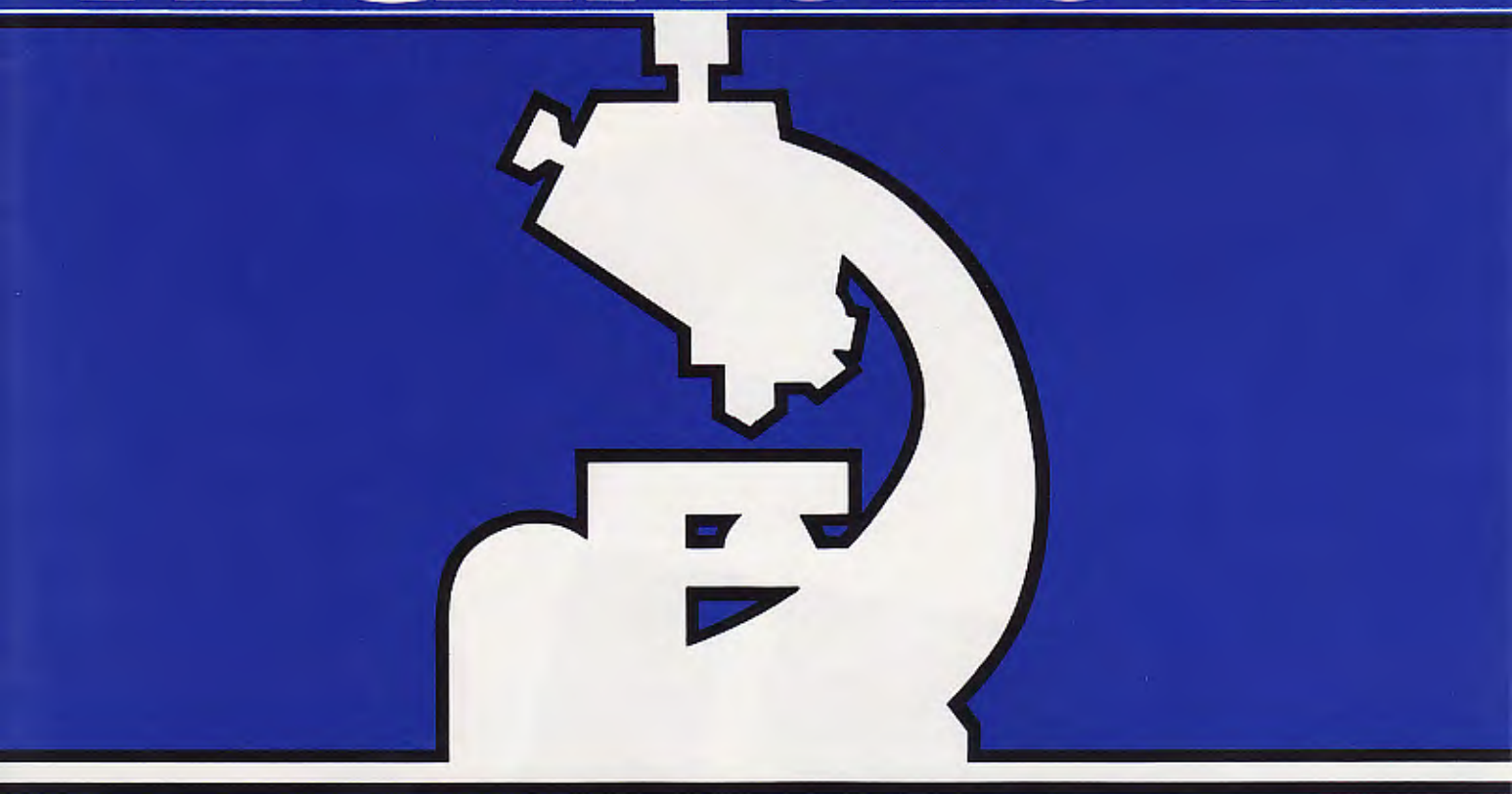
Volume 40 No. 4 1986

ISSN.0028-8349

NEW ZEALAND JOURNAL OF

MEDICAL LABORATORY TECHNOLOGY



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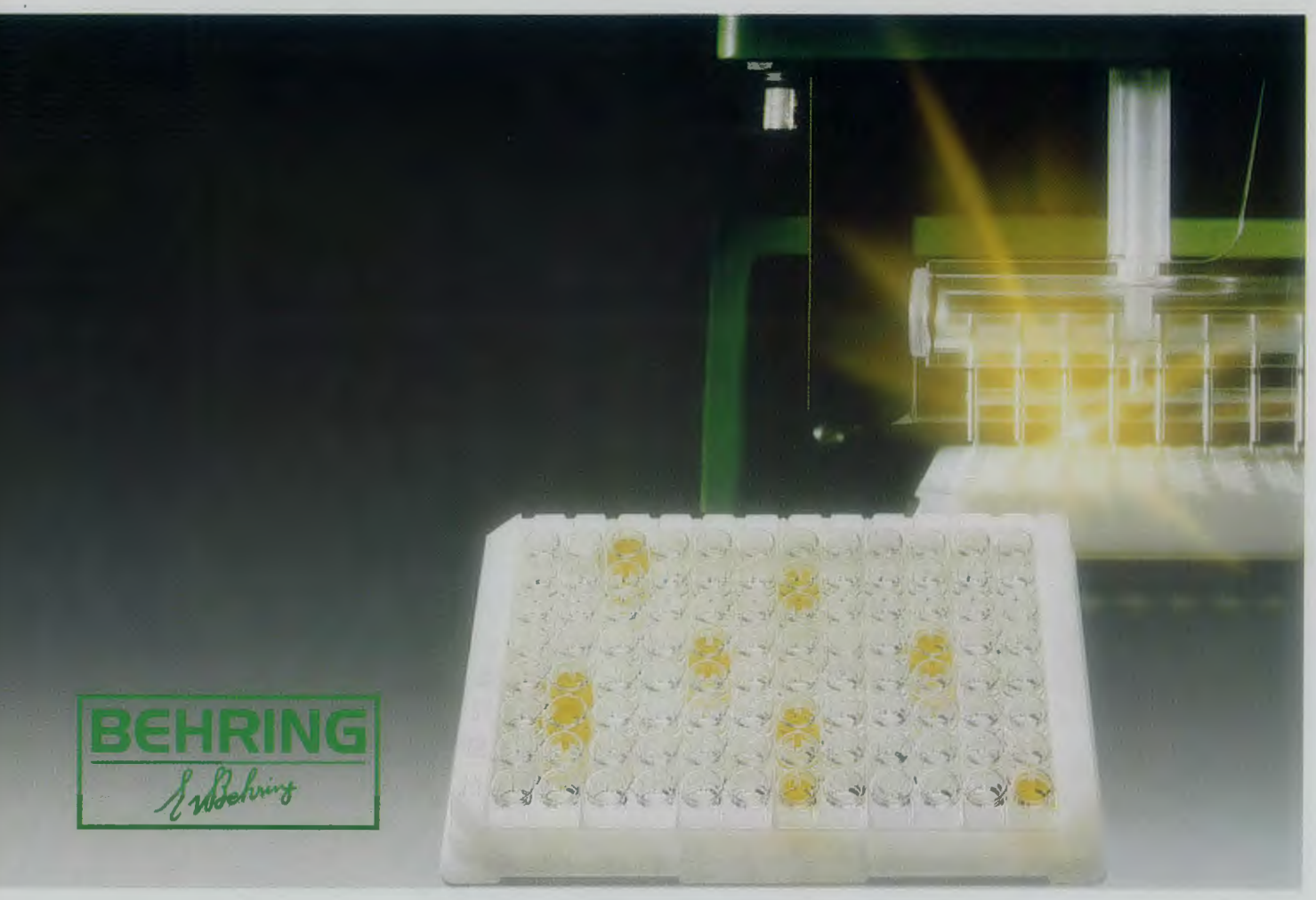

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Vol.40 No. 4 November 1986 ISSN 0028-8349

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Subscriptions to the Journal for non-members requiring delivery in New Zealand is $NZ30.00 for 1 year surface mail paid. Single issues are $NZ10.00 surface mail paid.

Subscription to the Journal for non-members requiring delivery overseas is $NZ30.00 for 1 year plus $NZ4.20 surface mail paid. All subscriptions except for single issues are due in February.

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DATES OF PUBLICATION

The months of publication for 1986 are March, May, August and November.

This Journal is abstracted by: Biological Abstracts, Chemical Abstracts, Cumulative Index Nursing and Allied Health Literature, Current Clinical Chemistry, Hospital Abstracts, Institut nautchnoi informatsii.

The Anti-Streptolysin O Test — Surveillance of Current Laboratory Practice in New Zealand

Diana R. Martin and Helen Brady

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Introduction

Streptolysin O is one of a number of extracellular antigens expressed during infection with groups A and C streptococci. The responding antibody, anti-streptolysin O (ASO) can be measured in patients' serum and its elevation provides evidence of recent streptococcal infection.[1]

The most widely employed method of testing for ASO is the neutralisation test, also known as the haemolytic test. In this test two important properties of streptolysin O are utilised. Streptolysin O is an oxygen-labile haemolysin able to combine with and be neutralised by ASO regardless of its oxidative state but which is haemolytically active only in its reduced form.[2] The ASO test measures the ability of a serum to combine with and thus inhibit the haemolytic activity of a standard concentration of reduced streptolysin 0.[1]

Since its development by Todd,[1] modifications of the tube haemolytic test have included microtitration[3] and the utilisation of a patient's whole blood.[4] Alternative types of test not involving the haemolytic property of streptolysin 0 include a single radial immunodiffusion test[5] and particle agglutination tests.[6,7] In the latter streptolysin 0 is coated onto particles such as latex, treated erythrocytes or certain bacterial cells.

In 1980 all hospital and private medical diagnostic laboratories likely to be undertaking ASO testing were surveyed to determine what methods were being used. This exercise was repeated in 1986 to assess the impact of a changing technology. The results obtained have provided the stimulus for this paper, which seeks to inform laboratories about the critical components of the test.

Results

Response rate for the questionnaire in 1980 was 76.6% (49/64) and in 1986 was 82.0% (50/61). Thirty-six responding laboratories undertook ASO titrations in 1980 and 38 in 1986. The remaining responders referred sera to other laboratories for testing.

The numbers of tests being performed, based on an approximated monthly average, has not changed noticeably. In 1980 hospital laboratories averaged per month 22 tests and private laboratories 120 tests, and in 1986 averages were 28 and 112 respectively.

Of the 38 laboratories undertaking ASO titrations 35 are using the haemolytic test and three latex agglutination. Only one laboratory recorded a change from the haemolytic test to latex agglutination. Microtitration is the more common technique for the haemolytic test, being used by 21 laboratories compared with 14 using the tube dilution technique. Since 1980 two laboratories have changed from tube dilution to microtitration and one from microtitration to tube dilution.

It was apparent from the questionnaire that in laboratories undertaking the haemolytic test there is considerable diversity in reagents and dilution sequences being used. The most notable variation occurring since 1980 is in the range of proprietary products used as reagents for the test. Eighty per cent (24/30) of laboratories able to be compared have changed the brand of at least one of the reagents, buffer, streptolysin O and anti-streptolysin O standard serum. Mixing of different brands appears common practice and only eight laboratories currently use the one brand for all three test reagents.

Streptolysin O:

Commercial streptolysin O is pre-reduced and remains haemolytically active providing that after reconstitution it is not vigorously shaken and it is used within the time specified by the manufacturer, usually less than two hours. The time given is that which is guaranteed for maintained reduction of the streptolysin O and is clearly dependent on the excess of reducing agent present in the preparation. Two laboratories reported the use of streptolysin O up to eight hours after reconstitution and another laboratory indicated unused streptolysin was frozen for future use. This is likely to result in oxidation of the streptolysin with consequent loss of haemolytic activity and falsely elevated titres.

Buffer:

Herbert and Todd[8] showed haemolytic activity of streptolysin O to be maximal at pH 6.5. To eliminate effects of streptococcal proteases present in preparations either gelatin or bovine serum albumin may be utilised in the buffer.[9,10] These components also retard spontaneous lysis of erythrocytes. The components of manufactured buffers are unknown in most cases. Eight laboratories reported that the buffer used is their own preparation. Six use phosphate buffered saline, pH 6.5-6.6, and two use gelatin-barbitone buffer, pH 7.2. Twenty-two laboratories do not pH their commercial buffer. Of the five that do, four are using a commercial buffer with pH 6.5 and one a commercial buffer with pH 7.2. It is noted that at least two manufacturers imply implicit trust in their product as no pH value is given on product sheets for users to verify.

Anti-streptolysin O standard:

Two laboratories reported no reference standard control serum is used with their test. Six laboratories use either a known positive patient's serum or pooled positive sera and one of these also controls with a commercial standard serum. All other laboratories use a commercial standard.

Validity of results is dependent on the use of a control serum of known titre as provided by the ASO standard.[11] This standard provides a quality check on the performance of the reagents. If the titre check of the reference serum differs at all from the expected value, it is necessary to repeat the whole test. Commercially available ASO control sera are standardised by titration against the World Health Organisation International Standard for ASO to give a precise titre as quoted by the manufacturer for specific test conditions.[12] Furthermore streptolysin O is standardised for the test such that one unit of streptolysin O is completely neutralised by one anti-streptolysin O unit.

Red blood cells (RBC):

The original haemolytic test as described by Todd used rabbit RBC. Modifications since then have been to use sheep,[13] horse,[14] and human.[15] Some commercial kits recommend human as an alternative to rabbit erythrocytes when using the tube technique. Titres can be affected by the use of human RBC in microtitration because of adherence to the sides of U plate wells causing difficulty in interpretation of the end point.[16] Furthermore, care must be exercised in the use of human RBC because of the presence of streptococcal antibodies, particularly in communities with high rates of streptococcal infections.

All laboratories surveyed prepared their RBC suspension using packed cell volume. Although it has been shown that standardisation by measurement of haemoglobin content is more accurate and is readily achieved using a spectrophotometer, [17] this has not been adopted by laboratories in New Zealand. When varying concentrations of RBC are added to a standard volume of streptolysin O the percentage haemolysis varies inversely with the concentration of RBC. Greater haemolysis occurs in tubes with less RBC.[8] Furthermore, results are affected by the species of RBC used. It has been shown that sheep RBC are the most resistant and rabbit RBC the least resistant to lysis by streptolysin 0.[9,18]

Of the 35 laboratories, 30 currently use human and five sheep RBC (Table 1). Since 1980 two laboratories have changed from sheep to human RBC. Varying concentrations of human cells, from 1 to 5 per cent, are being used with the microtitration technique, whereas in the same test sheep cells are being used at 2, 2.5 or 3 per cent (Table 1). Thirteen of the 14 laboratories employing the tube dilution technique use a 5% human RBC suspension. The other one uses 3% human RBC.

Most of the product manufacturers provide only a method for the tube dilution technique for which they recommend use of 5% human or rabbit RBC. Published methods for microtitration vary with 2%,[19] 2.5%,[16] and 3.0%[20] sheep or rabbit RBC being recommended. In the Cooke Microtiter Handbook, human O or

Table 1

Number of laboratories using different concentrations (v/v) RBC considering erythrocyte origin and ASO test technique .

TECHNIQUE	MICROTITRATION (n=21)								TUBE DILUTION (n=14)	
Species RBC	Human (n=16)					Sheep (n=5)			Human (n=14)	
RBC suspension	1%	2%	2.5%	3	5%	2%	2.5%	3%	3%	5%
Number of laboratories	1	1	2	5	7	1	1	3	1	13

rabbit RBC are mentioned with a recommendation for use of rabbit cells.[19]

Dilution sequences:

In the original tube dilution test Todd proposed tenfold dilutions of patient's serum from 10^{-1} to 10^{-4} followed by a second titration using 0.1mL increments.[1]

A variety of different dilution sequences have subsequently been published.[2,10,16,21,22] The most common tube method using a geometric progression of dilutions was devised by Rantz and Randall.[22] Nine of the 14 laboratories using the tube technique follow the Rantz and Randall sequence, three laboratories appear to have devised their own and the remaining two use another published sequence[2]. Nineteen of the 21 laboratories followed three published microtitration dilution sequences[3,19,20] and two are following their own. It is noted that the dilution sequence used by any one laboratory is not necessarily the one recommended by the manufacturer of either the streptolysin O or ASO standard being used by that laboratory.

