, B. Mitcherson, L. Margolin, chell, G. B. Winders. **Back row:** A. Deacon, M. Lynch, W. Aldridge, e, S. O. Jarratt, M. D. McCarthy, G. A. Kuru, R. Douglas, A. Fischman, K. Clapson, E. K. Fletcher.

hotograph by Carters Photo Service, 33 Devonport Road, Tauranga.



21st Annual Confere

Front row: D. J. Philip, D. Till, J. Braidwood, A. I. Grace, F. M. Hilder, R. B. T. Edwards, B. Cresswell, D. S. McConnell, G. R. Rose, J. F. Speed, R. B. Glynn-Jones, H. T. G. Olive, J. Case, B. Couchman, P. A. Jones, J. D. R. Somerville, H. G. Bloore, Dr T. Pullar, H. C. W. Shott, G. W. McKinley, F Orbell, C. S. Shepherd, Sr M. Paula, Sr M. Killian. **Third row:** H. E. Fost Ann James, Aileen Lee, Alison Buchanan, Jeannette Grey, Joan Mattingl Astrid Pridham, Christine Clark, Sally Whyte, Pam Wallace, Rosemary A Gates, Margaret Buchanan, Nancy Lumsden, E. P. S. Norman. **Fourth r** M. Donnell, D. M. Taylor, I. M. Cole, I. R. Buxton, M. G. Harper, I. C. T. E. Brown, K. H. Boddy, A. Stewart, V. A. Drewitt, K. G. Clarkson, M. I. Symonds, M. R. Peters, I. Lyon, R. MacKenzie, A. F. Harper, F. Smith, J. Pybus, B. W. Barry, K. R. Ja

The President thanked Mr Smith and the Tauranga staff.
Carried by acclamation.

Conference next year to be held in Hamilton subject to confirmation.

Essay Prizes:

Junior Essay: Mr Donald Snook (Hamilton).

Technical Essay: No award this year.

Rex Aitken Memorial Prize: Mr T. E. Brown (Napier).

MOVED:
That the N.Z.I.M.L.T. Council consider recommending to the M.L.T. Board that Histopathology including Cytology be regarded as a separate subject for specialization.
Allan/Tingle Carried.

MOVED:
That this Conference regrets the lack of progress in setting up an educational system for Medical Laboratory Technologists.
Allan/lapsed for want of a seconder.

MOVED:
That the Institute continue to accept laboratory assistants as members on suitable application.
Kennedy/Pybus Carried.

MOVED:
That this annual general meeting ask Council to recommend to S.A.C. or other authority that meal allowances be applied for.
Cameron/Cresswell Carried.

A vote of thanks was proposed to the chair.
Carried by acclamation.

The meeting closed at 9.35 p.m.

The coming-of-age card presented to the Institute by Drs T. H. Pullar and M. G. Somerville on the occasion of the Twenty-first Annual Conference, August 5, 1965, at Tauranga.

The meeting reopened at 2 p.m.

MOVED:
This Conference recommends provision for "on call" and "overtime" payment for graded officers similar to the equivalent provision for Radiographers and Sisters.
Wales/Mitchell
AMENDMENT:
This Conference recommends provision for "on call" and "overtime" payment for all graded officers.
Allan/Case — Carried.
The amendment now became the motion.
Carried.

MOVED:
This Conference expresses dissatisfaction with the salary levels throughout the scale and in particular with lack of evidence of any strong representations by our Council.
Wales/Jarratt
AMENDMENT:
This Conference expresses dissatisfaction with the salary levels throughout the scale.
Mitchell/Shepherd — Carried.
The amendment now became the motion.
Carried.

The meeting was adjourned at 2.45 p.m.

The meeting reopened at 8 p.m.

MOVED:
That the Health Department be asked for approval and support for local and overseas sabbatical leave for qualified technologists of longer than seven years standing.
Aldridge/Lynch
AMENDMENT:
That the Health Department be asked for approval and support for local and overseas sabbatical or study leave for qualified technologists of longer than seven years standing.
Aldridge/Lynch — Carried.
The amendment now became the motion.
Carried.

MOVED:
That the following directive be made by Council to the Institute's representatives on the Medical Laboratory Technologists Board:
That the New Zealand Institute of Medical Laboratory Technology is opposed to the action of the Medical Laboratory Technologists Board in suspending the Practical Examination as a requirement in the Certification of Proficiency in Hospital Laboratory Practice.
Cameron/Case — Lost.
That the Medical Laboratory Technologists Board be asked to examine the findings of the Watford Commission and consider their adaptation to the training and certification of Medical Laboratory Technologists in this country.
This section of the remit was withdrawn.

Recommendation from Council:
That the number of Honorary members be limited to 16 members, and that Dr S. Williams be elected to Honorary Membership.
Carried.

This Conference endorses the principal of a work book, checked by Pathologist or Charge Technologist as being satisfactory evidence of practical work done.
Withdrawn.

The Wellington Branch strongly recommends to Council to ensure that no certificate of Hospital Laboratory Practice be granted without there being a practical examination.
Withdrawn.

MOVED:
That the Honoraria remain the same and be paid.
Olive/Foster — Carried.

MOVED:
That the Auditor be reappointed.
Philip/King — Carried.

Treasurer	Mr D. J. Philip	unopposed
Council:		
Auckland Member	Mr R. T. Kennedy	unopposed
Wellington Member	Mr H. E. Hutchings	
Christchurch Member	Mr F. M. Hilder	unopposed
Dunedin Member	Mr C. W. Cameron	

MOVED:
That the ballot papers be destroyed.
King/McCarthy — Carried.

MOVED:
That the rules of debate be observed.
Mitchell/Shott — Carried.

Notice of Motion

Rule 14 (a) to read:—The Officers of the Institute shall consist of a President, Chairman, 2 Vice Chairmen, a Secretary, Treasurer and four (4) ordinary members. All members shall retire annually from office but be eligible for re-election. Except in the case of the President no person shall be eligible to hold office as a member of the Council who is not a Fellow, Associate or member of the Institute.

(b) 1. The President may be invited by Council to office and must be a member of the New Zealand Society of Pathologists and elected as an Honorary Member of the New Zealand Institute.
2. The Chairman, Vice Chairmen, Secretary, and Treasurer shall be Fellows or Associates but the ordinary members of the Council may be Fellows, Associates or Members of the Institute.
3. To read as the present rule 14 (b) 2.
4. To read as the present rule 14 (b) 3.
5. To read as the present rule 14 (b) 4.

Rule 15 To delete the words Vice President and substitute Chairman — the rule then to read "The President shall preside at all meetings of the Institute, the council and all committees or sub-committees, and in his absence the Chairman shall take the chair at such meetings. Should the President and Chairman be absent at the commencement of the meeting a Vice Cha'rman to act as Chairman and in the absence of the Vice Chairman those present shall elect one of their number to act as Chairman.

MOVED:
McCarthy/Whillans

MOVED:
That the motion be put.
Cameron/Case — Carried.
The motion was then put. — Lost on voices.