Discussion

The anti-streptolysin O haemolytic test is the commonest and, for some laboratories, the only test used for measurement of non-type-specific streptococcal antibodies. The results from this survey have highlighted the fact that a test which appears to have well standardised methodology is subject to considerable variation at the laboratory level. Greatest variation was found in those laboratories utilising microtitration. Considering techniques, RBC species and concentration, irrespective of dilution sequence, only four laboratories employ the same method. However, whilst making such observations one must ask, how critical is this variation? Clearly, differences in dilution sequences used affect the precision of the result achieved. This should not affect the accuracy in performance of the test although there is greater chance of error the more complex the dilution sequence. The accuracy of the test, however, is affected by the various reagents employed and can only be assured by appropriate use of reagents and adequate use of controls. The most important reagent, streptolysin O, is a standarised product prepared for use under conditions specified by each manufacturer. Titres obtained under the same conditions of testing but using streptolysin O from different manufacturers vary.[23] Only four of the responding laboratories are actually using the conditions specified as appropriate for the particular brand of streptolysin O they use. In many cases both the species and the concentrations of red blood cells used differ markedly from that recommended by the manufacturer. The species of RBC used[9,18] and the concentration of erythrocytes relative to streptolysin O concentration[8] each affect titres obtained.

Anti-streptolysin O standard serum provides a control on the test reagents, and results obtained in the test are invalid if the titre of the control serum is incorrect. However it must be realised that even in this well controlled test, since the method of end point detection is inherently inaccurate and because of the wide gaps in many dilution sequences, only inaccuracies over a certain magnitude will be recognised. Methods for more accurate detection of the end-point have been reported[11,17,24,25] but generally not adopted.

A quality assurance programme, not currently available in New Zealand, would allow laboratories to measure their overall performance. However such a programme would not necessarily detect errors in methodology, such as the use of suboptimal concentrations of reagents, unless a programme included a critical evaluation of the full method being used by every participating laboratory. This task would be enormous because it would require the referee laboratory to determine the significance of every single variation in every method used. In the meantime it remains the responsibility of each laboratory to critically evaluate their method in relation to that recommended by the manufacturer of the most important reagent, streptolysin O.

Acknowledgement

This paper is published with the authority of the Director-General of Health, Wellington.

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HPLC Determination of Amiodarone and its Metabolite Desethylamiodarone in Plasma and Erythrocytes

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Abstract

We present a High Pressure Liquid Chromatography (HPLC) method for the determination of amiodarone and its metabolite desethylamiodarone in plasma and erythrocytes after a simple one step extraction step. The method was linear over a concentration range of 0.5-10.0 μg/mL. Recovery of amiodarone and desethylamiodarone averaged 93.4% and 88.8% respectively. Detection limit was 0.05 μg/mL. Within-batch coefficients of variation of 2.4% to 11.1% were achieved for both amiodarone and desethylamiodarone over the concentration range of 0.5-10.0 μg/mL.

Key Words

Amiodarone, desethylamiodarone, HPLC, plasma, erythrocytes.

Introduction

Amiodarone is a benzofuran derivative and has anti-anginal and anti-arrhythmic properties. Its clinical use is for the treatment of ventricular and supra-ventricular arrhythmias, especially when resistant to conventional anti-arrhythmic agents. Amiodarone has a long therapeutic half-life and side effects due to amiodarone therapy are common. Plasma and especially erythrocyte concentrations of amiodarone and its metabolite have been reported to correlate with adverse side effects.[1] The erythrocyte comprises a separate drug compartment within blood, and erythrocyte drug concentrations can be indicative of free drug plasma concentrations.[2,3] Various methods for the determination of amiodarone and its metabolite have been proposed, differing in extraction techniques, pH and elution.[1,4-7] We evaluated several extraction techniques and chromatographic conditions as published, and selected the extraction technique of Heger et al[1] with modifications of the chromatographic conditions.

Method

Blood is collected in a heparinised vacutainer and centrifuged for 15 minutes at 4000g. The plasma is set aside for analysis and the packed erythrocytes are respun for 15 minutes at 4000g, after which the remaining plasma and top 5mm of erythrocytes are discarded. Into an extraction centrifuge tube containing 0.5mL (for plasma) or 1.0mL (for erythrocytes) of 0.2 M sodium acetate pH 5.4, pipette 0.2mL of plasma or packed erythrocytes with a positive displacement pipette (SMI Micro/Pettor). Add 2.0mL of iso-octane/iso-propyl alcohol (85:15 v/v) containing 0.5μg of the internal standard compound L 8040 and vortex mix for at least 30 seconds. Centrifuge for 5 minutes at 4000g and transfer as much as possible of the upper organic phase to an evaporation tube. Evaporate at 60°C to dryness under a gentle stream of nitrogen and reconstitute with 0.2mL of the mobile phase consisting of acetonitrile/methanol/0.1 M ammonium acetate pH 6.5 (48:48:4 v/v).

Stock solutions of amiodarone, desethylamiodarone and L8040 were prepared in methanol (0.5mg/L) and stored in amber bottles at 4°C. Working standards contianing 0.1, 0.5, 1.0, 2.5, 5.0 and 10.0μg/mL of amiodarone and desethylamiodarone were prepared in drug-free pooled plasma and stored at -20°C. The sodium and ammonium acetate and the iso-octane were Analar grade (BDH) and the acetonitrile, methanol and iso-propyl alcohol were HPLC grade (Baker).

The HPLC system consisted of a Model 6000 solvent delivery pump, a Model 710 B WISP automatic sample injection module, a Model 730 data module, a Model 720 system controller and a Model 440 absorbance detector (all from Waters Ass. USA). The column was a 12.5cm by 4.9mm I.D. Spherisorb S5 ODS 2 (Hichrom, UK) preceded by a guard column packed with Bondpak C-18/Corasil. The re-constituted samples, including the plasma based standards processed similarly as the patient samples, were loaded in the automatic sample injection module which was programmed to sample 40μL. Chromatographic separation was performed at room temperature and the mobile phase was pumped isocratically at 2.0mL/min maintained by a pressure of ca.1000 psi. The column effluent was monitored at 254nm using a detector range of 0.01 a.u.f.s. Peak area ratios of amiodarone and desethylamiodarone to the internal standard L 8040 were calculated and plotted against their appropriate working standards concentrations.

Results

Figure 1 shows the chromatograms of plasma and erythrocyte extracts containing amiodarone, its metabolite desethylamiodarone and the internal standard L 8040. The method presented here was linear for both amiodarone and desethylamiodarone over the concentration range of 0.1-10.0μg/mL (r=0.9993).

Table 1 shows the within-batch precision and recovery rates for amiodarone and desethylamiodarone from plasma at pH 5.4 over the concentration range of 0.5-10.0μg/mL when compared to pure methanol based standards. Within-batch coefficients of variation of between 2.4-11.1% were achieved for both amiodarone and desethylamiodarone. Recovery of amiodarone averaged 93.4% and for desethylamiodarone averaged 88.8% These recovery rates were similar when the pH of the extraction buffer was 7.4, but with an extraction buffer pH of 4.0 the recovery of amiodarone and desethylamiodarone was less than 80%.

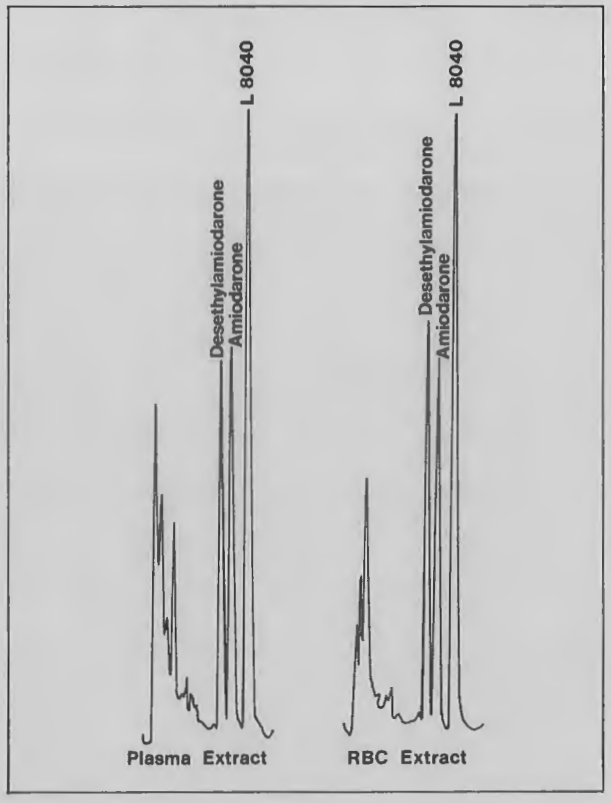

Figure 1
Chromatograms of plasma and erythrocyte extracts

Discussion

We chose the extraction method of Heger et al[1] because of the ease and reliability of amiodarone and desethylamiodarone extractions. The mobile phase presented here gave good separation of the three compounds of interest within 7 minutes; the critical part being the concentration of the ammonium acetate as ion paring agent. A previous study[8] has shown the reliability of positive displacement pipetting of packed erythrocytes but due to the viscous nature of the packed erythrocytes a correction factor of 1.05 has to be applied to the erythrocyte drug concentrations. A correction factor is also required for the amount of trapped plasma in the packed erythrocyte column. In our laboratory using the above centrifugation conditions the trapped plasma constitutes 2.2%[8]. The corrected erythrocyte drug concentrations are calculated as follows:

1.073 x [Erythrocyte] - 0.022 x [Plasma] = corrected [Erythrocyte]

The method presented here provides good separation, reliability of results, and the use of the automated sample injector allows unattended analysis of ca. 6 samples/hour. A project is now under way to study the relationship of plasma and erythrocyte concentrations of amiodarone and desethylamiodarone to dosage, side effects and ECG QT intervals of patients on long-term amiodarone therapy.

Acknowledgements

We thank Reckitt-Colman (NZ) Ltd for the supply of pure amiodarone, desethylamiodarone and L 8040; and the secretarial staff of the Department of Medicine for typing the manuscript. This work was supported by the Wellington Medical Research Society and the National Heart Foundation of New Zealand.

Table 1

Within-batch Precision and Recovery

(n=10) Plasma Std µg/mL	Amiodarone C.V. %	Amiodarone Recovery %	Desethylamiodarone C.V. %	Desethylamiodarone Recovery %
0.5	10.4	90.5	11.1	89.9
1.0	10.4	96.3	9.2	87.2
2.5	3.5	101.8	4.2	94.6
5.0	2.5	88.3	2.4	84.2
10.0	3.8	90.3	3.2	85.1

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Silver Jubilee of the Auckland Hospital Board School of Medical Laboratory Technology 1961-1986

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On 19 September 1986, the Auckland Hospital Board School of Medical Laboratory Technology celebrated its first quarter century of teaching. Auckland has been fortunate in having a School and the existence of this School has been possible only because of the very large number of medical laboratory personnel who are trained in the five (now six) major hospitals in Auckland city, run by the Auckland Hospital Board. Many hundreds of trainees have been tutored by the School.

The writer of this paper has recently published a booklet on the history of the School; this is a shortened version of part of that booklet. It coincides with the retirement of the Senior Tutor Technologist, who has been responsible for the daily running of the School since 1968 as well as tutoring haematology at three levels since 1972.

The true beginnings of the School are nebulous. However, it seems that for some years prior to the School's official founding in 1961 there existed the idea of a full-time tutor. Mr Rod Kennedy was appointed as first assistant to Mr Douglas Whillans, the Principal Technologist of all the hospital laboratories. So from Rod's general duties of rostering and training, the tutorship just evolved informally together with a later correspondence course to Intermediate Certificate (3rd year) level for most hospital laboratories in the Auckland province.

A rubber stamp was created and this was the first formal step in establishing the Auckland Hospital Board School of Medical Laboratory Technology. However, it should not be thought that there was no lab education prior to the above events. Survivors from those days speak of frequent but short teaching sessions occurring informally e.g. "on the lab back door-step in the sun after work"! The peripatetic teacher was often Mr Douglas Whillans.

On the 19th September 1961, a meeting was held in the 'tearoom' on the 5th floor of the Wallace Block. All thirteen Graded Officers from laboratories from all the city's hospitals were invited by Mr Douglas Whillans on the instruction of Dr. Stephen E. Williams, Director of Laboratory Services. Dr. Williams said: "a training scheme is necessary and has been sadly lacking for some years". A discussion on education followed and a steering committee was formed to draft a training scheme and meet regularly (later to become the School Council). This first committee comprised — Dr. S. E. Williams, Mr Douglas Whillans, Mr Ian Cole, Mr John Sloan, Mr Des Philip, Mr John Meredith with Mr Rod Kennedy as Secretary.

The following month, Dr. Williams also proposed a laboratory assistant's two year training scheme with a syllabus in various single subjects, formal examinations, badges and certificates. This became the Qualified Technical Assistants exam and the former Qualified Technical Officer's exam which by 1973 was extended to the whole of New Zealand and run by the NZIMLT.

Much of the early lecturing to trainees was done by qualified laboratory staff but it was thought necessary to have a pathologist to lecture on physiology; he was Dr George Hitchcock, the well known histo-pathologist.

A modest course of lectures in many subjects began in 1962 together with an introductory course for all new trainees. These lectures are already listed in a paper published in the 1962 Journal of the NZIMLT by Rod Kennedy (Vol. 16, No. 3, p. 57)

Advanced lectures for fifth year trainees were requested by those training in their final year; these were given at the Auckland Hospital laboratory under the supervision of Rod Kennedy and Mr Douglas Whillans. As well, fourth year trainee 'thesis-type' projects were begun in 1962; third year trainees attended four-month training programmes at Auckland Hospital. Reading lists for second year trainees were drawn up with internal examinations to be run by senior laboratory staff.

Annual Prize Givings began in 1964 and their history is recorded in the booklet mentioned earlier.

Trainees had practical assignments from Rod Kennedy and Mr Roy Douglas was involved with work-books for blood transfusion work from The Blood Bank, then in the Wallace Laboratory and directed by Dr. Jock Staveley (later to become Sir Jock).

Twenty half-days of practical blood banking were the prerequisite for Intermediate (Third year) exams and at least forty half-days for fifth year finalists. The Wallace Laboratory was known in those days as Central Laboratory, with much smaller out-lying laboratories.

In 1964 a formal Examination Committee came into existence at the Health Department in Wellington (forerunner of the Medical Laboratory Technologists Board) and Aucklanders associated with the School helped to promote this Committee.

By 1964 the first career brochures for medical laboratory technology in the Auckland Hospital Board's area had been printed, complete with photographs of laboratory scenes (in black and white); forerunner of the current brochure in colour.

Some lectures were held outside working hours and in 1966 lecturers were allowed 14 shillings an hour (Health Department regulations). The School of Medical Laboratory Technology, under Rod Kennedy's management and tutorship, trained local people for the third year external Intermediate Certificate exams and he also conducted the Correspondence Course for the Auckland province hospital laboratories until the appointment of Mr Innes King as tutor for that course in 1967 and half of 1968, with offices at Cornwall Hospital (now disbanded). The 'O' level (Part III and later Specialist level) had a lecture programme in the major disciplines, convened by such people as Mr A. (Bert) Nixon in Haematology, Mr Roy Douglas in Immunohaematology (then called Blood Group Serology and Blood Banking) Mr John Holland and later Mr Graham Cameron in Bacteriology and Mr Charles Small (Ph.D.) in Chemical Pathology (later Clinical Biochemistry).

In 1967 some arrangements were made with the Auckland Technical Institute for first year trainees to attend some lectures on a day-release trial basis (prior to the establishments of the NZCS). The first intake of First year trainees in the New Zealand Certificate of Science (Paramedical) was not until 1970. The experiences of the earlier trial group of trainees helped in the choice of subjects for the NZCS as some already established subjects had to be incorporated into this Course at the wishes of the Technical Institutes and the TCA (later AAVA).

During these formative years for the Course the lectures for the Health Department's Basic Training Certificate (third year exams) — were given by Rod Kennedy and helpers from the ranks of qualified technologists; lectures took place in a classroom kindly lent by the ATI for one morning a week.

Meanwhile, when Innes King left, Miss Jeannette Grey was appointed Correspondence Course tutor based at Cornwall Hospital in the middle of 1968. The following year she was appointed to Rod Kennedy's position as senior tutor when he became Principal Technologist at Auckland Hospital. Jeannette Grey continued lectures in all subjects for third year trainees in 1969, 1970 and 1971. The fourth and fifth year trainee lectures were still held after work as the School was not yet formally involved in those.

The Correspondence Course tutors were Miss Eileen Brosnan (later Dr.), then Richard Seelye and then Graham Thorne.

By 1971, a temporary lecture room was loaned to the School; it was an old part of the Costley block ground-floor wards. When a certain Milan Brych arrived, he was given the lecture room as a ward for his patients. However, plans were already afoot for the School to have some old prefabricated rooms on the hospital driveway. Moving in, in February 1973, with an hour to spare, the students carried the desks! Desks and projection equipment and teaching aids are taken for granted today. However, these were all introduced gradually over the years, and the School introduced the first overhead projector to Auckland Hospital. Also, hundreds of 35mm colour transparencies were gradually collected.

1972 was very significant as the School's tutorial functions focused away from third year trainees and on to the formal tutoring of the Part II ('O' level) trainees (4th and 5th years).

Jeannette Grey tutored Haematology, Graham Thorne tutored Microbiology and a new third tutor position was created so that Gabrielle Skeen (now Mrs Ryan) became the School's first Clinical Biochemistry tutor. Subsequent Biochemistry tutors were — Mr Grant Cathro (1973); Mrs Josephine Ellis (née O'Sullivan) 1974-1977; Mrs Jillian Coyte (née Hood) 1978; Mrs Patricia Wade (1979-1980); Mr Ron Law (1981-).

The three full-time tutors were running the Specialist level (Part III; A level) classes and the second year technical assistant classes by 1973 as well as the Certificate level (Part II; O level) classes. Other subjects like Immunology and Histology with much smaller numbers of students were tutored by specialised staff. Mrs Gillian McLeay (née Walton) who was in charge of the old Cornwall Hospital laboratory tutored not only practically for visiting Pacific Island students but also later in Immunology in which she specialised when the Cornwall Hospital was disbanded and she moved to Auckland Hospital. Histology ex-officio tutor-organisers included Mr Ron Patterson, Mr Barry Bilton, Mrs Mary Sorenson, Mr Noel Johnston and Miss Kathy Paton. The Immunohaematology tutoring started by Mr Roy Douglas was continued by Mr Walter Wilson and later by the Blood Transfusion Centre's own offical tutor, Mr John Lyne. The Cytology tutor was Mr Michael Churchouse.

Numerous technologists and some pathologists have helped the tutors by giving literally hundreds of lectures over the twenty-five year period. Regrettably they are too numerous to name but the lecture rosters with these names are still held in this School's archives.

Since 1972 the full-time tutors have used a 'semi-correspondence course' approach so that the limited time the trainees were available in lecture rooms was supplemented by targeted 'hand-out' information with weekly written half hour tests at Certificate level and appropriate feed-back in tutorials each week. The School is largely involved in teaching theory.

Before the establishment of the Pacific Paramedical training centre in Wellington in 1981, many students arrived over the years from various islands in the Pacific for brief training visits. The School and in particular Dr. Stephen Williams assisted in arranging their Courses during these visits which particular Dr. Stephen Williawere funded by various sponsoring agencies. The School issued its own certificate of training to these students. Among a variety of extra courses arranged over the years, several warrant mention. Orientation sessions for new first year trainees were held centrally before the trainees joined their appointed laboratory. Refresher courses of one week were held annually in the very early years for the technologists in charge of laboratories in the Auckland province. These were arranged by Mr Ian Cole, with help from Dr. Stephen Williams and Mr Doug Whillans. By 1970 these had ceased and a weekly lecture for qualified technologists in Auckland was arranged by Dr. Williams to inform them about various fields of clinical medicine.

Dr. Stephen E. Williams, Pathologist, was Head of the School from the time he created it in 1961 until when he retired at the end of 1976. He guided it through many stages and activities during a time when he gave up the position as the Director of Laboratory Services for the Auckland Hospital Board, to concentrate on his two great interests, namely Medical Cytology (at National Women's Hospital) and the education of medical laboratory technologists. It is impossible to convey on paper just how much Dr Williams helped the laboratory staff in Auckland, both in the laboratory and in a personal sense. His office 'door was always open' to all staff from the most junior member upwards. He pursued channels for the further education of medical laboratory technologists at every opportunity and as he retired, he almost achieved the establishment of a university Diploma for qualified technologists at the Medical School 'over the road'. Unfortunately this was blocked at the last minute by a change in rules by the University Grants Committee.

Dr. Michael Gill succeeded Dr. Williams and was Head of the School from 1977-1985 in between various mountaineering expeditions and a trip up the Ganges, as well as computer activities. Late in 1986 Dr. Charles Cameron will become Head of the School, a most suitable appointment which augers well for the future. He was a Medical Laboratory Technologist before he did his medical degree.

Recruitment of staff and thus vocational guidance have constituted part of the School's activities for many years. Hundreds of personal and written enquiries have been dealt with, in relation to employment within the laboratories.

The School analyses and sets up the annual trainee-intake interviews with a panel of Principal Technologists and usually the Head of the School. The second tutor, Mr Graham Thorne has been responsible for many weeks of work in this field over a period of many years and has been the School's own vocational guidance officer since Dr. William's retirement. Career evenings have been arranged at numerous secondary schools all over the city and tutors have attended these on many a cold wet night!

Liaison with the Auckland Technical Institute (ATI) was another facet of the School's many liaison activities as the School became the only laboratory department to belong to **all** of the Auckland Hospital Board's laboratories.

The School Council has met regularly for many years. It's function is 'to consider the detailed policies of the School's activities and to promote an opportunity for discussion on the progress of classes and the performance of individual students as well as dealing with a variety of administrative and managerial aspects of education within the Laboratory Services.' The Constitution of the council is defined to include the five (or six) Principal Technologists, a representative of the Blood Transfusion Centre's laboratories and all the School's own tutorial staff.

Members of the School Council over much of the last 20 years were Mr Ian Cole (Greenlane) recently replaced by Mr Peter Huggard, Mr Des Philip (Middlemore); Mr John Sloan (National Women's), Mr Rod Kennedy (Auckland), Mr Terry Martin (Princess Mary), Mr Walter Wilson (Blood Transfusion) and finally the various tutors named in this document. Mr Graham Thorne, Microbiology Tutor and deputy senior tutor has given an enormous amount of energy and service to the School since 1971 and with two fairly permanent tutors the School achieved a great degree of stability. Liaison with the Medical Laboratory Technologists Board of the Health Department in Wellington has continued through the years on many matters concerning examinations and overseas job applications. The presence in Auckland of a Board member (later Chairman) has smoothed the communications gap and soothed the frustrations over the years! Thus the School owes a debt of gratitude to Mr Des Philip.

It should not be thought that only the trainee technologists are catered for. From the earliest years, a class for first year technical assistants (training for their QTA) was conducted by this School's tutors, and also given lectures on 'the drama of medicine' by Dr. Stephen Williams. Then, in 1974, the ATI agreed to conduct this year's course and it is now called the 'Introductory Course for Medical Laboratory Assistants' and is a prerequisite to the School's specialised second year technical assistants lectures.

The Syllabuses from the Medical Laboratory Technologists Board in Wellington have, to a certain extent, dictated what should be taught, but inevitably and fortunately the School is able to teach around and beyond these prescriptions and thus encourage comprehension instead of merely having students learning 'off by heart'. There have been many changes in syllabus content since the writer's own qualifying piece of paper in 1954, the Certificate of Proficiency in Hospital Laboratory Practice. This was a comprehensive finals syllabus and examination which even included recognition of cercariae from Lake Wanaka! With the slow creep of knowledge, there has come a greater sophistication of approach with increasing specialisation. The growing numbers of laboratory tests and the consequent mechanisation, politely spoken of as 'automation', were inevitable and the arrival of computers has altered the thinking processes of laboratory personnel. However, it is to be hoped that the School does continue to train technologists and not merely technicians.

Over the last 15 years there have been many education changes proposed for New Zealand technologists but few of these seem to have succeeded and throughout all these proposals the School has gone steadily on TEACHING. The School has tried to shoulder much of the responsibility for trainee education in the medical laboratories in Auckland City and hopefully has taken at least the theoretical training load from the many staff and graded technologists so they could concentrate on running diagnostic services for the patients.

Acknowledgement:

I would like to thank Mrs Verlain Ford, the School Secretary for her unflagging support and tolerance in the production of this edited version of part of the booklet "The First Twenty-Five Years of The Auckland Hospital Board School of Medical Laboratory Technology" which was printed in September 1986.

TECHNICAL COMMUNICATION

Evaluation of Biorad Quantaphase B12 and Folate Kit

Sue Chambers, ANZIMLT, Marja Hallowes, ANZIMLT.
Wallace Laboratory, Auckland Hospital

Abstract

A commercially available radioisotope kit, Biorad Quantaphase B_{12}/Folate, was compared with the Diagnostic Products Corporation (DPC) Dual-count kit for the determination of serum Vitamin B_{12} and folate.

Introduction

A 200 tube Biorad Quantaphase B_{12}/Folate kit was provided for evaluation. This solid phase/boil kit was compared with the charcoal/boil DPC kit currently used in this laboratory. Routine samples referred for testing were run in parallel, and the data correlated.

Method

The principle of the Quantaphase kit is as follows: The serum sample is combined with Vitamin B_{12} (^{57}Co) and/or folate (^{125}I) in a solution containing dithiothreitol (DTT) and cyanide. The mixture is boiled to simultaneously inactivate endogenous binding proteins and convert the various forms of Vitamin B_{12} to cyanocobalamin. The reduced folate and its analogs are stabilised by DTT during the heating. The mixture is cooled and then combined with immobilised affinity-purified porcine intrinsic factor and folate binding protein, B-lactoglobulin. This addition adjusts and buffers the pH of the reaction mixture to 9.2. The reaction mixture is incubated for one hour at room temperature for competitive binding to occur. Labelled and unlabelled vitamins bound to the immobilised binding proteins are concentrated at the bottom of the tube in the form of a pellet. The unbound vitamins in the supernatant are discarded and the radioactivity associated with the pellet is counted.

The DPC Dualcount method routinely used in this laboratory involves essentially the same principles, and differs only in the binding stage, which is not solid phase. After competitive binding has occurred, unbound or free B_{12} and folate is absorbed onto dextran-coated charcoal and pelleted. The bound, labelled vitamins in the separated supernatant are counted in a gamma counter.

The samples analysed were those referred to this laboratory for routine assay. Standards were assayed in duplicate, along with low, low-normal, mid-normal and high value control sera. Prior to assay of red cell folate, the whole blood samples were processed in an identical manner (i.e. dilution in ascorbate 1/30, absorbate concentration 2g/L) to exclude any variables not related to assay procedure.

Results

The correlation data is summarised in Table 1, where respective batch means are also provided. The Quantaphase assay values were treated as being on the y axis.

The Quantaphase kit gave slightly lower serum folate results, and much lower whole blood folate results than the routine assay, with slightly higher B_{12} values being obtained.

The binding for the Quantaphase kit (Maximum Binding or zero standard divided by Total Counts) was 73% and 60% for B_{12} and folate respectively. This seemed very high for a competitive binding assay, and this laboratory is consistently achieving approximately 65% and 55% respectively with the DPC kit. In a third evaluation kit of 100 tubes, the binder was therefore diluted by adding 1 mL of deionised water to 10 mL of immobilised binder. This has worked very satisfactorily in the DPC kit, with accompanying improved control values being obtained, but with the Quantaphase kit the results were entirely unacceptable. This indicates that the balance of solid phase/binder does not lend itself to dilution, despite apparent improved figures of 63% binding for B_{12} and 57% binding for folate.

Discussion

The results indicate that all the reference ranges would require re-determination.

As the method of diluting red cell folates differed from the Quantaphase kit instructions it must be conceded that the results obtained may give a false impression and thus require further study.

In evaluating a kit, it is recommended that in addition to running routine samples in parallel, it is necessary to perform precision and accuracy studies on the kit in question. The run with diluted binder was to be such a trial, with low, medium and high value sera duplicated six times each for precision; recovery experiments where sera were spiked with known amounts of B_{12} and folate for accuracy; and dilution series of a high value serum for sensitivity. As outlined, this batch gave unsatisfactory results, presumably because a solid phase binder does not lend itself to dilution.

In conclusion, the Biorad Quantaphase assay appears to be reliable, with the advantage of one less pipetting step and the convenience of tipping off the supernatant and counting the pellets instead of carefully decanting individual tubes to reserve the supernatant for counting. The clinical validity of results obtained has not been assessed; we believe that the proffered advantages of the Biorad over the DPC kit are not sufficient to inspire the establishment of new reference ranges required for a change of assay by this laboratory.

Table 1

Correlation Data

	Serum B12	Serum folate	Whole Blood folate
No. of samples	88	88	50
Correlation Coefficient	0.9285	0.9110	0.7993
Slope	1.1649	0.7862	0.6328
y intercept	9.3621	0.9141	-0.3131
Batch Mean Quantaphase	340	10.9	7.9
Batch Mean Dualcount	283	12.7	15.1

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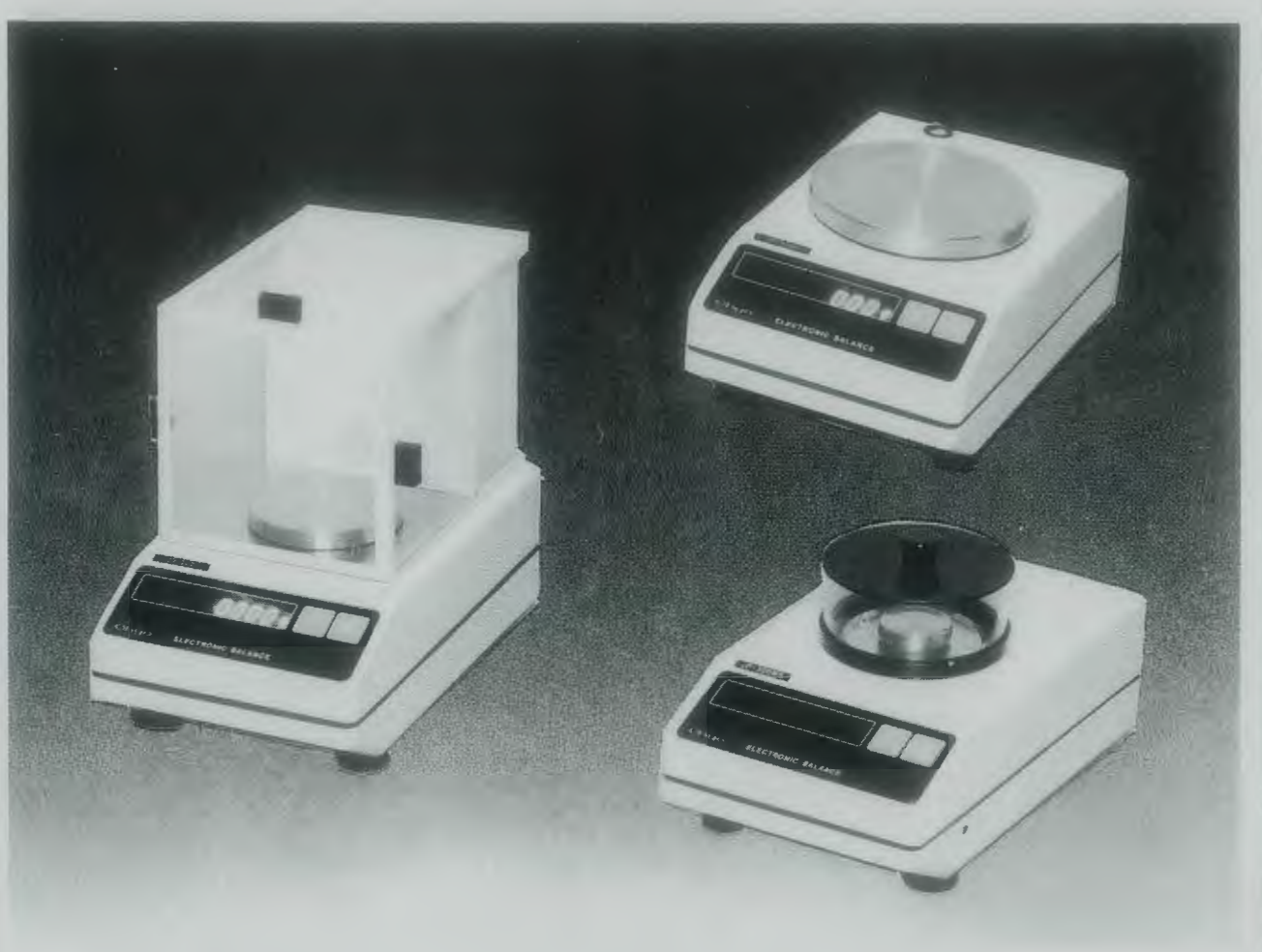