Remits previously circulated:

MOVED:
The council of the New Zealand Institute of Medical Laboratory Technology (Inc.) make a recommendation to the Medical Laboratory Technologists Examination Board to have the name of the qualifying certificate altered.
Kennedy/King — Carried.

MOVED:
The New Zealand Institute of Medical Laboratory Technology (Inc.) make a submission to the Salaries Advisory Committee to have the employment regulations altered to allow for payment of all persons required to lecture outside of normal working hours regardless of whether a tutor is employed in that centre or not.
Kennedy/King — Carried.

Mr Whillans to supply information to council concerning the position at Auckland.

MOVED:
That the Secretary of the Institute publish a Council newsletter outlining salient features of Council discussions within thirty days of a Council meeting, to be circulated to all Laboratories.
Norman/Rose — Lost.

The meeting adjourned at 12.30 p.m.

Johnston, A., Thames
Joyce, W., Waipukurau
Kennedy, R. T., Auckland
Kerr, Miss J.
Killian, Sr. M., Auckland
King, I. C., Auckland
Kuru, G. A., Wairoa
Law, Mrs J., Hamilton
Lee, Miss A., Invercargill
Lewis, T. J., Nelson
Lumsden, Miss N., Christchurch
Lynch, M. J., Wellington
Lyon, I. C. T., Lower Hutt
McCarthy, M. D., Dunedin
McConnell, D. S., Christchurch
MacKenzie, R., Masterton
McKinley, G. W., Waipukurau
Margolin, L., Palmerston North
Martin, T. B., Auckland
Mattingley, Miss J., Wellington
Mayes, R. G., Rotorua
Meads, G. D. C., New Plymouth
Miller, T. E., Auckland
Mitchell, D. F., Dargaville
Mitchell, M. A., Rotorua
Mitcherson, B., Hastings
Morgan, J. D. R., Dunedin
Nicholls, Miss J., Hamilton
Nixon, A. D., Auckland
Norman, E. P. S., Christchurch
Olive, H. T. G., Wellington
O'Meara, F. B., Rotorua
Orbell, W. G., Auckland
Paula, Sr. M., Auckland
Philip, D. J., Auckland
Pittman, Miss P., Tauranga
Pybus, J., Auckland
Reeve, K. G., Gisborne
Reilly, R., Tauranga
Rose, G. R., Christchurch
Rusbatch, Miss R., Dunedin
Rush-Munro, F. M., Auckland
Seelye, R., Tauranga
Shepherd, C. S., Hamilton
Shott, H. C. W., Dunedin
Smith, B. N., Timaru
Smith, D. C., Tauranga
Smith, F., Napier
Speed, J. F., Hamilton
Stewart, A. McD., Dunedin
Stewart, Mrs G., Tauranga
Taylor, D. M., Auckland
Thompson, G. C., Invercargill
Thomson, Mrs E., Dannevirke
Tingle, D., Dunedin
Till, D., Wellington
Wales, R., Kawakawa
Wallace, Miss P., Timaru
Walsh, J., Auckland
Walton, Miss G., Auckland
Whillans, D., Auckland
Whyte, Miss S., Napier
Winders, G. B., Invercargill
Wood, R. L., Wanganui

Written apologies were received from: M. R. Morris (Clyde); J. Rees (Dunedin); K. B. Ronald (Whangarei) and L. R. Taylor (Oamaru).

Minutes of the Twenty-first Annual General Meeting

MOVED:
That the minutes of the previous Annual General Meeting be confirmed and signed as a true record.
King/Allan — Carried.

MOVED:
That the Annual report be adopted.
Morgan/Olive — Carried.

MOVED:
That the annual balance sheet be adopted.
Philip/Mitchell — Carried.

MOVED:
That the editor's report be adopted.
Case/Whillans — Carried.

Mr Whillans commented on the excellence of the *Journal* and thanked Mr Case.

Election of Officers

The following were elected to office for 1965-66

President	Mr H. G. Bloore	unopposed
Vice-Presidents	Mr M. McL. Donnell	unopposed
	Miss J. Mattingley	unopposed
Secretary	Mr J. D. R. Morgan	unopposed

cards and feed data into the computer the problem of medical diagnosis was coming to depend less and less upon the human element. However, said Dr Short, "You can't make soft data hard if it's rubbish to start with. . . ."

Roll of Honour.

The President read out the list of persons who attended the inaugural meeting of the New Zealand Association of Bacteriologists and asked those present at this meeting to stand. Nine members stood.

Presidential Address, Mr H. G. Bloore.

The President covered the following subjects in his address:

There had been three Council meetings; the Associateship diplomas had been printed and distributed; the question of meal allowances for technologists on call had been investigated; the Institute had been accepted as an approved organisation for membership of the Public Service Investment Society; a precedent had been set regarding the payment of candidates' fares to examination centres, with the authorisation of Hospital Boards to reimburse candidates their actual fares for attendance at the 1964 examinations; a brochure advertising the Institute and the career prospects of medical laboratory technology was in course of preparation; Mr G. McKinley had retired from the Medical Laboratory Technologists' Board and thanks were due to him for his years of service; Watson Victor Ltd. had offered a £5 5s award for the top final examination candidate, and this had been won, in 1965, by Mr E. M. Johnston of Auckland; substantial progress had been made in the negotiations towards the establishment of a hospital service tribunal; the Medical Laboratory Technologists' Board had made certain important decisions relating to examinations and training which are given in detail in *Council Notes* in this issue of the *Journal.*

Roll Call

Aldridge, W., Wellington
Allan, R. D., Dunedin
Allen, Miss R. E., Ruakura
Anderson, P., Rotorua
Barry, B. W., Hamilton
Blackshaw, C., Whakatane
Bloore, H. G., Blenheim
Boddy, K., Oamaru.
Braidwood, J. L., Dunedin
Brierley, Miss S.
Brown, T. E., Napier
Buchanan, Miss A., Auckland
Buchanan, Miss M., Rotorua
Burnett, Miss M., Hamilton
Buxton, I. R., New Plymouth
Cameron, C. W., Dunedin
Case, J., Dunedin
Chambers, Miss D., Auckland
Clapson, C. K., Hamilton
Clark, Miss C., Auckland
Clarkson, K. G., Lower Hutt
Cole, I. M., Auckland
Cresswell, B., Christchurch
Cross, L. G., Gisborne
Davies, Miss N., Hamilton
Deacon, A., Nelson
Donnell, M. McL., Takapuna
Douglas, Miss L., Hamilton
Douglas, R., Auckland
Drewitt, Miss V., Rotorua
Edwards, B. T., Christchurch
Elliott, G. S., New Plymouth
Evison, Miss G., Hamilton
Fischman, A., Auckland
Fisher, D. A. I., Hawera
Fletcher, E. K., New Plymouth
Forrest, Miss H.
Ford, D. S., Dunedin
Foster, H. E., Taumarunui
Gamlin, Miss B., Palmerston North
Gates, Mrs S., Whangarei
George, G. R., Rotorua
Glynn-Jones, B., Dunedin
Grace, A. I., Wellington
Grey, Miss M. J., Auckland
Hammond, Miss W.
Hampson, M. H., Rotorua
Harper, A. F., Wanganui
Harper, M. G., Hamilton
Hawes, Miss M.
Hilder, F. M., Christchurch
Holland, J. T., Auckland
Hughes, Miss R., Rotorua
Hutchings, H. E., Palmerston North
James, Miss A., Auckland.
James, K. R., Hamilton
Jarratt, S. O., Palmerston North

THE NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY TECHNOLOGY (INC.)