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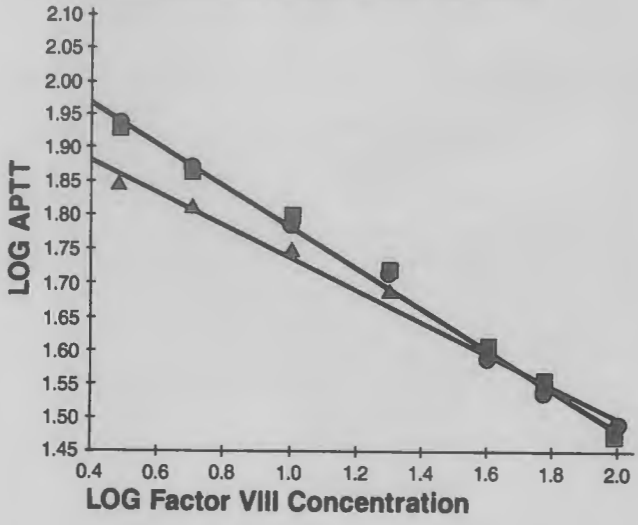

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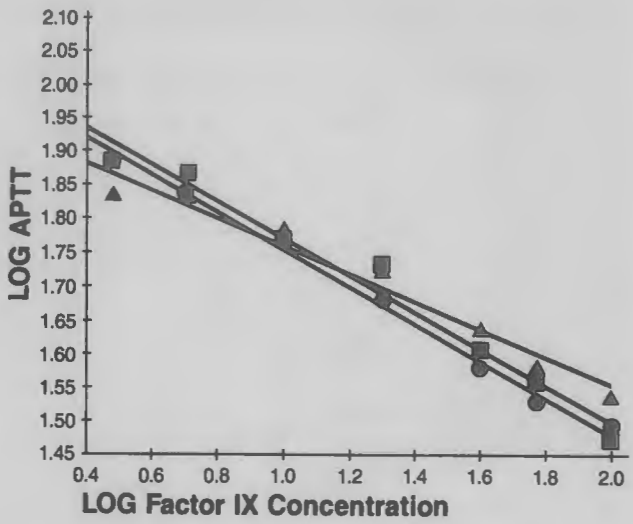

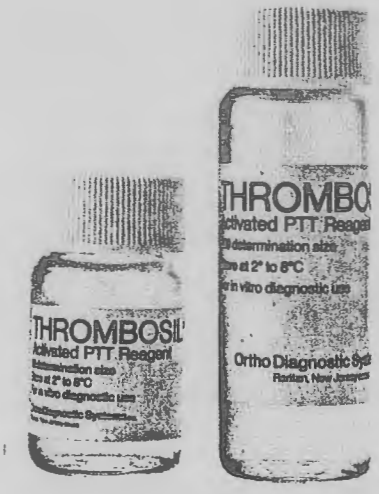

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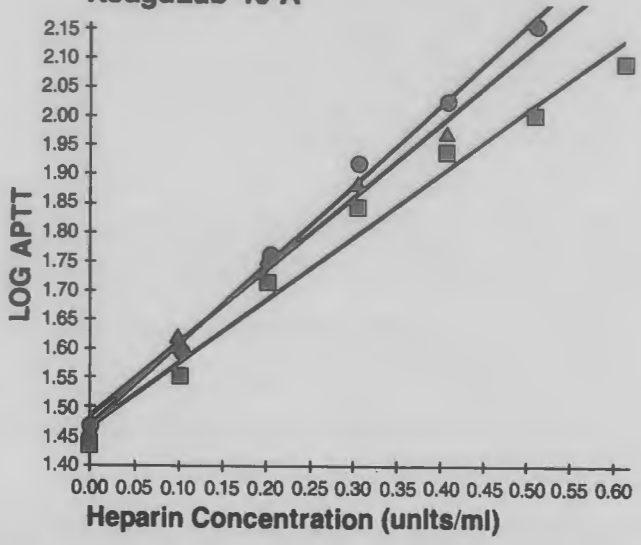

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The Pacific Way

Pacific Paramedical Training Centre

Visitors to the Centre:

There have been a number of visitors to the Centre over the past eighteen months. We were pleased to welcome His Excellency, Lupematasila Aumua Ioane, High Commissioner for Western Samoa, who presented Certificates to trainees who completed the 1985 Diarrhoeal and Acute Respiratory Diseases course.

In August 1985 His Excellency, Sir Kuamala Kalo, High Commissioner for Papua New Guinea, visited the Centre as guest speaker at the conclusion of the May-July 1985 Haematology/Blood Bank Technology course.

Other visitors to the Centre included representatives from the Department of Pacific Island Affairs, representatives from the Pacific Island Multicultural Resource Centre, and the Scholarship Officer from Kiribati.

In September 1985 we had the pleasure of a visit from Dr. Lili Fülop, Chief of the Debrecen Red Cross Blood Transfusion Service, Hungary. Dr Fülop is a distinguished immunohaematologist with an interest in medical resource management and medical education, and the teaching of blood transfusion technology to middle level health workers. She also has an interest in the application of appropriate technology, and examined the PPTC approach to laboratory training programmes at the primary health care level.

The Committee of the Centre was grateful to receive a grant from the Norman Kirk Memorial Fund for the purchase of a microscope and, on the occasion of the presentation, we were delighted to receive a visit from The Hon. Frank O'Flynn and Mr R. Gould, Trust Representative.

On 4th April 1986 a Certificate presentation function was held to mark the completion of the first Laboratory Equipment Maintenance and Management Course. On this occasion we were pleased to welcome Ms Fran Wilde, MP for Wellington Central, who represented the Department of Pacific Island Affairs and presented the trainee awards.

In May of this year we welcomed a visit from Dr. Masri Rustam, Director of the Indonesian Red Cross Blood Transfusion Service.

Presentation of grant from Norman Kirk Memorial Fund for purchase of a microscope for the P.P.T.C. Left to Right: Mr R. Gould (Trust Representative), The Hon. Frank O'Flynn, Mr M. Lynch, Dr R. McKenzie, Dr H. C. Ford.

Ms Fran Wilde M.P. for Wellington Central representing the Department of Pacific Island Affairs with Dr R. McKenzie (left) and Dr H. C. Ford (right), Co-Chairmen of the Management Committee of the P.P.T.C. at a function held to mark the completion of the first Laboratory Equipment Maintenance and Management Course. Ms Fran Wilde presented the trainee awards.

The lecture room P.P.T.C. Wellington Hospital. Lecturer: Mr John Elliot, Charge Technologist, Microbiology Dept., Wellington Hospital.

The Centre has had two trainees from Indonesia over the past five years and we were pleased to have the opportunity to discuss training methods with Dr. Rustam. In addition to these visitors, there have been visits from other people in local health, education and service organisations who have an interest in the activities of the PPTC.

Trainees Who Completed Courses at the Pacific Paramedical Training Centre

May 1985 — April 1986

Upokoina A.S. Samuel, Cook Islands. Haematology/Blood Bank Technology. May — August 1985. (N.Z. Government Bilateral Aid Programme); Victor Waleanisia, Solomon Islands. Haematology/Blood Bank Technology. May — August 1985. (N.Z. Government Bilaterial Aid Programme); Patrick Hlatshawayo, Swaziland. Haematology/Blood Bank Technology. May — August 1985. (League of Red Cross & Red Crescent Societies); Suganda Permana, Indonesia. Haematology/Blood Bank Technology. May — August 1985. (League of Red Cross & Red Crescent Societies); Leonila Eltanal, Philippines. Haematology/Blood Bank Technology. May — August 1985. (League of Red Cross & Red Crescent Societies); Andrew

Wagira, Solomon Islands. Haematology/Blood Bank Technology. May — August 1985. (N.Z. Government Bilateral Aid Programme); Kesler Lakutak, Kosrae, TTPI. Haematology/Blood Bank Technology. May — August 1985. (WHO Fellow); Plumber Nicholls, Cook Islands. Haematology/Blood Bank Technology. May — August 1985. (WHO Fellow); Esau Kalfapun, Vanuatu. Haematology/Blood Bank Technology. May — August 1985. (N.Z. Red Cross Health Service Award); Philip Anaroai, Papua New Guinea. Laboratory Equipment Maintenance & Management course. Feb — April 1986. (N.Z. Government Bilateral Aid Programme); Paulino Rosario, Ponape, TTPI. Laboratory Equipment Maintenance and Management Course. Feb — April 1986. (WHO Fellow); John Pola, Solomon Islands. Laboratory Equipment Maintenance and Management Course. Feb — April 1986. (N.Z. Government Bilateral Aid Programme); Willie Kalfapun, Vanuatu. Laboratory Equipment Maintenance and Management Course. Feb — April 1986. (N.Z. Government Bilateral Aid Programme); Bonaventure Talley, Yap, TTPI. Laboratory Equipment Maintenance and Management Course. Feb — April 1986. (WHO Fellow); Faapulou Auva'a, Western Samoa. Laboratory Equipment Maintenance and Management Course. Feb — April 1986. (N.Z. Government Bilateral Aid Programme); Billie Bryce, Western Samoa. Laboratory Equipment Maintenance and Management Course. Feb — April 1986. (N.Z. Government Bilateral Aid Programme); Areta Aritiera, Kiribati. Extended Training Supervision. March 1982 — continuing. (N.Z. Government Bilateral Aid Programme.)

New Zealand Microbiological Society: 30 Years On

Thirty years of formal activity were marked at the annual conference of the New Zealand Microbiological Society, hosted in Nelson May 20-22, by the Cawthron Institute. In his welcoming address, Dr. Royd Thornton, Director of Cawthron Institute, recalled his part in initiating an informal meeting of microbiologists attending the 8th New Zealand Science Congress in 1954. This resulted in the formation of the New Zealand Microbiological Society (NZMS), which held its first scientific meeting in 1956.

Mr Philip Woolaston, MP for Nelson, Undersecretary for the Environment and member of the Cawthron Institute Trust Board formally opened the conference. In his remarks, Mr Woolaston traced the changes in the relationship between Microbiology and NZ's prosperity. He noted the move from the 1960's, when NZ's wealth was in part due to *Rhizobium* bacteria (aiding pasture) and the microbes of cheese making, to these more testing times when we look to the science of microbial genetics and biotechnology to produce cheap protein or expand our manufacturing industry. Mr Woolaston spoke about the milestones in Microbiology in the 30 years since the beginning of the society. This included reference to the successes such as the eradication of smallpox, the continuing challenges of drug-resistant organisms and Influenza, and the "new" problems of *Legionella* and AIDS. He noted the changes in the publically perceived role of scientists, in that it is now acceptable for scientists to consider and act on their political and social responsibilities. He went on to say that Govt. needs to hear from bodies such as NZMS on areas of concern to both parties and named three problem areas as he saw it. These were the need to keep the fundamental science-applied science link in the face of the commercial necessities of science funding, the problems involved in drawing up legislation for the patenting of microbes, and the need of advice prior to the beginning of any field experiments in NZ that may involve the introduction into the country of a new organism or genetically engineering microbes.

Guest speakers at the conference were Mr Edwin E. Geldreich, US Environmental Protection Agency; Professor Colin Ratledge, Hull University UK; and Professor Richard W. Castenholz, University of Oregon USA.

Professor Colin Ratledge opened the scientific proceedings with a provocative address, in which he promoted microbial physiology as the cornerstone of biotechnology, as opposed to the more glamorous but relatively unsuccessful application of genetic manipulation. He opened the following day's session also, with an overview of the organisation of biotechnology in Europe.

In a joint session with the NZ Society of Pathologists, Mr E. E. Geldreich spoke on the occurrence of *Legionella* in water supplies. *Legionella pneumophila*, the causitive agent of the sometimes fatal pneumonia known as Legionaires disease, seems to flourish within the water systems of large buildings where there is an opportunity for the buildup of a biofilm of many types of microbes. When the infected water is used as a coolant in older-type airconditioning, or used in showers, it leads to the formation of tiny water droplets containing the bacteria, which are infective when inhaled.

Professor Castenholz addressed the conference with an overview of light and the ecology of Cyanobacteria.

During the 3-day conference, more than 100 microbiologists met and discussed their work. The presented papers spanned a wide range of topics, with sessions on microbial physiology, virology, molecular biology, biotechnology, medical microbiology, water and food microbiology, *Rhizobia*, anaerobes, environmental microbiology, clinical and veterinary microbiology. There was an impressive turnout of trades displays from the scientific supply companies, and the NZMS conference organisers are grateful for their support.

The conference was wound up with the conference dinner, where a large 30th birthday cake was ceremoniously cut by Dr. Royd Thornton, a founding member of the society, and Dr. Diane Martin, the newly elected President.

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Q.T.A. Examination Application Form
N.Z.I.M.L.T. Membership Application Form

The New Zealand Institute of Medical Laboratory Technology offers to laboratory assistants the qualification known as the Certificate of Qualified Technical Assistant (QTA). The Department of Health has given official recognition to this qualification and laboratory assistants who pass the examination and are employed by Hospital Boards are entitled to a salary increment.

The Technical Assistants Examination Committee is based in Christchurch and all correspondence should be addressed to:—

The Secretary
Technical Assistants Examination Committee
Haematology Department
Christchurch Hospital
Private Bag
CHRISTCHURCH

EXAMINATION SUBJECTS

The examination is offered in the following:—

Clinical Biochemistry
Cytogenetics
General Certificate (see prerequisite 2)
Haematology
Histological Technique
Medical Cytology
Medical Microbiology
Mortuary Hygiene & Technique
Radioisotopes & Radioassay Technique
Immunohaematology
Immunology (Microbiology)

PREREQUISITES

1. Candidates for the examination must be employed as laboratory assistants in an approved laboratory and have worked continuously in the subject since 30 June two years previously or accumulated not less than two years practical experience in the examination subject.
2. Small laboratories which require their laboratory assistants to work in more than one subject can apply to the Committee for students to train for the General Certificate Examination.
3. A laboratory which requires a laboratory assistant to work in a narrow field may apply to the Committee for the student to train for a Special Certificate Examination (Note syllabus requirements).
4. Candidates for the Immunohaematology Examination must have completed not less than 320 hours and candidates for the General Certificate Examination not less than 160 hours in practical cross-matching of blood for clinical use.

SYLLABUS

1. The syllabuses for all subjects (except Special Certificates) are available from the Secretary, Technical Assistants Examination Committee.
2. Laboratory assistants intending to train for a Special Certificate Examination must have a detailed syllabus prepared by the charge technologist and forwarded to the Committee for approval at least 6 months before the examination.

EXAMINATIONS

1. The examinations will be held annually during the month of May.
2. Candidates must complete an examination application form and forward this, together with the appropriate examination fee, to the Secretary before the closing date.
   (NOTE: LATE APPLICATIONS WILL NOT BE ACCEPTED)
3. The examination will consist of two written papers, each of two hours duration.
4. The candidate must obtain an overall mark of 50% to pass the examination. Candidates for the General Certificate Examination must obtain a minimum of 40% in each of the four sections and 50% overall to pass the examination.
5. The results of the examinations will be announced by the New Zealand Institute of Medical Laboratory Technology. Successful candidates who are financial members of the Institute at the time of the examination will be awarded the QTA badge and certificate.

NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY TECHNOLOGY

What is the Institute?

The NZIMLT is an organisation of people who work in medical laboratories and who have united to carry out certain functions for the profession, which cannot be performed by the individual alone.

Included in those eligible for membership are all people who work in this profession — laboratory assistants, medical laboratory technologists and science graduates. All have a moral obligation to support the organisation by becoming interested financial members.

What does the NZIMLT do for its Members?

1. It is the only organisation which negotiates, directly or indirectly, for improvement in salaries and conditions of employment for technologists and laboratory assistants employed by the Health Department, and thus, by spinoff, for other Government departments and private sector employees.
2. It initiates and negotiates changes in education and training. A continuing and involving process.
3. It publishes a scientific journal which is distributed free to all members and operates a free audio-visual training library.
4. It supports the organisation of an annual scientific meeting, workshops and one day seminars (at local branch level) thus providing a unique opportunity for further colleagueship and friendship within the profession.
5. It conducts examinations for Fellowship and the Certificate of Qualified Technical Assistant. Although laboratory assistants who are not members of the Institute are eligible to sit the QTA examination, it is only members who will receive the qualifying badge and certificate.
6. It provides availability and access to study and travel awards and prizes.
7. It allows members who are employed by Hospital Boards or Government departments to have access to the Public Service Investment Society.

Membership of the NZIMLT

During the first year of employment membership is complimentary but a subscription must be paid in subsequent years. A laboratory asssistant who has worked for more than a year before making application for membership will have to forward the current subscription with the application.

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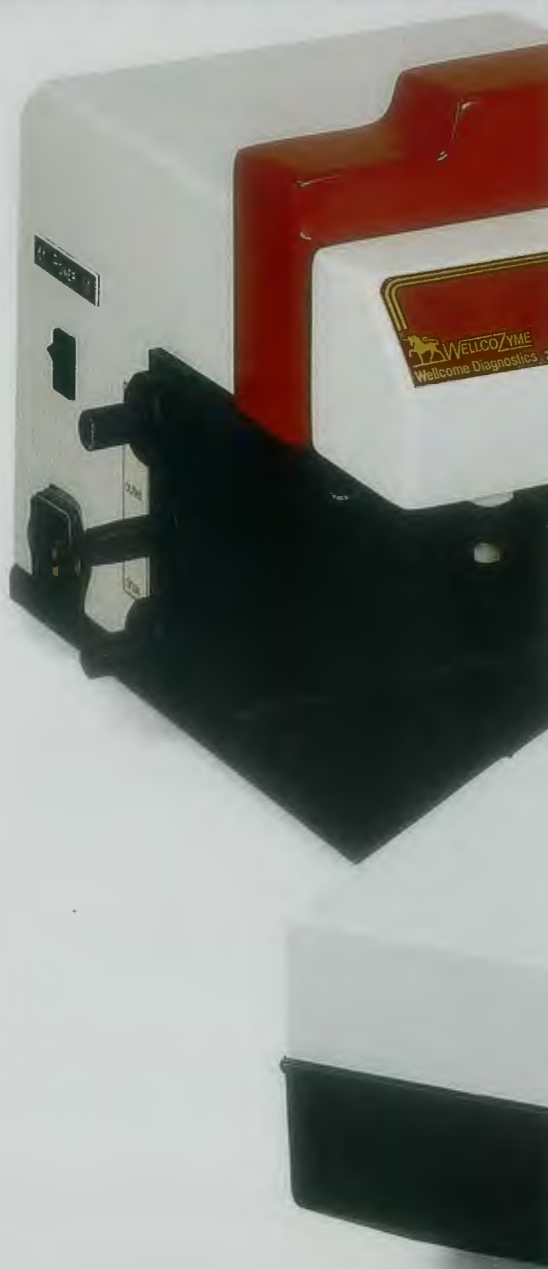

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NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY TECHNOLOGY

Application to Sit the Examination of Qualified Technical Assistant
12 and 13 May 1987

SECTION A — TO BE COMPLETED BY THE CANDIDATE

Name: Mr / Mrs / Miss ..... (Surname) ..... (Christian Names)

Laboratory .....

Lab. Address .....

.....

Subject (Haematology, Microbiology, etc.) .....

Are you a member of the NZIMLT YES/NO

Application for membership may be made on the reverse side of this form. If the application for membership accompanies this form then the reduced examination fee applies.

EXAMINATION FEE: $49.50 reducible to $16.50 if currently a financial member of the N.Z.I.M.L.T. (incl. GST).

FEE ENCLOSED $ ..... DATE ..... SIGNATURE .....

SECTION B — TO BE COMPLETED BY THE PATHOLOGIST OR CHARGE TECHNOLOGIST

Date Candidate commenced work in examination subject .....

"I certify that the above candidate meets the requirements of the Q.T.A. Regulations"

Signed .....

Designation .....

Please state the name and address of the person responsible for receiving the papers and supervising the Examination in your laboratory or centre

Name .....

Address .....

.....

.....

Office use only

APPLICATIONS CLOSE FRIDAY 28 FEBRUARY 1987

Please forward application forms accompanied by fees to: Mr B. T. Edwards, Secretary, Technical Assistants Examination Committee, Haematology Department, Christchurch Hospital, Christchurch 1.

LATE APPLICATIONS WILL NOT BE ACCEPTED

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

Application for Membership

(Please Print Clearly and Tick Appropriate Box)

I,

SURNAME

MR, MRS, MS, MISS

INITIAL(S)

FIRST NAME(S)

MAIDEN NAME

OF,

WORK ADDRESS

HOME ADDRESS

Hereby apply for membership of the New Zealand Institute of Medical Laboratory Technology in the category of:

☐ Associate ☐ Member ☐ Non-Practising Member

☐ Complimentary Member (Date Commenced Work: _____)

AND Certify That I Have:

☐ Not Previously Been a Member ☐ Previously Been a Member (State Category: _____)

☐ Resigned (Date: _____) ☐ Did Not Resign

I am employed as: _____

in the Speciality Department of: _____

Highest Professional Qualification: _____ Year Obtained: _____

Applicants Signature: _____ Date: _____

Nominated by: _____

(Current Financial Member N.Z.I.M.L.T.)

Enclosed with Application $ _____ Subscription $ _____ G.S.T. $ _____ Total Paid

(See Latest Journal for Current Subscription Rates)

Please Forward Completed Application Form to: **Membership N.Z.I.M.L.T.**
P.O. Box 29115
Greenwoods Corner
Auckland New Zealand

(Please Leave Blank)

Received _____ L

Acknowledged _____ R

Council _____ S

Notified _____ E

Convenor _____ M

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Anti-HBc EIA (Roche)
HBeAg EIA (Roche)
Anti-HBe EIA (Roche)

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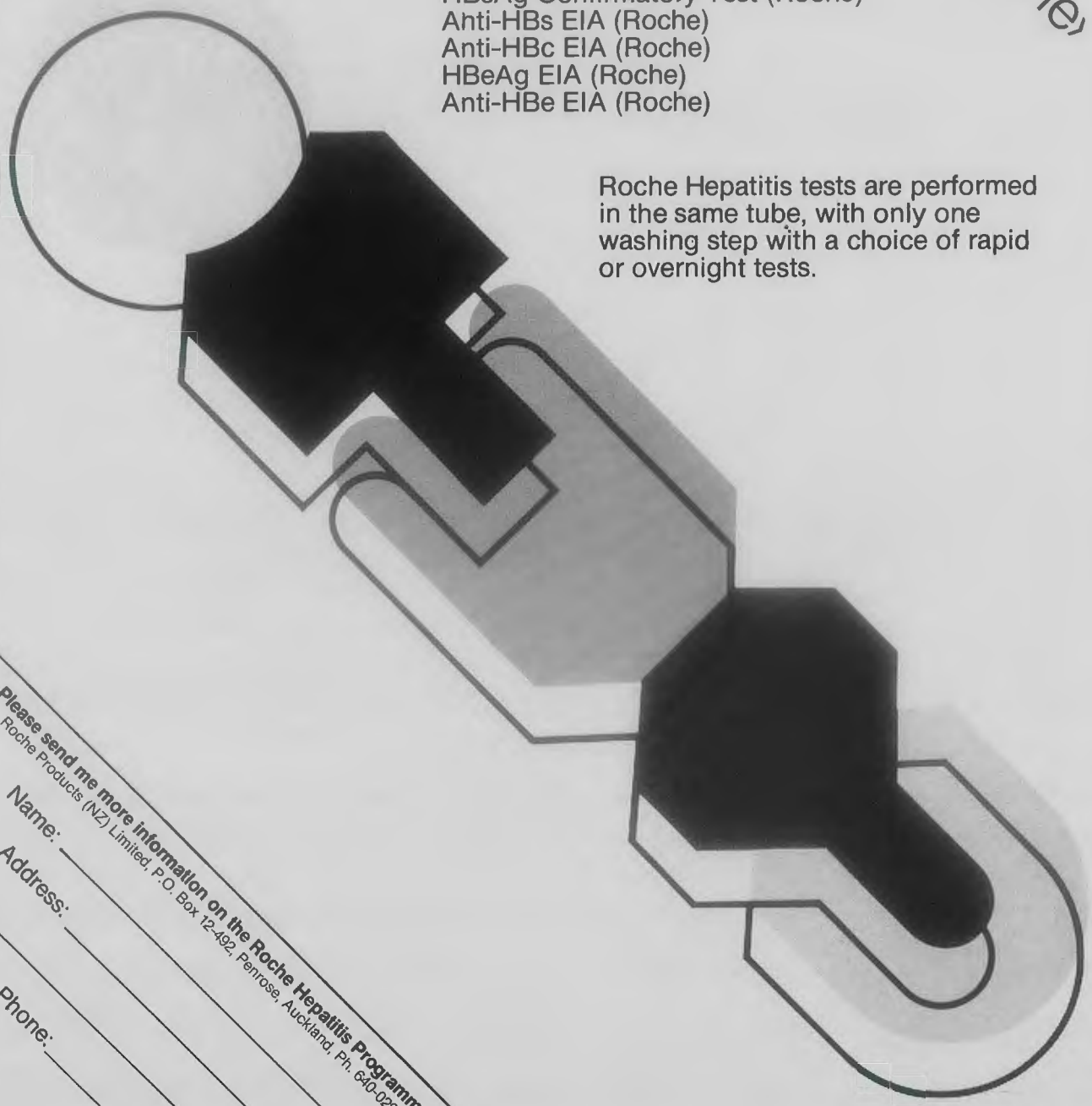

Please send me more information on the Roche Hepatitis Programme
Roche Products (NZ) Limited, P.O. Box 12-492, Penrose, Auckland, Ph. 640-029.

Name: _____

Address: _____

Phone: _____

or **Circle 9 on Readers Reply Card**

SITUATIONS VACANT

AUSTRALIA

THE GEELONG HOSPITAL GEELONG, VICTORIA, DEPARTMENT OF PATHOLOGY

Microbiologist Grade IV

Applications are invited for the position of Senior Scientist within the Microbiology Divison of the Department of Pathology of the Geelong Hospital, Geelong, Victoria, Australia. The senior scientist is expected to supervise laboratory staff, and evaluate and develop new techniques. He/she is to assist the Medical Microbiologist in administration, education and infection control, and carry out the responsibilities of the Medical Microbiologist in his absence. The applicant should be a graduate in science and Microbiology with appropriate fulltime experience in Clinical Microbiology as required for a Grade IV position. It would be an advantage to have a postgraduate degree and a special interest in computerisation.

The Geelong Hospital has 526 beds and is a teaching hospital associated with Monash University, Melbourne. The Department of Pathology is modern and well equipped and consists of four divisions — Haematology and Blood Bank, Chemical Pathology, Anatomical Pathology and Microbiology. It has a total establishment of 80 staff members; the Division of Microbiology comprises the Medical Microbiologist, 5 scientists, 4 laboratory assistants and one clerical staff member.

Geelong is situated 85 kms south-west of Melbourne and has a population of 180,000 over an area of 300 sq. km. It has a temperate climate and is close to ocean beaches.

Salary and conditions are in accordance with the Victorian Hospital Scientists determination and the salary range is $A40,934 to $A46,462 p.a. Further information may be obtained from the Director of Pathology, Dr. D. R. Hocking on (052) 904-520.

Applications are to be in writing and addressed to the Personnel Officer, The Geelong Hospital, P.O. Box 281, Geelong, Victoria, Australia 3220.

INSTITUTE BUSINESS

Office-Bearers of the N.Z.I.M.L.T. 1986-87

President
C. Campbell
Laboratory, Palmerston North Hospital

Vice-Presidents
W.J. Wilson
D. Dixon-McIver

Secretary
B.T. Edwards
Haematology, Christchurch Hospital

Treasurer
D.M. Reilly
Diagnostic Laboratory, Auckland

Council
M. Young, D. Pees, J. Elliot, J. Parker, P. McLeod

Editor
D. Dixon-McIver
Biochemistry Dept., National Women's Hospital, Auckland.
or the Editor, P.O. Box 35-276, Auckland, 10.

Membership Convenor
David Pees
P.O. Box 29-115, Greenwoods Cnr, Auckland.

Membership Fees and Enquiries

Membership fees for the year beginning April 1, 1986 are:

For Fellows—$45 Sub
$2.25 GST

For Associates—$45 Sub
$2.25 GST

For Members—$30 Sub
$1.50 GST

For Non-practising Members—$20 Sub
$1 GST

All membership fees, changes of address or particulars, applications for membership or changes in status should be sent to the Membership Convenor at the address given above.

Members wishing to receive their publications by airmail should contact the Editor to make the necessary arrangement.

Membership Sub-Committee Report — August 1986

Since our June meeting there have been the following changes:

Membership:	17.8.86	27.6.86	5.3.86	13.2.86
Less Resignations	1735	1792	1753	1527
Less G.N.A.	24	78	1	5
Less Deletions	2	32	—	15
Less Deceased	—	9	—	—
	—	1	1	—
	1709	1672	1751	1507
Plus Applications	12	62	40	246
Plus Reinstatements	3	1	1	—
	1724	1735	1792	1753

Applications for Membership
Miss Susan GRAHAM, Blenheim; Miss Davina SMITH, Wellington; Ms Debra FLEET, Tauranga; Miss Kellie EAGLES, Whakatane; Mrs Kay GREENWOOD, Blenheim; Mrs Mary LEWIS, Dargaville; Miss Wendy BLANKS, Invercargill; Mrs Geraldine COATS, Hawkes Bay; Miss Cassandra HANSEN, Hawkes Bay.

Applications for Associateship
Miss Wendy PERKINS, Christchurch; Mrs Suzanne WILLIAMS, Dunedin; Mr Joseph MORAHAN, Porirua.

Reinstatements
Mr B. BODGER, Australia; Mrs J. MASSEY, Wellington; Mr P. EDWARDS, Christchurch.

Resignations
Mr M. HORRIDGE, Invercargill; Mrs M. SORENSON, Auckland; Mrs A. ADAIR, Rotorua; Miss W. PEARCE, Hamilton; Mrs R. HAWORTH, Palmerston North; Mrs K. MORRISON, Dunedin; Miss D. AITKEN, Christchurch; Mr W. HODGSON, Nelson; Miss J. KINGI, Dunedin; Mrs A. Bennitt, Palmerston North; Mrs A. SHARP, Dunedin; Miss D. BRENNAN, England; Mrs F. TAYLOR, Auckland; Miss S. MILHAM, Auckland; Miss S. NEWMAN-HOLLIS, Auckland; Miss L. STERRITT, Hamilton; Mrs L. HILL, Oamaru; Mr D. GRIFFITHS, Auckland; Mrs P. WILLIAMS, Auckland; Miss J. NIELAND, Hamilton; Mrs C. HENWOOD, Whangarei; Mr J. SMITH, Wellington; Mrs K. STIRLING, Auckland; Mr A. LANDER, Lower Hutt.

Gone No Address:
Mr C. BLACKSHAW, Rotorua; Mr J. GERARDS, Rotorua.

1986 NZIMLT Scholarship And Eli Lilly Scholarship Winners

Eli Lilly Microbiology Scholarship

The 1986 Eli Lilly Microbiology Scholarship was won by Murray Carter of Taranaki Base Hospital, New Plymouth.

He trained at Wanganui Hospital 1965-69. He was a staff technologist at Wanganui Hospital for a year before working for three years at Queen Elizabeth Hospital, Adelaide, South

Australia, before returning to New Zealand to take up his current position at Taranaki Base Hospital. He has been an examiner in Microbiology for QTA, Certificate and Specialist exams. He has had three papers published.

NZIMLT Scholarship

The 1986 winner of the NZIMLT Scholarship was Miss Katherine Caldwell of Waikato Hospital, Hamilton.

She trained at Waikato and Christchurch Hospitals and worked for a year at Waikato Hospital before working at National Heart Hospital, London before returning to take up her current position at Waikato Hospital.

Katherine presented a paper "Methanol levels in methylated spirit drinking alcoholics" at the 2nd South Pacific Congress in Sydney.