21st Annual Conference

Held at Tauranga on August 5 and 6, 1965.

The meeting opened at 9.15 a.m. with the introduction by the President, Mr H. G. Bloore, of the official guests.

Address of Welcome, Mr H. J. Clark (Chairman of the Tauranga Hospital Board).

Referring to the fact that the medical laboratory technologist is an important link in the hospital team, and with the rapid advance in science and technology an increasingly important one, Mr Clark extended a cordial welcome to the Conference. The Tauranga Hospital Board was pleased with our good choice of venue for the 1965 Conference, and we were still welcome, even though we had waited twenty-one years to come to Tauranga.

Conference Address, Dr M. G. Somerville (Pathologist).

Dr Somerville said it had been 19 years since his attendance at the third Conference of the New Zealand Association of Bacteriologists in Christchurch, and a few years later he had been present at a conference in Hamilton. Looking back, one cannot but be astonished at the progress the Institute has made. The attendance at the third Conference numbered less than the technical staff at Auckland Hospital. In those days most technologists were primarily interested in Bacteriology and Haematology, with very few engaged in Biochemistry. Specialisation and automation were developments that were inevitable to cope with the pressure of work, allied to which was the question of quality control, which makes us all strive to a better standard. Referring to a recent clinical chemistry survey, Dr Somerville said he felt that it might be desirable to see this extended to include Bacteriology and Haematology.

Laboratory work has expanded enormously since the Institute was founded, possibly associated with the extension of social security. The growth of the private laboratory had been another interesting development, creating competition and helping to keep standards high.

Another feature of our twenty-one-year history, said Dr Somerville, was the growth of the *Journal* and the increasing numbers of regional seminars.

Examinations and training standards had so improved that the third-year trainee was at a level better than the fifth-year trainee of a few years ago; and the great increase in the numbers of people undergoing training had presented new problems to face. The examination problem was a difficult one, Dr Somerville said, on which there will probably never be complete agreement. However, although feeling that specialisation should not be overdone, Dr Somerville favoured specialisation after the Intermediate examination.

Extending the greetings of the New Zealand Society of Pathologists from Dr Fairbrother, Dr Somerville concluded by presenting the President with a coming-of-age card from "two of the surviving Honorary Members" mentioned in the July *Journal,* Dr T. H. Pullar and himself.

Opening Address, Dr D. P. Short (Medical Superintendent, Tauranga Hospital).

Welcoming delegates on behalf of the staff of Tauranga Hospital, Dr Short alluded to an editorial in the *British Medical Journal,* dealing with the subject of medical computing. Making reference to automation, Dr Short said that great increases in work-load were now possible without corresponding increases in staff; and with a high-grade moron to punch

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The Junior Essay Competition

Results of the 1965 Junior Essay Competition were as follows:—
ESSAY SECTION won by D. B. Snook, Waikato Hospital, Hamilton, for an essay entitled "THE HISTORY OF BLOOD TRANSFUSION."

TECHNICAL SECTION. The Council decided that, as no entry reached a desirable standard, there should be no award in the Technical Section this year.

THE CLOSING DATE FOR THE 1966 JUNIOR ESSAY COMPETITION IS JULY 1, 1966.

The Council hopes that the early notification will enable a greater number of trainee members to participate in the Competition than has been the case in the past, and will allow them ample time to discuss possible subjects with their senior technologists and prepare their work with greater care.

£5 5s will be awarded for the best entry in each of the two sections of the Competition:—

TECHNICAL SECTION: Consisting of descriptions of methods or technical procedures, presented in the manner laid down in the "Directions for Contributors" appearing in each issue of the *Journal*.

ESSAY SECTION: Consisting of essays on historical, general or particular aspects of medical laboratory technology, presented in the style of an essay.

A cyclostyled sheet of instructions and suggestions for entrants is available on request, either from the Secretary of the Institute or from the Editor of the *Journal*.

Entrants must be financial members of the Institute and must not have passed the Certificate of Proficiency examination before the closing date, nor be otherwise eligible for Associate membership.

anti-B (537) and the patient's cells was completely and specifically inhibited by group B secretor saliva only.

5. Similarly, only group B secretor saliva inhibited the reaction between the patient's serum and group B cells.

6. Inhibition experiments with the patient's saliva established that he was a secretor, and that his saliva contained A substance but not B substance.

Discussion

Re-examination of Mr Gr.'s blood after an interval was not possible because he died shortly afterwards; also no blood grouping tests were carried out on relatives. However, there was now a reasonable weight of evidence pointing towards a conclusion that Mr Gr. was group A with an acquired B antigen. A weak B allele had not been completely excluded, but these generally behave rather differently than the blood of Mr Gr. One would have expected, for example, to have found either B substance in his saliva or an absence of β from his serum in this event. This argument is also valid against the likelihood of his being a blood group chimera. The more prosaic explanation of the sample having become contaminated with group B cells is excluded by the results of tests on a new sample.

The possible causes of acquired B antigens are discussed by Race & Sanger (1962)[7]. There seems every reason to suppose that the phenomenon results from the adsorption of some bacterial polysaccharide since Marsh (1960)[4] was able to reproduce it *in vitro* by using a powerful bacterial T-activating filtrate. Moreover, he was able to achieve this with group O as well as with group A_1 cells, in spite of the fact that there is a significant absence of group O bloods among those reported to have exhibited this strange phenomenon *in vivo*. No effort was made in the present case to isolate an organism that might be capable of reproducing the effect *in vitro,* but the experience of others has shown that such a search is most likely to be fruitless.

One fact that has emerged is that of the undoubted value of the use of a system of symbols to denote differing degrees of agglutination. Had it been the practice to employ the symbol '+' to denote any degree of agglutination, the significance of the weaker, mixed-field agglutination observed between anti-B and the patient's cells would not have been apparent.

Summary

A case is described in which difficulty is experienced in crossmatching blood for a patient originally thought to be group AB, but who later proved to be group A with an acquired B antigen. The progressive identification of the phenomenon is detailed.

reaction. Microscopic examination of the test with anti-B, however, revealed that although some of the cells were strongly agglutinated, the remainder were lying free; this reaction was recorded as 'double-plus mixed field' ($++^{mf}$). The patient's serum agglutinated B cells with a 'c' reaction, but A_1 and O cells were not agglutinated.

These results so closely paralleled the findings in the reported cases of acquired B antigens that it seemed likely that Mr Gr. was an example of this phenomenon. Four units of group A Rh(D) Positive blood were crossmatched without difficulty and were subsequently issued for administration to Mr Gr. An investigation was then undertaken to establish the patient's true group as A.