New Zealand Institute of Medical Laboratory Technology

Annual Staffing Survey — 1 April 1986

Medical Laboratory Technologists

Currently Employed

	1983	1984	1985	1986
Clinical Biochemistry	175	174	187	186
Microbiology	155	164	168	172
Haematology	145	160	160	163
Immunohaematology	84	86	90	92
Histology	25	22	24	24
Cytology	6.5	6.0	5.2	7.2
Nuclear Medicine	4.2	6.2	8.5	8.0
Immunology	23	23	22	28
Cytogenetics	10	5.5	7.5	6.5
Virology	2.0	1.0	2.0	6.0
Administration (full time)	30	37	34	39
On rotation	47	46	41	55
Other	6.0	4.5	7.3	2.4
TOTAL	712.7	735.2	756.5	789.1

Current Vacancies

	1983	1984	1985	1986
Clinical Biochemistry	6.0	9.0	8.5	15.3
Microbiology	5.0	1.5	4.0	12.5
Haematology	4.5	4.5	4.0	11.0
Immunohaematology	5.0	6.0	4.0	6.5
Histology	3.0	3.0	5.0	3.0
Cytology				
Nuclear Medicine				1.0
Immunology	1.0	1.0		2.0
Cytogenetics	1.0			
Virology	1.0			
Administration (full time)	1.0			1.0
On rotation		1.0	3.8	6.5
Other	1.0			
TOTAL	28.5	26.0	29.3	58.8

Medical Laboratory Assistants

Currently Employed

	1983	1984	1985	1986
Clinical Biochemistry	188	188	193	183
Microbiology	170	165	186	168
Haematology	142	142	145	143
Immunohaematology	101	101	118	118
Histology	80	78	77	85
Cytology	39	40	32	36
Nuclear Medicine	8.0	16.0	12.5	16.8
Immunology	40	41	32	42
Cytogenetics	7.0	5.0	4.0	7.5
Virology	5.5	5.6	7.0	7.0
Blood Collection	88	87	96	91
On rotation	59	56	44	51
Other	28	24	31	44
TOTAL	955.5	948.6	977.5	992.3

Current Vacancies

	1983	1984	1985	1986
Clinical Biochemistry	3.5	5.5	5.5	7.0
Microbiology	2.0	3.9	4.8	8.4
Haematology	1.5	1.7	4.3	5.8
Immunohaematology	4.2	2.1	1.0	2.5
Histology		0.5	3.0	2.0
Cytology			1.0	1.0
Nuclear Medicine			1.0	
Immunology			1.0	
Cytogenetics			1.0	
Virology				
Blood Collection	1.6		1.0	4.0
On rotation		2.0	2.7	2.7
Other			1.0	
TOTAL	12.8	15.7	26.3	33.4

Medical Laboratory Technology Trainees

Trainee Numbers

	1983	1984	1985	1986
Total Trainees	415	381	334	341
NZCS Trainees	219	185	173	173
Graduate Trainees	18	22	15	39
Certificate Trainees	156	162	133	139
Specialist Cert. Trainees	40	34	29	29
Trainee Vacancies	2	6	21	11

NZCS Trainees

	1983	1984	1985	1986
First Year	67	50	65	61
Second Year	61	65	48	61
Third Year	91	70	60	51

Certificate Trainees

	1983	1984	1985	1986
Clinical Biochemistry	33	45	39	42
Microbiology	50	41	35	33
Haematology	42	38	37	32
Immunohaematology	19	25	15	18
Histology	3	5	4	4
Cytology	3	2		2
Nuclear Medicine	1			
Immunology	2	2		3
Cytogenetics	3	2	1	2
Virology		2	2	3

Specialist Certificate Trainees

	1983	1984	1985	1986
Clinical Biochemistry	10	8	9	8
Microbiology	15	5	6	9
Haematology	7	9	5	4
Histology	1	2	2	1
Cytology		1	1	
Nuclear Medicine	2	5		
Immunology			1	
Cytogenetics	1	1		2
Virology			1	

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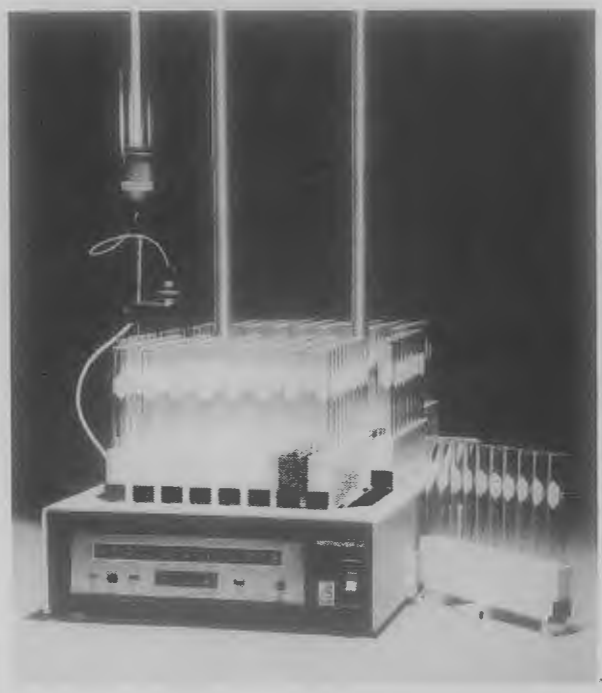

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Minutes of the 42nd Annual General Meeting of the New Zealand Institute of Medical Laboratory Technology held in Auckland on 28 June 1986 Commencing at 1.20 p.m.

Present
The President (Mr C. Campbell) presided over an attendance of 91 members.

Apologies
It was resolved that apologies be accepted for K. McLoughlin, D. Reilly, P. Reilly, C. Curtis, S. Lines, R. King, J. Hunt, M. Lorney, D. Riley, G. Warren, L. Dent and G. Hurd.
D. Dixon-McIver/T. Martin

Proxies
A list of 35 proxy holders representing 396 proxies were circulated to the meeting.

Minutes
It was resolved that the Minutes of the 41st Annual General Meeting as circulated be taken as read and confirmed.
W. Wilson/I. Bardsley

Annual Report
It was resolved that the Annual Report be received
B. Edwards/T. Martin.
Speakers on the annual report included B. Main (Negotiations), J. Elliott (Audio Visual Aids), B. T. Edwards (Technical Assistants Examination Committee), C. Campbell and D. Pees (Membership), I. Bardsley and J. Parker (Safety), D. Dixon-McIver (Publications).
The Chairman advised the meeting that Council was unanimous in it's decision to award Life Membership on Past President A. Harper. The announcement was greeted with acclamation and the Certificate was received by J. Mann.
It was resolved that the Annual Report be adopted.
B. Edwards/A. Buchanan

Financial Report
It was resolved that the Treasurers and Financial Report be received.
W. Wilson/D. Pees
Speakers on the Financial Report included W. Wilson and C. Campbell.
It was resolved that the Financial Report be adopted.
W. Wilson/J. Mann

Election of Officers
The following members of council were elected unopposed:-

President
Mr C. Campbell

Secretary
Mr B. T. Edwards

Treasurer
Mr D. Reilly

Regional Representatives
Christchurch — Mr P. McLeod
Dunedin — Mrs. J. Parker

The following are the results of elections:-

Vice-President

K. McLoughlin	269
W. Wilson	475
D. Dixon-McIver	319
Invalid	1

Declared elected were W. Wilson and D. Dixon-McIver.

Auckland Regional Representative

D. C. Pees	91
J. Townsley	33
G. Rimmer	82
Invalid	6

Declared elected was D. C. Pees.

Central North Island Regional Representative

E. Norman	38
M. Young	58
Invalid	1

Declared elected was M. Young.

Wellington Regional Representative

J. E. Elliott	95
W. G. Shearman	27
Invalid	3

Declared elected was J. E. Elliott

Presentation of Awards
The following award winners were announced and the awards presented by the President:-

Certificate Examination Awards:

Clinical Biochemistry	— Helen Coats
Haematology	— Angela Roigard
Microbiology	— Angela Stoddard
Immunohaematology	— Holly Mason
Immunology	— Pamela English
Virology	— Deborah Langford
Histology	— Gillian Whittaker

Specialist Certificate Examination Awards

Clinical Biochemistry	— Dean Nixon
Haematology	— Sylvia Boag
Microbiology	— Jackie Wright
Immunohaematology	— Sandra Clark
Histology	— Rosemary McAnulty
Virology	— William Gee
Immunology	— Lynley Ellwood
Cytogenetics	— Ainslie Watt

Qualified Technical Assistant Awards

Immunohaematology	— Nicola Beamish
Clinical Biochemistry	— Sharon Weastell
Haematology	— Jillian Corbett
General Certificate	— Maura Webber
Medical Microbiology	— Deidre Hore
Histological Technique	— Lisa Cassels

Journal Awards
ROCHE PRODUCTS CLINICAL CHEMISTRY AWARD — Bill Hodgson and Rob McKenzie.
TRAVENOL — DADE HAEMATOLOGY AWARD — Christine Hickton and Lynette Honeybone.
JOURNAL STUDENT AWARD — Shona Brougham.
JOURNAL PRIZE — Dennis Romain.

Fellowship
The President congratulated Alexander (Sandy) Milne on being awarded an MBE in recognition of his work on hepatitis. The President also announced that Council had decided to elect Mr Milne a Fellow of the Institute. The announcement was met with acclamation and his award was received by D. Philip.

Honoraria
It was resolved that no honoraria be paid.
B. Main/W. Wilson

Auditor
It was resolved that Deloitte, Haskins and Sells be appointed the Institute Auditors.
W. Wilson/D. Pees

1988 Annual Scientific Meeting
E. Norman advised the meeting that the 1988 Annual Scientific Meeting could be held in Rotorua subject to consultation with laboratory staff. The announcement was met with acclamation.
There being no further business. The meeting closed at 2.05 p.m.
C. Campbell
(President)

Minutes of the Special General Meeting of the New Zealand Institute of Medical Laboratory Technology held in Auckland on the 28 June 1986 Commencing at 2.05 p.m.

Chairman
Mr C. Campbell

Minutes

It was resolved that the Minutes of the Special General Meeting held on 13 August 1985 be taken as read and approved.

B. Main/R. Austin

Business Arising

W. Wilson and P. McLeod reported that Council had considered an alternative organisation for negotiations but supported negotiations remaining the responsibility of the Institute. However Council had adopted the policy of including all Regional Representatives on the Negotiations Committee and the establishment of Laboratory Representatives to communicate with Regional Representatives.

Other speakers on the Minutes included K. Smith, B. Edwards, B. Main, P. McLeod, A. Pratt and W. Wilson.

Remits

1. It was moved W. Wilson, seconded D. Dixon-McIver "that the following rates of subscription operate from and including the year commencing 1 April 1987.

   For Fellows and Associates — $55.00 reducible to $50.00 if paid by 30 June that year.

   For Members — $45.00 reducible to $40.00 if paid by 30 June that year.

   For Non Practising Members — $30.00 reducible to $25.00 if paid by 30 June that year."

   The motion was carried unanimously on a show of hands.
2. It was moved W. Wilson, seconded B. Main "that Policy Decision Number One be reaffirmed."

   Policy Decision Number One

   That all committees and meetings convened under the auspices of the New Zealand Institute of Medical Laboratory Technology (Inc.) be subjected to a standard reference of parliamentary procedure and that this be 'A Guide For Meetings and Organisations' by Renton.

   It was moved D. Pees seconded D. Dixon-McIver "that the words 'the latest edition of' be included after the words 'and that this be . . .'.

   The amendment was put to the meeting and carried unanimously on a show of hands.

   The amended motion was then put to the meeting and carried unanimously on a show of hands.
3. It was moved A. Johnson, seconded A. Wigmore "that the number of seats on Council be increased by one. This seat to be filled by a laboratory assistant nominated and elected by laboratory assistants. Voting for Regional Representatives not to be effected by this change."

   After the counting of hands and proxies the motion was declared lost, there being 71 votes for the motion and 380 against.
4. It was moved M. Wigmore, seconded A. Johnson "that the PSA be approached by the NZIMLT to represent laboratory workers in their salary and conditions negotiations."

   The motion was declared lost on a show of hands.
5. It was moved M. Wigmore, seconded A. Johnson "that the Qualified Technical Officer examination be reintroduced i.e. two years post QTA."

   After discussion it was moved J. Mellelieu, seconded W. Shearman "that the motion be amended by adding the following words 'as a post QTA examination in a similar format as the Special Certificate examination is to the Certificate examination'."

   After discussion the amendment was put to the meeting and declared lost on a show of hands.

   The original motion was then put to the meeting and after the counting of hands and proxies was declared lost with 91 votes for the motion and 368 against.
6. It was moved A. Johnson, seconded M. Wigmore "that the Laboratory Assistants designation be altered to:

Laboratory Assistant	Pre-exam
Technician	Post exam
Technical Officer	Post QTO

   After discussion it was moved R. Scott, seconded M. Clarke "that the motion be amended to read 'That the Laboratory Assistants designation be altered to Medical Laboratory Assistant'."

   After discussion the amendment was put to the meeting and declared carried on a show of hands.

   The amended motion was then put to the meeting and declared carried on a show of hands.
7. It was moved D. Dixon-McIver, seconded C. Burnet that "Rule 13A and Rule 13C be amended by deleting the words 'five (5) ordinary members' and replacing them with the words 'six (6) ordinary members' and

   That Rule 13(d) be deleted and the following substituted: 'Two (2) ordinary members of the Council shall represent the Auckland area and one (1) ordinary member of the Council shall represent each of the following areas: Central North Island, Wellington, Christchurch and Dunedin' and

   That Rule 13(d) be further amended by deleting the words 'Hospital Boards' and substituting the words 'Hospital Boards or Area Health Boards'."

   After discussion it was moved B. Edwards, seconded W. Wilson "that the first two clauses of Remit 7 be taken as one."

   The proposal was put to the meeting and declared carried on a show of hands.

   The Chairman then put the first two clauses to the meeting and after the counting of hands and proxies the motion was declared lost with 152 votes for the motion and 315 against.

   The Chairman then put the 3rd clause to the meeting and it was carried unanimously on a show of hands.

General Business

It was moved I. Steed, seconded P. Clark "that the NZIMLT approach the Communicable Disease Advisory Committee to develop guidelines for a policy (with input from the NZIMLT) for a vaccination programme in order to gain a uniformly effective hepatitis B vaccination programme for all medical laboratory workers."

The motion was carried unanimously on a show of hands.

It was moved I. Steed, seconded I. Dixon "that the the NZIMLT communicate with the Minister of Health recommending that all new born and pre-school children in high risk areas be vaccinated against hepatitis B."

After discussion it was moved J. Greenwood, seconded J. Parker "that the motion be amended by including the words 'that it be offered' after 'in high risk areas . . .'."

After discussion the amendment was put to the meeting and declared lost on a show of hands.

The original motion was then put to the meeting and declared carried on a show of hands.

It was moved B. Edwards, seconded J. Parker "that the incoming Council consider the establishment of a fourth region in the North Island and report to the next General Meeting of the Institute."

The motion was put to the meeting and declared carried on a show of hands.

It was moved D. Pees, seconded W. Wilson "that this meeting ask the Council of the NZIMLT to seek an amendment to the wording of HS19 to change Grade Laboratory Officer to Grade Technologist."

It was moved J. Elliott, seconded P. McLeod "that the motion be amended to read 'change Grade Laboratory Officer to Graded Medical Laboratory Technologist'."

After discussion the amendment was put to the meeting and was declared lost on a show of hands.

The original motion was then put to the meeting and declared carried on a show of hands.

It was moved J. Mellelieu, seconded G. Meads "that this meeting record a vote of thanks for the work done by the Council during the period of negotiations."

The motion was carried unanimously with acclamation.

D. Philip then addressed the meeting and expressed concern at the low numbers of trainees and urged the Council to give urgent consideration to correcting this.

His statement was greeted with acclamation.

There being no further business. The meeting closed 4.35 p.m.

C. Campbell
(Chairman)

COMING EVENTS

The Australian and New Zealand Association for the Advancement of Science 56th Congress

Palmerston North. January 26-30th 1987

Energy, health, women's and nuclear issues, new technologies — and the popular attraction of Dr. David Bellamy are features of the Australian and New Zealand Association for the Advancement of Science congress programme announced by organisers.

The 56th ANZAAS Congress will bring over three thousand Australasian scientists to Palmerston North in January 1987 mixing state-of-the-art specialist topics with general public sessions.

Planning for the multi-faceted congress has been progressing throughout this year and organisers have now confirmed the highlights of the main science programme.

Fresh from his conservation battles in Tasmania, globe-trotting botanist and media personality Dr. David Bellamy has accepted a place as a main congress lecturer and will deliver a paper titled 'Planting a Future'.

Also speaking as a main lecturer will be Professor John Cadogan, an internationally recognised energy specialist and expert in visual aid presentation techniques who is currently Director of Research for British Petroleum.

The prominence given to women's issues at recent ANZAAS congresses will be continued with many discussion sessions devoted to the subject, highlighted by two main symposia — 'Women in Science' and 'Women's Lives and Visions.'

Eight health symposia grouped under the title 'Health Sciences' will focus on high-interest topics such as AIDS, invitro fertilisation, brucellosis, sports medicine and work injuries.

Featured in the health programme is Nobel Laureate Dr. D. Carleton Gajdusek who leads the laboratory for central nervous system studies at the National Health Institute in the United States.

Congress organisers believe that scientific debate on the nuclear question is of primary importance, and a major symposium on nuclear issues will include American scientist Dr. R. Schribner — an active contributor to discussions on arms control and international security.

The developments and consequences of new technologies are also key areas in the programme with lectures on the implications of technological advance, legal issues and a series of sessions dealing with gene manipulation in plants, animals and micro-organisms.

Congress organisers stress that anybody can regiser to attend ANZAAS and that programmes are designed for broad, wide-ranging discussions rather than technical detail.

For further information contact Dr. M. Baxter, Organising Secretary, 56th ANZAAS Congress, Massey University, Palmerston North.

The 18th Congress of International Association of Medical Laboratory Technologists Kobe, Japan, 17-22 July, 1988

Scientific Program

This program will cover the scientific and technological exchange based on the main theme "Progress in Bioscience and Humanity".

Schedules Events

Special Opening Lecture
The spirit of the tea ceremony
Keynote Lecture
Progress in bioscience and humanity
Scientific Lectures
Endemics around the world
Acquired Immune Deficiency Syndrome (AIDS)
Laboratory diagnosis of cancer
Symposium
The current situation and the future prospect of Medical Laboratory Technology in each country
Panel Discussion
The outlook for Medical Laboratory Technology in South-east Asia
Round-table Discussion
The management and administration of Medical Laboratory Technology
Working Conference
We are planning a program especially directed to Southeast Asia

General Lectures

Presentation of papers (including invited lectures) and poster sessions.
Participants are invited to submit their papers on the following subjects:
Urinalysis
Hematology
Microbiology
Immunology
Clinical Chemistry
Blood Transfusion
Histopathology
Cytology
Clinical Physiology
Public Health
Management and Operation
Education and Training

Exhibition of Medical Equipment for Laboratory Technologists

Based on the theme of "Bringing a Better Future through Medical Laboratory Technology", we are planning a large-scale exhibition during a period of four days for the Congress.

Social Program

Arrangements will be made for receptions, parties, hospital inspection and sight-seeing tours, and homestay during a period for the Congress, as well as a post-conference sight-seeing tour around typical Japanese spots.

The IAMLT Congress

Period
17-22 July, 1988
Location
Kobe, Japan
Site
Kobe International Conference Centre, Kobe Portopia Hotel, etc.
Language
English (with simultaneous interpretation into Japanese)

Exhibition of Tool and Equipment for Medical Laboratory Technologists

Four days of 17-20 July, 1988 at the Kobe International Exhibition Hall.

Social Program

Receptions
Welcome party, opening reception, Japan night and Sayonara banquet.
Inspection and Sight-seeing Tour
Hospital inspection, sight-seeing tour in Kobe and Kyoto, shopping tour, homestay, and optional post-conference tour.

Invitation Program

Printed matters giving a full detail on the conference schedule, method of preliminary registration, main program, instructions for submitting papers, etc. will be distributed to the office of member organisations in the beginning of 1987.

Any member of the Association who personally wishes to obtain the invitation program is kindly requested to inform the 18th Congress Secretariat of his or her name, institution, address, country and the required number of copies.

Further Communication

The progress of the preparations and further discussions, if any, will be informed from time to time.

Transportation and Hotel Reservation

Transportation and hotel reservation will be made by the Japan Travel Bureau.

Please forward all inquiries to:

JTB Kobe Sannomiya Branch (Re: The 18th IAMLT Congress)
5-1-305 Kotonoo-cho, Chuo-ku, Kobe-shi, 651 Japan
Telephone: (078) 252-1017 FAX: (078) 222-1698

The 19th Congress Secretariat

Executive Committee For 18th IAMLT Congress
Japanese Association of Medical Technologists
c/o Ichigaya Hoso Building, 4-1-5 Kudan-kita,
Chiyoda-ku, Tokyo 102 Japan
Telephone: (03) 230-0634 FAX: (03) 221-1296

NEW PRODUCTS AND SERVICES

DU PONT INTRODUCES NEW TOOL FOR AIDS RESEARCH

Du Pont has introduced what promises to be a very important new tool for the development of new diagnostic and therapeutic agents for AIDS and in the search for a vaccine, says Du Pont (New Zealand) Limited's managing director Max Lloyd Jones.

Called the Radioimmunoassay (RIA) kit, Mr Lloyd Jones says it can be used by researchers for detecting a core protein of the HTLV-III virus, and will be used by an estimated 30,000 biomedical scientists worldwide.

Mr Lloyd Jones says the kit represents a major advance for researchers who in the past have had to use expensive methods which were time and labour-intensive to detect the virus.

Du Pont's RIA kits will detect p24, the major structural protein of the viral core in less than five hours. Because the kit measures the actual amount of the protein, it provides a new tool to analyse the degree of viral activity in cells.

This analysis is a key factor in studies being conducted to test new anti-viral drugs which could be used to treat AIDS patients and those at risk to AIDS, Mr Lloyd Jones says.

For further information contact Max Lloyd Jones, Du Pont (New Zealand) Limited, P.O. Box 76-256, Manukau City or **circle 89 on readers reply card.**

NEW PRODUCTS FROM MBE

Med-Bio Enterprises can now provide a single vial, kinetic amylase reagent. This reagent, manufactured by Data Medical Associates, is available in both 6.5mL and 16.5mL vials. The reconstituted stability of the reagent is 7 days, which makes it suitable for any size laboratory to use, without the risk of reagent wastage.

Data Medical Associates have produced a single vial, kinetic acid phosphatase kit. The reagent is available in either 6.5mL or 16.5mL vials. The reconstituted reagent is stable for 7 days. The kit contains all the necessary reagents to measure both total and prostatic acid phosphatase.

MId-Bio Enterprises can now provide a single vial, kinetic CK (CPK) assay. The manufacturer, Data Medical Associates, has packaged the reagent in both 6.5mL and 16.5mL vial sizes. The reconstituted reagent has a 14 day stability. It is NAC activated and is linear to 1500 U/L.

Micro-Bio-Logics have developed a single tube test, for the identification of the 4 most commonly encountered Enterobacteriacae. These 4 organisms probably account for 70% to 80% of the enteric identification workload in the average clinical laboratory. This new product, called Lyfo-Kwik OMI only requires a 2-4 hour incubation to identify these organisms. **Circle 90 on readers reply card.**

BIOCHEMICALS NOW AVAILABLE EX STOCK NEW ZEALAND AT COMPETITIVE PRICES

1) p-Nitrophenyl Phosphate, Disodium

Suitable for use in the preparation of alkaline phosphate substrate using Autoanalyser methods N-6b, AA-11 and SMA 12/60 procedures.

Now recognised as the most ideal procedure published for acid, alkaline and prostatic phosphatases. This has been made possible by the extreme purity and unusual stability.

2) L-ɣ-Glutamyl-p-Nitroanilide

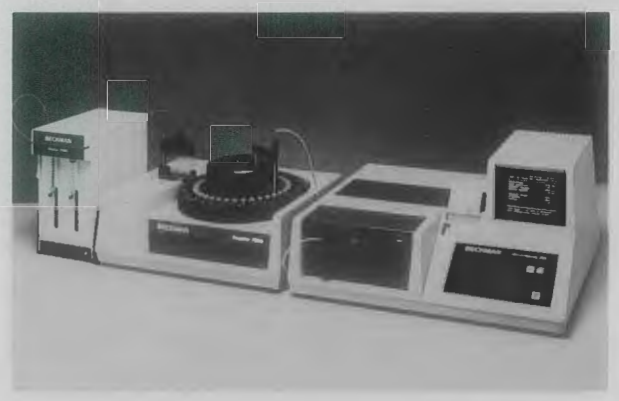
Suitable as substrate for ɣ-glutamyl transpeptidase.

For price information, contact Carter Chemicals Limited, P.O. Box 6848, Auckland, New Zealand or **circle 91 on readers reply card.**

TOPLOADER FOR INDUSTRIAL AND LABORATORY APPLICATIONS

With the "universal" line, Sartorius is launching a program of toploaders targeted for a broad array of both industrial and laboratory applications. Theme: reliable toploaders with an extra measure of precision. Noteworthy features: the wide range of 4140g paired with automatic fine range selection "Sartorange Poly" for adaptable readabilities from 10 . . . 50 mg, plus a large pan that is only slightly smaller than the toploader's base. Important news: weighing precision is unconditionally guaranteed at every point of the pan clear to the outer perimeter. These toploaders operate extremely fast and are virtually immune to interference signals from the environment. Integrated functions permit the user to adapt his balance to variables of his application and operating site. Added versatility comes from an integrated Data Input keyboard, which makes the toploader instantly systems-capable for use as a weight date terminal in a high-ranking network or ready to use as an intelligent stand-alone measuring station.

For further information **circle 92 on readers** reply card.



BECKMAN OFFERS VERSATILE LOW-COST CLINICAL SYSTEM

The Clinical System 700 is a new, fully automated clinical analysis system from Beckman Instruments, Inc. for applications in independent, private laboratories, in small hospitals, or in large facilities where the system serves as a supplemental unit to the larger workstation.

The 'walkaway' batch analyser accepts average reagent volumes of 600 microliters (μl) and produces up to 200 test results per hour. The system 700 provides 21 preprogrammed Beckman chemistries which can be easily reprogrammed; Beckman has over 50 different reagents for this system. In addition, it features full alpha capability in naming tests and linearity check for kinetic chemistries. An advanced curve fitting program for Enzyme Immunoassay (EIA) and EMIT* is included as standard.

Wavelengths range from 330 to 800 mm with 8 mm bandwidth, using a holographic grating. An advanced flow cell design helps eliminate bubbles, and the cell heats or cools to 25°C, 30°C or 37°C, ± 0.1°C. Flow is controlled by a precision pump which steps in 25μL increments. The system produces carryover of less than 0.2% at 600μL. The analyser has an RS232 port for connection to personal computers. The analyser can be used without the sampler/diluter, which can be added later. The diluter and sampler are totally controlled by the analyser.

For more information, contact Beckman Instruments (Australia) Pty. Ltd., 24 College Street, Gladesville, N.S.W. 2111 Australia; or **circle 93 on readers reply card.**

vonWILLEBRAND CONTROL FEATURES
Immunodepleted Plasma

Immunodepleted vonWillebrand Factor Deficient (vW) Abnormal Control Plasma™ reduced biohazardous risks in vonWillebrand Factor (Ristocetin Cofactor) assays. Available from Bio/Data Corporation, this plasma is prepared exclusively from blood tested negative for both Hepatitis B Surface Antigen and HTLV-III antibody.

Ristocetin Cofactor assays, such as the vW Factor Assay™, provide the most definitive test results used in screening for and assessing vonWillebrand disease. An abnormal control which is deficient in VIIIR:Co, run as a patient plasma, ensures the specificity and sensitivity of the assay reagents for detection of vonWillebrand activity in plasma.

vW Abnormal Control Plasma is depleted of VIIIR:Co by selective immunoadsorption of the factor VIII protein from normal human blood. This immunodepleted product provides full quality control capability in ristocetin cofactor assays, precluding the requirement to use congenitally deficient patient plasmas which are high risk carriers of viral disease. Additionally, lot-to-lot performance of immunodepleted vW Abnormal Control Plasma is more controlled and predictable than other products which rely on highly variable sources of congenitally deficient patient plasmas.

vW Abnormal Control Plasma™ is available as part of the vW Factor Assay™ test kit (Catalog No. 101246) as well as in packages of 3 x 0.5ml vials (Catalog. No. 101270). For further information, contact Wiltons, P.O. Box 31-044, Lower Hutt or **circle 88 on readers reply card.**

NEW MICROCONCENTRATE REAGENTS FOR COAGULATION TESTING

New coagulation reagent tablets are a unique alternative to traditional lyophilized and liquid materials for prothrombin time, activated PTT and thrombin time testing. Microconcentrates of thromboplastin, silica activated cephalin, thrombin, control plasmas and calcium chloride in tablet form are now being offered by Bio/Data Corporation. Equivalent in use and performance, the new microconcentrates offer substantial cost and handling advantages over existing products.

Microconcentrate tablets are packaged in flat, 2-3/4 inch plastic disks. Each disk contains ten microconcentrate tablets, the equivalent of ten vials of comparable reagent. For reconstitution, one or more segments are removed from the disk and the tablets are transferred into any clean glass or plastic receptacle and distilled water is added. The reconstitution volume is determined by the number of tablets used. This minimises reagent waste by providing the flexibility to reconstitute the optimal quantity for the daily work load.

Coagulation testing with reconstituted microconcentrate reagents is identical to existing procedures and methodologies. The reagents are compatible with all manual or automated, optical or mechanical endpoint detection systems. Normal and therapeutic ranges of test results are the same as those which are generally accepted and established.

Microconcentrate reagents are priced dramatically lower than comparable products. In the new tablet form, the products are free of the material and production expenses inherent to conventional vial packaging. The attractive selling price yields the lowest possible material cost per coagulation test. Reduced shipping and storage costs, made possible by the configuration of the microconcentrates, further enhance the economic efficiency realised with these products.

The compact size of the microconcentrate disks enables laboratories to store a full year's lot of reagent in relatively little refrigerator space. Any laboratory may keep its entire supply on site, eliminating the expense and shortages which can accompany the current practice of periodic shipments from a manufacturer's distribution centre.

The microconcentrate line contains the full range of reagents required for general evaluation of plasma coagulation and monitoring and oral anti-coagulant therapy. Plastinex™ (rabbit brain thromboplastin), Cephalinex™ (micro silica activated PTT reagent), and Thrombinex™ (bovine thrombin) are accompanied by four levels of control plasma: Citrex™-I (normal control); Citrex™-II (abnormal control); Citrex™-III (abnormal control); and Citrex™-H (heparin control). Calcium chloride is also available in tablet form for use in activated partial thromboplastin time (APTT) testing.

An inter and intra-laboratory quality assurance program is being offered. Laboratories implementing the microconcentrate Q.C. program have the advantage of sharing control lots of unprecedented size for a broader peer comparison statistical base.

Sample packages of microconcentrate reagents are available to interested laboratory professionals. For further information, **circle 88 on readers reply card.**

vonWILLEBRAND FACTOR CALCULATED AUTOMATICALLY

The vW Program™, a data reduction capability of the Platelet Aggregation Profiler®, Model PAP-4, simplifies the performance of vonWillebrand factor (ristocetin cofactor) assays. This software capability reduces material costs and technologist time by enabling the PAP-4 to construct, quality control and store log-log standard curves. Patient results are automatically calculated in percent vonWillebrand factor activity.

The vW Program, activated by simple push-button operation, guides the operator step-by-step through the assay procedure. Following development of the standard agglutination patterns, the instrument automatically calculates each slope value, evaluates linearity, and produces a "best fit" standard curve. The vW Program alerts the operator to deviations outside quality assurance limits which could lead to inaccurate results. All data, including slope, plot of test results on the standard curve, and percent vonWillebrand factor activity, are printed out on a log-log chart.

Automatic microprocessor calculation of the standard curve increases assay precision by eliminating manual approximation of the best fit line. Assay costs are reduced through elimination of

the time and materials required for the manual construction of the vonWillebrand factor activity curve.

This software feature is standard on all new instruments and is available through a retrofit program to all current PAP-4 owners. For further information on the vW Program™, or the Platelet Aggregation Profiler®, Model PAP-4, **circle 88 on readers reply card.**

NEW MICROSAMPLE ANALYZER FOR COAGULATION

The newly introduced Microsample Coagulation Analyzer™, Model MCA™ 110P, is the first fully automated coagulation instrument to operate on microsamples of plasma. This unique capability of the MCA 110P proportionately reduces the quantity of reagents and controls consumed, resulting in substantial savings for the laboratory. The MCA 110P is the only coagulation instrument to provide for the direct entry of the PT and APTT concurrently, in any order and in any quantity, without limiting throughput efficiency. This open-ended feature saves labour by eliminating the need to wait and batch samples by test type. Random samples may be entered at any time regardless of the type of test in progress. The MCA 110P performs all routine coagulation tests as well as fibrinogens, thrombin times and factor assays.

The MCA 110P has been specifically designed to perform on microsamples of plasma, reducing reagent consumption by 75% of that required for existing coagulation instruments. This capability is the result of a newly developed submerged vertical optical system, termed SVO™. The vertical orientation of the optical system enables the MCA 110P to observe three hundred and sixty degrees of the clot during its formation. In contrast, existing coagulation instruments view the clot across a horizontal plane, limiting their view to a layer of the clot. This limitation significantly restricts their ability to operate on microsamples of plasma.