Further tests

1. A new sample of blood was obtained from the patient before transfusion and it was confirmed that the cells were agglutinated by the anti-B serum originally used (ref: 537). Of three other standard anti-B typing sera, one gave even stronger agglutination (ref: 9175), one weaker (ref: 9273) and one failed to agglutinate the patient's cells at all (ref: 536). Out of fifteen group A sera selected at random, only three agglutinated the patient's cells.

2. A quantity of the original anti-B serum (537) was absorbed for one hour at 4°C. with an equal volume of washed, packed patient's cells. At the same time, similar portions of the same serum were absorbed with A_1 and with B cells. The resulting absorbed sera were then titrated, in parallel with an unabsorbed sample, against group B cells and against the patient's cells.

The reduction in anti-B titre resulting from absorption with the patient's cells was very slight, and hardly greater than that accomplished by absorption with group A_1 cells. Two reabsorptions failed to cause a more significent loss of anti-B activity, though the reaction against the patient's cells was absent after the first absorption. The portion of anti-B absorbed with group B cells, however, no longer agglutinated either group B or the patient's cells.

3. It was shown that if the cells of the patient which had been used to absorb anti-B (537) were washed, resuspended in a small volume of saline and then exposed to a temperature of 56°C., they yielded up anti-B. This was also true of patient's cells used to absorb an anti-B serum (536) which had given no apparent agglutination of them.

4. Using salivas from group A secretor and non-secretor, group B secretor and non-secretor and group O secretor and non-secretor individuals, it was shown that the reaction between

A Blood of Group A Resembling Group AB

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(Received for publication November 1963)

Introduction

In 1959, Cameron *et al*[1] reported a series of cases in which they claimed to have recognised something new in blood grouping experience: an acquired antigen.

Samples from each of the seven patients studied were shown to possess a weak B antigen in addition to a normal A_1 antigen, and the claim that this was an acquired rather than an inherited character was based on the following facts:—

1. In all seven cases, collected over several years in several laboratories, anti-B was present in the serum.
2. Those of the patients who had been tested for secretor status and found to be secretors, had A and H substance in their saliva but no B substance.
3. Four of them had group O children, eliminating the possibility of a weak B allele.
4. In some, the character was shown to have disappeared on subsequent testing.

Other accounts of the same phenomenon were soon reported [1, 3, 5, 9] and three earlier serological curiosities [6, 8] were thought, in retrospect, to represent examples of it.

The following is an account of a similar case encountered in the laboratory of the Dunedin Hospital Blood Bank.

Case Report

Mr Gr. was admitted to hospital with profound anaemia resulting from prolonged chronic gastro-intestinal haemorrhage. His condition was such that a blood transfusion was considered an early necessity and, accordingly, four units of blood were requested from the Blood Bank.

Four bottles of group AB Rh(D) Positive blood were selected on the basis of the results of the provisional slide grouping test, their cells were washed, and the crossmatch was set up. Simultaneously, in accordance with routine practice, the full tube grouping tests were set up in order to confirm the group of the patient before actual transfusion.

Results

All four donors were incompatible. There was strong agglutination of the cells of each of them in saline, in albumin and by the indirect antiglobulin technique, while tbe tests against the patient's own cells showed no agglutination.

In the tube grouping tests on the patient, his cells were strongly agglutinated by anti-A and anti-A+B, showing a 'c'

With regard to neuroblastomas (particularly in paediatric cases) and the excretion of pressor amines, the products showing greatest increase are VMA and dopamine. The latter being estimated with the total catecholamines. Methylated amines are increased in nearly all cases, but to a lesser degree. The most sensitive method would appear to be the VMA determination, with the total catecholamines or essentially dopamine (3-hydroxy-tyramine) an equally sensitive alternative though with less relative increase.

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Addendum

Since the presentation of this paper, further articles of similar material have been published.

Kelleher *et al* (1964),[11] compare urinary catecholamine, V.M.A., and metadrenaline output in hypertensive and pheochromocytoma patients. The estimation of catecholamines and metadrenalines are shown to be the more diagnostically reliable tests while the method of Hingerty (1957)[10] is considered a suitable simple screening test for excess catecholamines. The technique of Hingerty is further improved in a *Triangle* publication.

Sandler (1964)[12] traces the main metabolic pathways of the adrenalines and dopamine and suggests a rationale of tests to eliminate the presence of excessive urinary V.M.A. and metadrenaline. Ford (1964)[9] proposes a two dimensional paper chromatographic method for the quantitation of urinary 3 methoxy-4-hydroxy-mandelic acid, thus making for specificity and eliminating the necessity for diet control prior to urine collection.

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Attention should be drawn to the effects of two drugs: *Aldomet,* Methyldopa, commonly known as is a decarboxylase inhibitor. The inhibition acts in such a way as to prevent the synthesis of dopamine from dopa. Its effect is greatly to increase the catecholamines estimated by the fluorescent technique. A diagnosis of phaeochromocytoma could easily be made on a patient who is otherwise normal, but receiving aldomet anti-hypertensive therapy. This would be an example of a false positive. The second hypothetical case is rather the reverse of the first. The drug to eliminate is pargyline, a monoamine oxidase inhibitor. The imaginary case is a patient who has a phaeochromocytoma and being clinically hypertensive, is on pargyline therapy. If a laboratory VMA screening procedure were performed the result would most likely be low, negative or normal, as the monoamine oxidase inhibitor has blocked the pathway to VMA. A false negative value would be established.

The importance of being aware of anti-hypertensive therapy cannot be stressed too strongly. There are other similar drugs and, naturally, more to come, presenting a continuous need for care and attention in phaeochromocytoma screening. Generally it is considered that antihypertensive therapy should be excluded for at least seven days before laboratory screening for phaeochromocytomas.

Assessment of the Methods Available:

Essentially the aim should be to establish the most sensitive index to detect these tumours. Modern authors use, as an indication of relative values of methods, the daily excretion as a factor of the upper limit of the normal range. Overall reports show that on occasions all three compounds, catecholamines, methylated amines and mandelic acid, share the high values, and on other occasions they alternate. Phaeochromocytomas have been reported when the catecholamines were normal and the VMA greatly increased. However, on greatest relative increase over normal, the methylated amines show most consistent results, being increased through hypertensive phases and quiescent periods. This quality is also similar from patient to patient. With this estimation there is a high degree of reliability and comparative ease of technical performance. Great variation is found with the catecholamines and VMA during various stages of the history and from patient to patient. Using the methylated amine determination appears to be the most satisfactory screen at all times, while the catecholamine determination is more suitable as a check, when normal values are found with the methylated amines on a specimen collected over a timed period of paroxysmal hypertension.

ethylenediamine is also carried out, dopamine is included to give total catecholamines. In quantitative methods the catecholamines are adsorbed on a column of amberlite, eluted, condensed in alkaline solution with ethylenediamine, and the resulting fluorescence read.

2. The 3-methyl derivatives are usually adsorbed on a column of amberlite, eluted with ammonia and converted to vanillin by oxidation with periodate. The vanillin formed is read in a spectrophotometer at 350 and 360 mμ.