Additional reagent efficiency is attained with the MCA 110P by means of an innovative pressurised reagent delivery system. This new method for dispensing microvolumes of reagents eliminates conventional pumps and the volumetric inaccuracies typically associated with pumps. The MCA 110P reagent delivery system makes daily set-up unnecessary. No depriming or repriming is required as reagents are stored on board at refrigerator temperature. Frequent tubing changes, necessary with peristaltic pumps, are elinated. Reagent volume calibration is semi-automated reducing labour required for routine maintenance and reagent set-up. Precision pipetting is eliminated as the MCA 110P automatically aliquots the exact amount of plasma required, resulting in consistent reproducibility between technologists and shifts.

The simple, push-button operation of the MCA 110P allows 24 hour-a-day walk-up access to both PTs and APTTs. The continuous entry of test samples improves efficiency in processing the daily coagulation workload by replacing the traditional practice of waiting to batch by test type. The microprocessor control of the MCA 110P automatically calculates the most efficient sequence or fastest run order for the mix of test samples in progress.

The MCA 110P features complete push-button control, displays operator prompts and warnings, and offers a complete complement of self-diagnostic routines. Each test is performed in duplicate with results printed out individually and averaged. Patient identification numbers may be entered through the keypad and printed out with results for record purposes.

For more information on the MCA™ 110P, **circle 88 on readers reply card.**

DIRECT ACCESS COAGULATION INSTRUMENT ELIMINATES CENTRIFUGATION OF WHOLE BLOOD

The Microsample Coagulation Analyser™, Model MCA™ 110WP is the first coagulation instrument able to perform plasma-based coagulation tests directly from whole blood specimens. By eliminating the centrifugation step, the MCA 110WP reduces turnaround time for Prothrombin Times(PT) and Activated Partial Thromboplastin Times (APTT) by up to 80%. This enables the coagulation laboratory to offer true STAT testing to critical-care areas such as surgery, ICU and Emergency Rooms; providing results in less than eight minutes. The MCA 110WP performs PTs and APTTs simultaneously, randomly accepting whole blood or plasma samples without affecting throughput efficiency. All tests are performed using microsamples of plasma and microvolumes of reagents.

The instrument automatically extracts plasma using a filtration process which required only 1.0 ml of whole blood. The resulting sample is a high quality coagulation plasma, free of cellular material. By incorporating the plasma preparation process into the instrument's function, sample handling is brought to a minimum reducing the hazards associated with handling blood specimens. Most significantly, STAT tests which typically take 30 minutes to an hour are turned-around in less than five minutes for a PT and less than eight minutes for an APTT. This saves critical minutes during the clinical decision making process.

The MCA 110WP has all of the operational efficiencies of the cost-effective Microsample Coagulation Analyser Model MCA 110P. Tests are performed on microsamples of plasma (25 microliters) minimizing the required draw from pediatric and geriatric patients. Correspondingly, all tests use 75% less reagent.

The MCA 110's push-button ease of operation offers 24 hour-a-day walk-up access. The microprocessor automatically controls and monitors virtually all instrument functions resulting in trouble-free performance.

For laboratories already using the MCA 110P, the capability of directly accessing whole blood specimens can be added quickly and economically providing the laboratory with the most

versatile and advanced coagulation analyser available.

For further information on the Microsample Coagulation Analyser™, Model MCA™ 110WP, **circle 88 on readers reply card.**

LYPHOCHEK BI-LEVEL ROUTINE URINE CHEMISTRY CONTROLS

This new member of the LYPHOCHEK controls family rounds out the Company's current line of LYPHOCHEK brand urine controls and allows us to offer complete 100% bi-level urine monitoring for both qualitative and quantitative phases of clinical urine testing.

Quantitative Routine Values are provided for Sodium, Potassium, Glucose, Protein, pH, osmolality & Specific Gravity. Featuring 36 hour room temperature stablility, this new bi-level urine control set, provides negative (normal) and strong positive reactions with urinary chemistry test strips, from five leading manufacturers.

It offers true normal, or negative controls as well as positive controls for such important analysis as: Bilirubin, Leucocyte esterase, Blood, Glucose, Ketones, Nitrates, Phenylpyrvic acid and Protein.

For further information contact Salmond Smith Biolab or **circle 96 on readers reply card.**

SIGMA REAGENTS

Sigma Diagnostics makes reagents that can be used on virtually all clinical batch and random access analysers.

Applications are available for:
Abbott, Centrifichem, Cobas Bio & Mira, Gemini, Guildford, Multistat, Hitachi, Chemetrics 1 & 2, Genesis & Technicon.

Methods for all kits are available on request as is full technical backup and service.

For further information contact Salmond Smith Biolab or **circle 97 on readers reply card.**

NEW B.D.H. pH BUFFER MIXTURES

Recently introduced and designed to complement their range of pH Buffer tablets and 'Colourkey' colour coded buffer solutions is the B.D.H. range of pH buffer mixtures as follows:-

Buffer mixture pH4, 50 sachets per pack each to make 100ml.
Buffer mixture pH7, 25 sachets per pack each to make 200ml.
Buffer mixture pH9, 50 sachets per pack each to make 100ml.

The buffers are accurate to two decimal places and are designed to dissolve very quickly. Therefore, they cater for modern laboratory practice which demands higher levels of accuracy linked with greater ease of use and the buffer mixtures offer both of these advantages.

Available free from their Distributor, the Scientific Products Division of Salmond Smith Biolab are sample packs of these new buffer mixtures, each containing a sachet from each pH range (4,7 and 9) and a leaflet outlining the use of the product.

The B.D.H. pH buffer mixtures offers the convenience of being readily dissolvable and stable buffers which can be made up freshly as required. Accurate to ∓0.02 pH at 25°C, they also offer the facility for Temperature Adjustment as per the charts contained on the package inserts. On a cost per litre basis they fall in between the cost of the B.D.H. buffer tablets and the 'Colourkey' buffer solutions.

For further information contact Salmond Smith Biolab or **circle 95 on readers reply card.**

SITUATIONS VACANT

TECHNOLOGIST — IMMUNOLOGY
Senior Position

Applications are invited for this senior position within the Immunology department of Medical Laboratory in Central Auckland.

The vacancy is for the position of Second-in-Charge and is one of responsibility and challenge.

Salary and conditions of employment will be discussed with each applicant. Application should be made in writing and addressed to:

Personnel Department, Medical Laboratory, P.O. Box 4120, Auckland.

Enquiries per telephone are welcome: Auckland 778-331 Collect.

TECHNICAL STAFF

Medical Laboratory in Central Auckland has vacancies for trained technical staff in both Microbiology and Biochemistry.

Applicants would need to h ave had some practical experience in either field and preferably hold the Qualified Technical Assistants examination, or have completed the Technologists course.

Salary and conditions of employment will be discussed with each applicant. Apply in writing to:

Personnel Department, Medical Laboratory, P.O. Box 4120, Auckland.

Enquiries to Auckland 778-331 collect.

LOCUM WANTED

Chief Medical Laboratory Scientific Officer with ten years experience, currently in charge of Haematology and Blood Transfusion Department at a 900 bed hospital, seeks a locum appointment for one year. AC.V. is available on request. Please write

J. D. Hall,
District Laboratory
South Shields General Hospital, Harton Lane
South Shields, Tyne and Weir, NE34 OPL
ENGLAND

WORK WANTED

CHARGE TECHNOLOGIST — MICROBIOLOGY

A Lower Hutt private medical laboratory requires a registered medical technologist to take charge of their microbiology laboratory. Salary is negotiable but would be up to Grade 3 or 4 for appropriate experience. Please contact:

Dr S. Hatch, Valley Diagnostic Laboratories, P.O. Box 30044, Lower Hutt.

HISTOLOGIST SEEKS POST

English histologist seeks post in New Zealand as a Staff/Grade Technologist. B.Sc. Honours Degree in biology, F.I.M.L.S. in histology. 3½ years work experience in quality assurance and histology. 26 years old, single, New Zealand registration applied for. Please contact:

Mr P. Culbert, 4 Field Way, Hoddesdon, Herts, EN11 OQN, England.

KONTRON ANALYTICAL

SWISS PRECISION

Now available in NZ

UVIKON 860 UV/VIS SPECTROPHOTOMETER

THE END OF COMPROMISE

— After the world-wide success of Kontron Uvikon 810/820 Spectrophotometers the engineering development team at Zurich have now produced the Kontron Uvikon 860 Spectrophotometer which was introduced in Europe earlier this year.

— Rather than list all specifications we would urge those interested in spectrophotometers to read the following press release.

PRESS RELEASE

The KONTRON UVIKON 860 was launched at the Analytica exhibition in April under the heading "UVIKON 860 — the end of the compromise!" this claim based upon the unique combination of intelligent electronics and proven optics.

The intelligent electronics make full use of a video display and RAM curve memory for entering parameters and post measurement calculation.

Entering measurement parameters involves no reading of long complicated instructions or answering any questions. Each parameter is presented to the operator, one at a time, together with its possible values. The UVIKON 860 to have a very simple keyboard. SOFT keys-software defined function keys which appear on the video display — allow the Complete sets of method parameters are stored in parameter memory ready for fast set up of routine conditions.

In addition to the normal measurement modes, λ Fix and λ scan, the UVIKON 860 has special programs for enzyme kinetics, endpoint analysis and absorbance vs time. Also, by using a personal computer the operator has access to the internal commands of the UVIKON 860 and can easily write programs to suit his own application.

All the spectral data is put into the large curve memory which means that decisions about how to handle it can be made after the measurement. Curve expansion, multi curve overlay, curve addition and subtraction, peak determination, derivatization, and area calculation can all be carried out on the stored data. High quality hard copy of the results is provided by the P 800 Printer/Plotter.

But the UVIKON 860 is not just a clever, convenient microcomputer. It uses the high performance optical system which has been proven in thousands of KONTRON Spectrophotometers.

As you might expect from a company such as KONTRON with a strong reputation in UV/VIS Spectrophotometry, the UVIKON 860 has a complete range of sample compartment accessories to make the instrument as versatile as possible.

For further information please contact:

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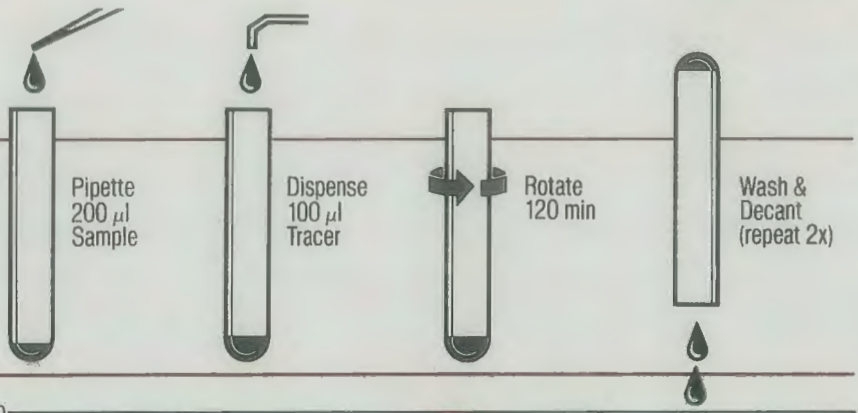

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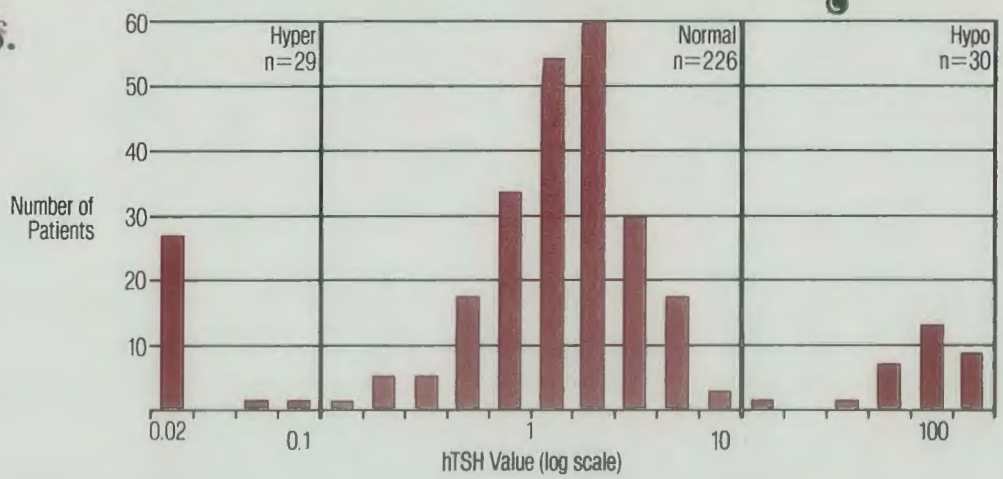

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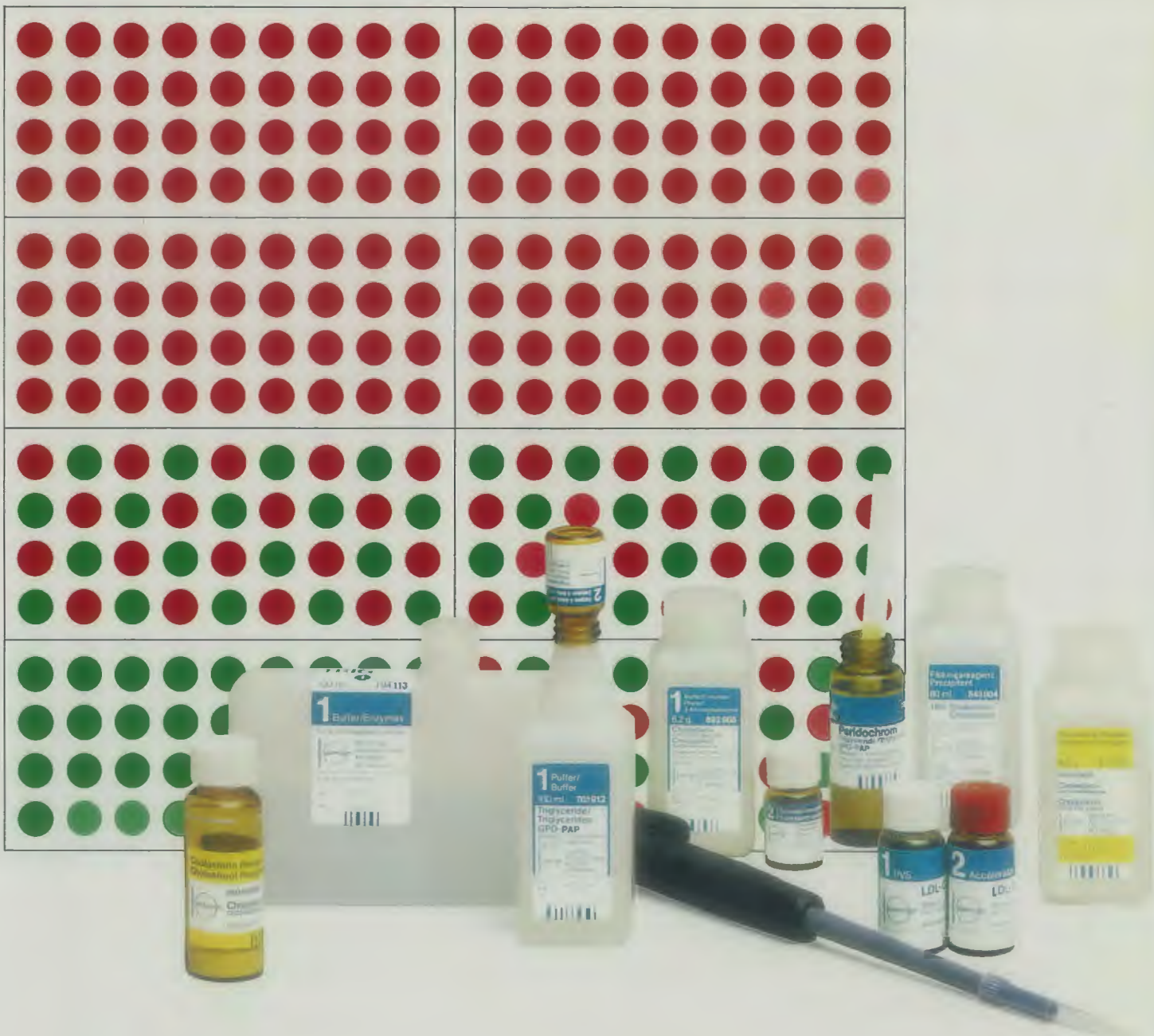

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