3. 3-methoxy-4-hydroxy mandelic acid (VMA) is extracted with ethyl acetate solvent from acidified urine and coupled with diazotised p-nitroaniline. The diazo complex is extracted with amylalcohol and read at 450 and 540 mμ.

Alternative methods include adsorbing on an iron exchange resin, two dimensional chromotography and extraction and oxidation to vanillin.

Substances and Conditions Affecting Results.

All vanilla containing foods should be eliminated from the diet, as the presence of this compound greatly increases the urinary VMA excretion. It has also been recorded that marked stress will affect the result, as will the presence of a carcinoid tumour. Coffee and fruit, especially bananas, also aspirin will affect VMA results, while quinidine and all vitamins have been noted as contraindications to catecholamine estimation.

As hypertension is one of the leading symptoms of phaeochromocytoma, patients who are screened for this pathology are invariably hypertensive, whether it be of the paroxysmal or the persistent type. It would be pertinent to mention that from patient to patient with this disease, the output of catecholamines and derivatives vary. In the persistent hypertensive patient the excessive output will be more or less constant through the attack and laboratory screening will usually detect the increase. However, where the attacks are irregular (i.e. paroxysmal hypertension) the output varies with the hypertensive attacks. If, in this case, only 24-hour urine samples are collected, the spasmodic increase may well be diluted out; therefore it is important, especially in the paroxysmal hypertensive patient, to screen specimens collected during the attack and express the output as per the creatinine output. This will establish a sudden increase in catecholamines or derivatives.

In some cases, specimens may have been collected from patients who are currently on anti-hypertensive therapy and it is important that the technologist ascertain this fact and note clearly when reporting the effect, if known, of this drug on catecholamine output. Ideally, the physician should be aware of interference produced by antihypertensive drugs, and the patient suitably prepared.

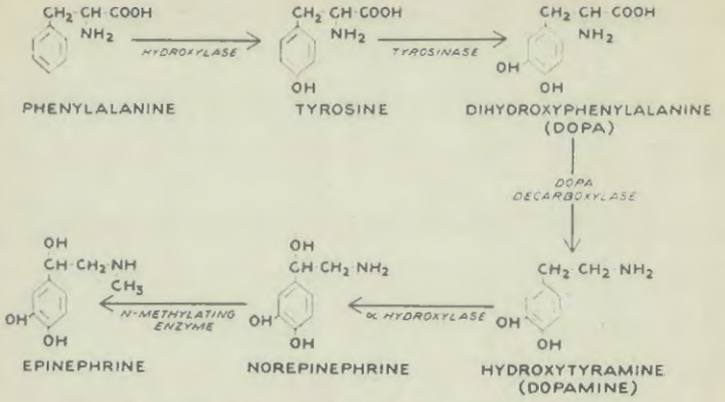

Fig. 1. Biosynthesis of Norepinephrine and Epinephrine.

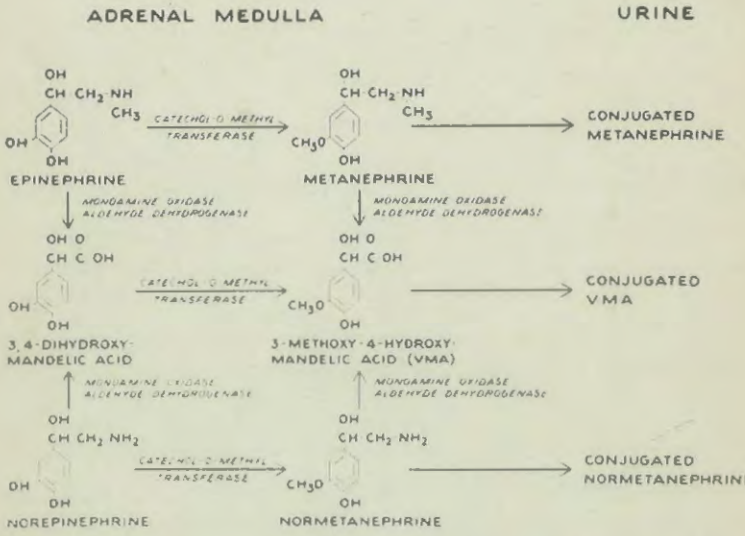

Fig. 2. The Breakdown Pathways of Epinephrine and Norepinephrine.

The methodology of these three are elaborated as follows:

1. A simple screening test involves oxidation (in some cases with ferricyanide). Epinephrine is oxidised at pH3 and both epinephrine and norepinephrine at pH6. The resultant adrenolutine compounds are compared with a standard for yellowish green fluorescence under ultraviolet light. If condensation with

Laboratory Screening for Phaeochromocytomas

E. K. FLETCHER, A.N.Z.I.M.L.T.
New Plymouth Hospital

A paper read at the 1964 Annual Conference of the N.Z.I.M.L.T.

Larger hospital laboratories are receiving increasing numbers of requests for tests which screen for phaeochromocytomas and neuroblastomas. Most of these tests are semi-quantitative, or fully quantitative, biochemical estimations of the pressor amines secreted by the adrenal medulla and excreted in the urine. Recent papers have drawn attention to the importance of the pressor amines, their chemistry, estimation, clinical application and diet and drug precautions. Much work has been carried out on the estimation of pressor amine metabolites and opinions presented on the importance of measuring either one or each of these. Drawing the attention of the technologist to this work would now seem timely.

Synthesis of the catechol amines is shown in figure 1. The chromaffin cells of the adrenal medulla, on stimuation, secrete epinephrine, norepinephrine and dopamine. There are two types of cells: those storing epinephrine, and those storing norepinephrine; the latter cells lacking the necessary methylating enzyme to form epinephrine. (Fig. 1). This methylating system is almost completely lacking in the cells of the sympathetic ganglia and nerves, so that secretion from these cells is chiefly norepinephrine and dopamine. In contrast, the adrenal medulla cells secrete both norepinephrine and epinephrine.

The breakdown pathways of epinephrine and norepinephrine are shown diagrammatically in figure 2. Catechol-o-methyl transferase is most important, and present in all tissues where catecholamines exert an effect. 50% of both epinephrine and norepinephrine follow the metanephrine and normetanephrine pathway, to be found in this free and conjugated form in the urine. 30% follows the 3-metoxy-4-hydroxy mandelic acid (VMA) pathway. In the urine the conjugates are glucuronides and sulphates. Therefore by the direct pathway, methylated compounds are the more predominant.

On studying the alternative breakdown pathways, it becomes apparent that one (or several) compounds or metabolites may be estimated.

Methods Used in Diagnosis

Three alternative determinations are available:

1. The total catecholamines: (dopamine, epinephrine and norepinephrine).
2. Their 3-methyl derivatives: (metanephrine and normetanephrine).
3. 3-methoxy, 4-hydroxy mandelic acid (VMA).

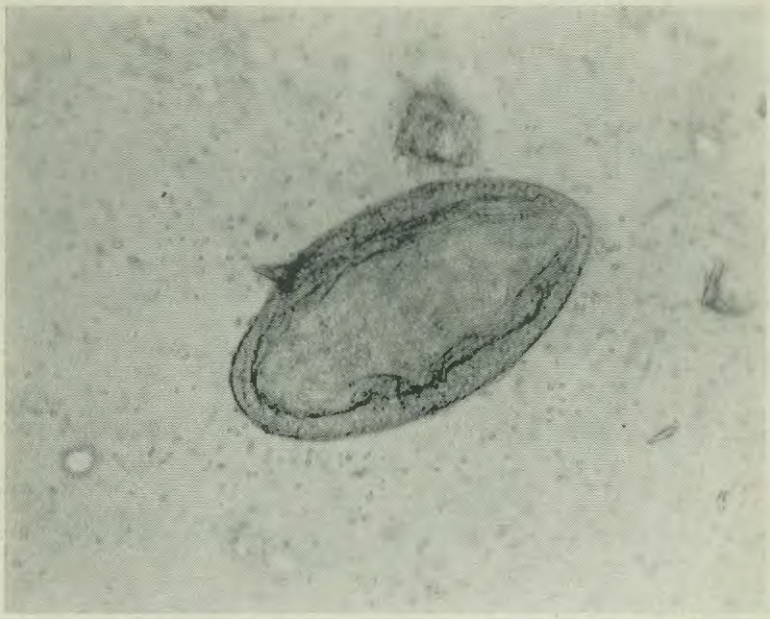

Plate 1. An ovum of *Schistosoma mansoni* obtained by the method described from the faeces of an African student.

The number of Schistosoma ova found in each of the faeces was quite large—about 10-20 per coverslip of concentrate.

Haematology Findings

Of the two male students with schistosomiasis, one presented with a haemoglobin of 15 gm.%, an eosinophilia of 990/c mm., a serum iron of 124 μg%, and bis erythrocytes showed hypochromic changes. The other student had a haemoglobin of 14.1 gm.% and an eosinophil count of 140/c mm.

Of the remaining 10 students with parasitic infestations, 2 showed some degree of anaemia—haemoglobins of 11.1 gm.% and 12.0 gm.%. None presented with an eosinophilia.

Serology

All students were screened by Wasserman and V.D.R.L. and all were negative.

Acknowledgments

I would like to thank Mr D. Weston of the Photographic Department of the Medical School for the photomicrographs and Dr D. Strang of the Student Health Service, University of Otago, for his collaboration.

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The Recovery of Parasites from Faeces using the Formal-Ether Method in a Group of Overseas Students

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c/o Drs Perry & Fitzgerald, 685 George St., Dunedin.

(Received for publication, May 1965)

The formal-ether technique of Ritchie modified by Ridley and Bigwood[1], as described by E. Joan Stokes[2], is used routinely in this laboratory. It is the method of our choice due to its ease of performance and rapidity of recovery.

A survey was undertaken of a number of the foreign students resident in this city and the results are shown below.

Technique of Concentration

1 gm. of faeces is emulsified in about 7 ml. of 10% formal-saline and strained through wire gauze (mesh 40 squares to 1 inch) into a centrifuge tube. Add 3 ml. of ether and shake vigorously for one minute. Centrifuge, accelerating slowly and gradually over a period of two minutes to 2,000 r.p.m. then switch off and allow to come to rest.

Loosen the debris on the surface and interface between the two liquids from the wall of the tube with a stick and decant the supernatant allowing the last drop or two to run back. Shake up the small deposit, make a wet preparation and examine unstained.

Results

23 students from Malaysia, Nigeria, Uganda, Tanzania, Kenya and Rhodesia submitted 65 specimens of faeces which were concentrated by the above method. 12 students showed parasitic infestations in 34 specimens of faeces. Of these 34 specimens, 26 showed Ancylostoma ova, 20 *Trichuris trichiura* ova, 6 *Ascaris lumbricoidas* ova and 9 showed ova of *Schistosoma mansoni.* The distribution and recognition of the first three is appreciated in this country but schistosomiasis is possibly not widely known.

Schistosoma mansoni occurs in Africa, chiefly in Egypt, the valleys of the Nile, the Congo and the Niger rivers, in the West Indies and Venezuela. The adult worms have a predilection for the mesenteric veins draining the bowel near the ileocaecal junction. The ova are deposited in the veins of the colon and especially those of the rectum and occasionally a few in those of the bladder.

The life cycle is well described in the 10th. Edition of *Practical Bacteriology, Haematology & Parasitology* by Stitt, Clough & Branham.

that future stain tests with azocarmine or other dyes will show increased binding speed and a much closer adherence to the Beer-Lambert Law.

If a suitable dye or dye combination can be found that will give accurate results in response 5, then it may be possible, using an accurate "Hamilton" pipette for application of the serum to the spreader, to work out the total protein from the total number of counts recorded.

For analytical use, two questions would have to be answered by experiment.

(1) Strict conformity to the Beer-Lambert Law can be tested by the method of Grassmann and Hannig[2] as reported by Wunderly[3].

(2) Non-uniform dye binding capacity of serum protein fractions on agar can be checked using purified preparations of human albumin and globulin.

Conclusion

This method gives a rapid, clearly defined separation of serum protein bands, with a very low background optical density. Satisfactory results are obtained when a commercial control serum is run and then scanned photoelectrically.

Acknowledgment

The author wishes to express his thanks to the following: to Dr Sullivan and Dr Hills for the provision of equipment; to Mr Hoggart of Civic Cameras, Auckland, for his assistance in locating suitable polyester film; and to Dr Heron of the Medical School, Dunedin, for his helpful suggestions on quantitation procedure.

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The Rex Aitken Memorial Prize

The 1965 Rex Aitken Memorial Prize of £25, presented by Biological Laboratories Ltd., of Auckland, was won by:—

T. E. Brown, of Napier,
for his paper

"LACTIC DEHYDROGENASE AND THE APPLICATIONS OF ITS ESTIMATION IN THE CLINICAL LABORATORY"

which was printed in the October 1964 issue of this journal.

The correlation will be improved by the use of an 0.1mm. slit instead of the standard 1mm. slit. This will remove possibilities of a following band starting to scan while a preceding band is still scanning, and will allow the trace to return to the baseline between each band and give much more accurate bands for integration.

The initial trace has been over-lined in black for ease of legibility.

The comparison of the results obtained to the given results for Hyland is as follows:—

	Hyland % Composition	Results %
Albumin	57	57
Globulins α_1	4	4
α_2	10	12
β	12	10
γ	17	17
A:G Ratio	1.3	1.3

Discussion

Two minor adjustments are being made to the scanning system to improve the resolution of the protein fractions particularly the alpha-1 globulin. These modifications are:

1. A 0.1mm. slit to replace the standard 1mm. slit, and
2. A gearing mechanism to provide a 1:2 or 1:4 scale expansion between the stained strip and the recording chart.

This laboratory is now investigating changing the stain for electrophoresis strips from bromphenol blue to azocarmine G. It is hoped that this procedure will halve the staining and processing time after electrophoresis. The uptake of the stain is very much quicker with azocarmine G. and according to the work of Grassman and Hannig[2] on paper, azocarmine gives a higher absolute extinction as well as showing less differences in the dye-binding capacity and consequent extinction of stained protein fractions.

The variable response setting in the Densicord is a valuable asset, particularly as many of the stain techniques do not accurately follow the Beer-Lambert Law. In response 1, the recorder acts as a linear millivolt recorder, whereas in response 5 the machine records the logarithm of the input. At higher response values the machine reads along curves progressively sharper than the log curve.

That bromphenol blue staining does not strictly conform to the Beer-Lambert Law is easily recognised by the fact that strips stained with this dye must be read at response 9 for accurate correlation of commercial test sera. It is possible that much of the discrepancy is caused by the much reduced staining time: 15 minutes instead of the requisite 16 hours. It is hoped

(g) Blue the strips by holding over an open bottle of concentrated ammonia.
(h) Varnish and leave to dry.

Results

The strip, illustrated in Fig. 1, was run on Hyland Special Clinical Control Serum with a total protein of 7.0 g. per 100ml. The scanning was run on the Photovolt Corporation, Model 542 recording densitometer with attached Model 49 integrator.

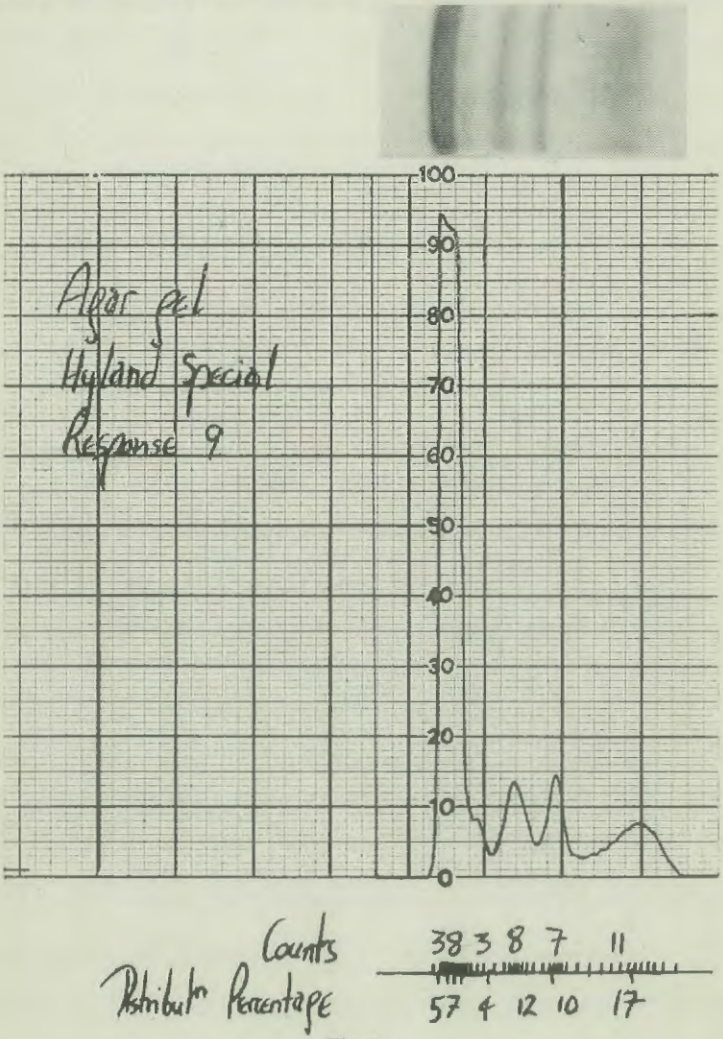

Fig 1.

8. **Agar.**

'Oxoid' Ionagar No. 2 obtainable from Edwin A. Piper Ltd. or 'BBL' Purified Agar obtainable from Biological Laboratories Ltd. 300mg. per 100ml. buffer as described below.

9. **Photoelectric Scanner.**

This laboratory has a 'Photovolt' Model 542 recording densitometer, coupled with a Model 49 Intergraph for this work. This appears to be the most suitable system for speed and ease of reading; also, the integrator markings are in a form that is less prone to error than the saw-tooth marking used in some systems. An accessory is the scaled expansion of reading which is not yet available.

10. **Varnish.**

'Spray-Kote' clear varnish.

Method

1. **Preparation of the Agar Strips.**

Dissolve 300mg. of agar in 100ml. buffer and bring to the boil while stirring continually. Hold at 56°C. temporarily until ready for use.

The buffered agar is best pipetted at 56°C. onto the film which has previously been taped down on flat glass with plastic adhesive tape. This allows sufficient time for control of coverage before the agar sets.

Pour the strips as a total area, with dimensions 2cm. greater in each direction than the strip requirement, to allow for uneven edge coverage. The coverage should be 1ml. agar per 8 sq. cm. of strip.

The strips are then cut 3cm. wide with a scalpel blade and placed in the electrophoresis cell.

2. **Electrophoresis.**

4-5 μl of test or control serum from a marked pasteur pipette is transferred evenly to the edge of a clean glass slide and lightly applied to the surface of the agar.

The strips are run for 45 minutes without need for current reversal.

3. **Preparation for Quantitation.**

4-5cm. of agar is removed from each end of each strip for ease of handling and for application of identification markers.

The strips are then processed as follows:

(a) Dehydration: 10 minutes in acid methanol.
(b) Stain: 15 minutes face down.
(c) Wash: 5 minutes face down in aq. Acetic acid.
(d) Dry: at about 60°C. on a thermostatically controlled hot plate.
(e) Wash: 5 minutes face down in clean aqueous acetic acid.
(f) Dry.

Rapid Electrophoresis of Serum Proteins on Agar-gel

Preliminary Communication

D. L. PEZARO
Laboratory Diagnostic Service,
43 Symonds Street, Auckland, C.1.

(Received for publication June 1965)

Introduction

The method outlined has been slightly modified from the method of Cawley and Eberhardt[1] which employs a photoelectric scanner as the only addition to normal electrophoresis apparatus. The use of a different carrier base was caused by the non-availability of photographic leader film, and the modified staining procedure was found to give less background colour. The entire method is not yet in routine use as the recording scanner system is not complete.

Apparatus and Reagents

1. **Power Supply.**

Any partially stabilised system, capable of delivering 0.4-0.8 watts per strip, preferably in the range 300-350 volts and 1-4 m.a. per strip.

2. **Electrophorectic Cell.**

Horizontal or vertical cells may be used. Vertical cells may be modified by lowering the cross-bar thereby decreasing the length of strip utilised.

3. **Veronal buffer pH 8.6,** Ionic strength 0.05.

Barbituric acid (LR) 1.84g. } dissolved in distilled water
Sodium Barbitone 10.30g. } and made up to 1 litre.
Preserve by adding 5ml. of thymol (5% in isopropanol).

4. **Fixing Solution.**

Acetic acid (AR) 1% in methanol AR.

5. **Stain.**

Bromphenol blue	0.2 g.
Mercuric chloride (AR)	4.0 g.
Glacial acetic acid (AR)	8.0ml.
Ethanol (AR)	10.0ml.

dissolved in distilled water and made up to 400ml.

6. **Washing Solutions.**

Commercial glacial acetic acid 1% in tap water. Change each second day.

7. **Polyester Film.**

'Melinex' film 0.002in thick, obtainable from I.C.I.

The Training of Laboratory Technologists

Every trainee and qualified medical laboratory technologist should make a point of reading a stimulating paper*, recently delivered by Dr T. H. Pullar to the N.Z. Society of Pathologists. His appraisal may be calculated to provide a breeze to remove the proverbial cobwebs of I.M.L.T. thinking. On the other hand it may have been presented, to some extent, with tongue in cheek.

One may better say, perhaps, "delivered" because he has set out, in an admirable manner, the means of conception, the lengthy period of gestation and the rather irksome arrival of a fatherless infant. Although much loving care was lavished during the infant's early childhood, it would appear that at the most critical period of his life a willing, although rather superior foster-parent was the only help available. The orphan proved to be an exception to the rule, for no real State aid came to hand, even though other offspring had toys and money to burn.

The infant has outgrown his clothes; a drastic haircut is overdue. Nevertheless, he must find and express his own self-determination. Lord Dawson of Penn (quoted elsewhere) said, "Professions, like nations, have need of self-determination." To those worthy of the name, the laboratory technologist is a professional.

Maybe the gawky adolescent will not face the courts on a juvenile delinquency charge, but at least he should be given a sense of urgency; and, in rebuke, be told to follow his proper vocation. Furthermore, this grown-up must now find his place in a society where an immediate contribution is in demand. Rose-coloured spectacles must be discarded and unless he can navigate a proper course then, quite justifiably, some more enterprising pilot must be allowed aboard.

The challenge to the N.Z.I.M.L.T. is abundantly clear, neither money nor energy should be spared. Meanwhile, all would do well to remember that this original infant can never say, on reflection, that his present misfortune is due to the sins of his father. Like it or not, the Institute has to live its own life. To do so it should accept advice from those who appreciate its needs and intended status. However, it has already grown in stature to the extent where it must abide by its mistakes — and be proud of success. Above all else, the N.Z.I.M.L.T. must create its own image, and members must always remain grateful to Dr Pullar for cleaning the looking-glass. H.C.W.S.

* Pullar, T. H. (1965), *N.Z. med. J.*, **64**, 432.

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Secretary.

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THE NEW ZEALAND JOURNAL OF MEDICAL LABORATORY TECHNOLOGY

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The Journal is published thrice yearly (in March, July and November) and is distributed without charge to all financial members of the N.Z.I.M.L.T. (Inc.). Subscription to the Journal for non-members is ten shillings per year or four shillings per single issue postage paid.

Communications primarily concerning the Institute should be addressed to the Secretary.

Intending contributors to the Journal should address their communications to the Editor at the Department of Pathology, Medical School, Dunedin. Copy must be in the hands of the Journal Committee by not later than the first of the month preceding the month of publication.

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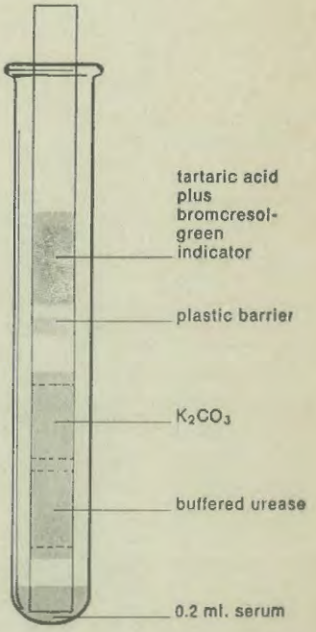

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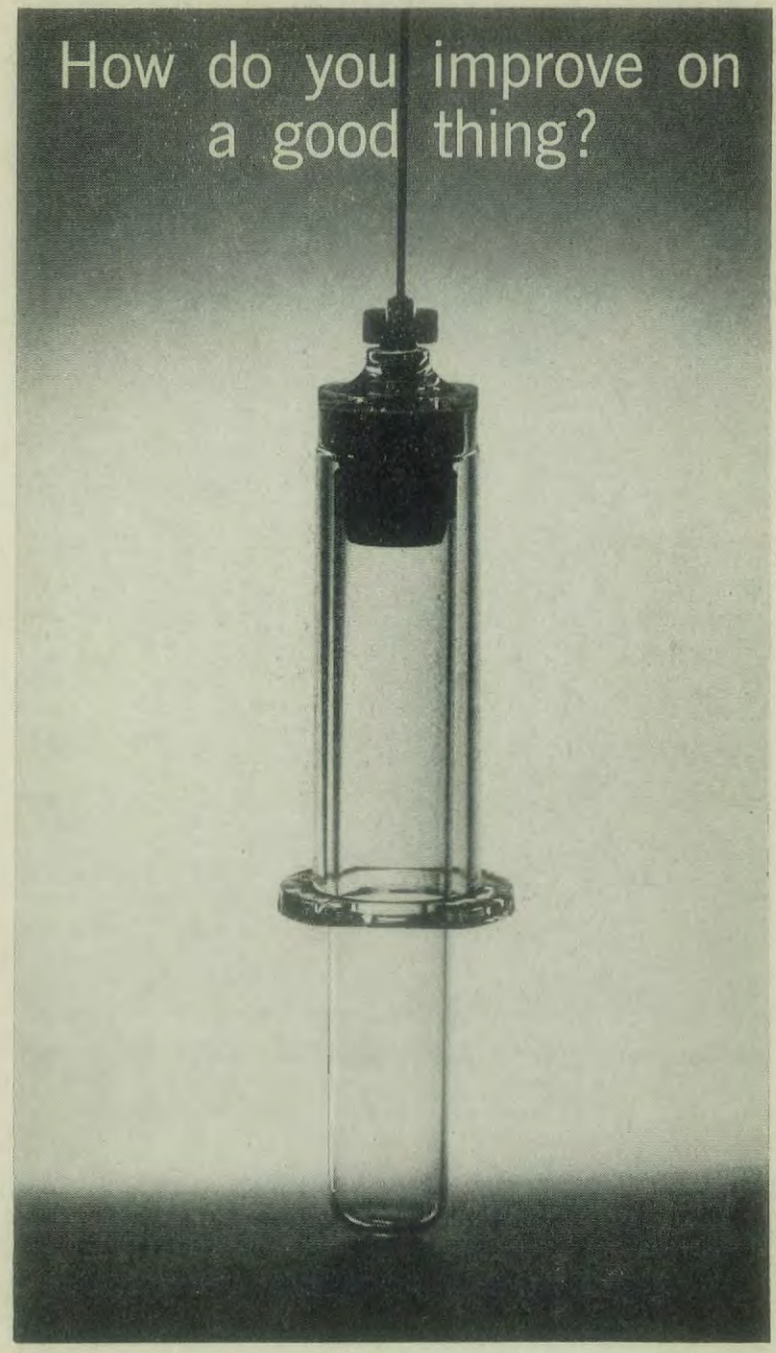
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