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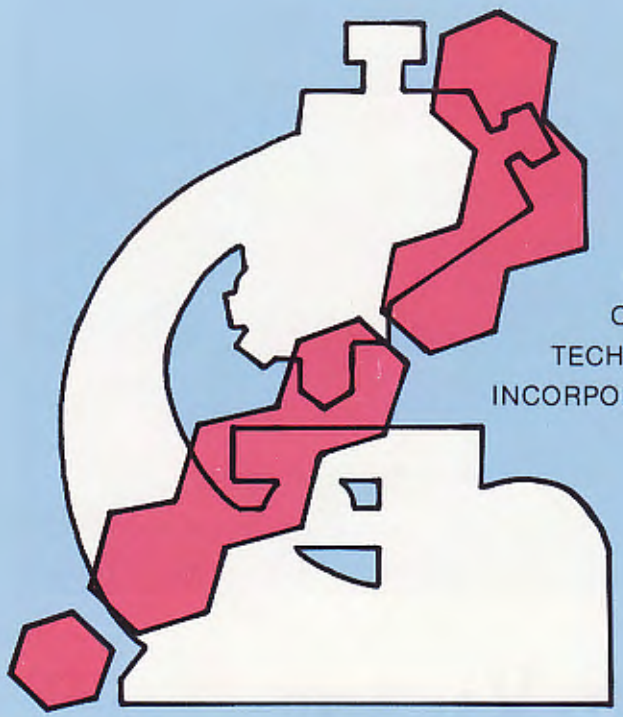

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THE NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY TECHNOLOGY (inc.)

Laboratory
Wanganui Hospital
WANGANUI

19th April 1982

To All Institute Members:

As all members are aware we stood out from the Annual General Adjustment effective from November 1981 and decided to take our case for improved salaries and conditions for all members to arbitration.

The Tribunal application was finalised and lodged on the 12th March. At the point we would have been expecting a response from the State Services Coordinating Committee the decision of the Tribunal regarding the Primary School Teachers case was released.

Their claim and ours (to a major extent) were based mainly on horizontal relativity ie., a comparison with another group of workers within the State Service.

The effect of the Tribunal's decision is that claims which are not based on external counterparts ie., workers in the private sectors' have no chance of success. The other requirement for an increase would be recruitment or retention problems which at present are minimal.

Primary Teachers have decided to test this Tribunal decision in the Court of Appeal. This will be an expensive and long drawn out business which may take more than a year to be finalised.

There is therefore little chance that any case involving horizontal relativity will be heard until the Teachers case is finished.

The State Services Coordinating Committee have made no response to our application but they have indicated that they will not oppose the 9.2% Annual General Adjustment backdated to 10th November last year.

Your negotiations team has decided to withdraw the claim and has requested the Tribunal to make an order to apply the 9.2% AGA with backdating. They will now give consideration to preparing a claim for negotiation in the 1982 round and have made a proposal regarding hours of work and Graduate Technologists salaries.

In making this decision we have indicated that we do not agree with the principles enunciated by the Tribunal.

I believe that our negotiations team have taken the only action available to them at this time.

Yours sincerely,

A.F. Harper
President
N.Z.I.M.L.T.

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DIRECTIONS FOR CONTRIBUTORS

From Vol. 36 No. 1 all papers published will be in the form known as "Vancouver Style" or Uniform Requirements for Manuscripts submitted to Biomedical Journals. Full details may be found in the New Zealand Medical Journal April 11, 1979 No. 633 Vol. 89, pages 259-264 or Medical Laboratory Sciences 1978, 36, 319-328, or from the Editor. The Journal intends to publish a copy of the instructions in 1982.

Intending contributors should submit their material to the Editor, P.O Box 6168, Dunedin, New Zealand. Acceptance is at the discretion of the Editor, and no undertaking is given that any article will be published in a particular issue. The copy deadline for each is the first of the month prior to the month of publication.

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An Inexpensive Radioimmunoassay for Hepatitis B Antigen Detection

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Blood Transfusion Centre, Park Avenue, Grafton, Auckland, New Zealand.

Received for publication 23/11/81

Abstract

A modified micro radioimmunoassay for the detection of HBsAg is described and compared with a commercial radioimmunoassay (Ausria II-125) and a micro "Hepatest" method. The new RIA method is performed in anti-HBs coated PVC micro-titre plates using salvaged ^{125}I-anti-HBs. The PVC-RIA technique is sensitive to 2 ng/ml HBsAg, is inexpensive and has proved useful for mass screening of blood donor sera.

Introduction

Commercially available radioimmunoassay (RIA) tests for the detection of hepatitis B surface antigen (HBsAg) are expensive, especially for Blood Transfusion Centres where large numbers of screening tests must be performed. At the Auckland Blood Transfusion Centre (ABTC) the annual cost to test over 70,000 donors by RIA would be over NZ$70,000 for reagents alone.

Radioimmunoassay is the most sensitive "third generation" HBsAg test available and under optimal conditions can detect 1 ng/ml of antigen. By comparison most passive haemagglutination assays (PHA) have sensitivities varying from 10-100 ng/ml HBsAg. However, the most sensitive PHA tests are also expensive and their costs can exceed those of RIA.

The microhepatest[1] (mPHA) system has a sensitivity of between 30-60 ng/ml of HBsAg and has proved a useful, inexpensive and rapid routine test. However, on a recent survey comparing RIA (Ausria II) and mPHA, the latter test failed to detect all HBsAg positive blood donors. It was decided that with the high cost of commercial RIA kits it would be worth attempting to develop an inexpensive RIA test for routine blood donor screening.

The methodology of Koistinen[2] provided the initial basis for the developmental work. Optimal reaction conditions were determined, resulting in a micro RIA method with good sensitivity.

Materials and Methods

MATERIALS

Disposable, flexible, polyvinyl chloride (PVC) 96 well microtitration plates. Cat. No. 1-220-25 (Dynatech Laboratories Inc.).

Hyper-immune horse hepatitis B antiserum (anti-HBs) (Wellcome N.Z. Ltd. Cat. No. IP23).

Carbonate Buffer (BCCB) 0.05M Na_2CO_3-$NaHCO_3$ pH9.6.

Bovine Serum Albumin (BSA)—Ortho Pharmaceuticals.

Radio Iodinated anti-HBs ^{125}I tagged anti-HBs was obtained from Ausria II kits (Abbott Pharmaceuticals).

Quantitated purified HBsAg. The positive control from the Ausria II kits was a purified solution of HBsAg, concentration 20 ± 5 ng/ml.

PLATE COATING PROCEDURE

100 µl of 1/1000 dilution of the hyperimmune anti-HBs in 0.05M BCCB buffer was added to each well of the PVC microplate.

After 30 mins at room temperature, the plate was emptied of its contents and each well filled with 0.5% BSA-BCCB, and left for a further 30 mins at room temperature. This plate was then washed twice in saline and flicked dry. Plates were either used that day or sealed and stored at 4°C. Quality control was performed daily on the coated plates to ensure that adequate uptake of anti-HBs had been achieved.

TEST PROCEDURE

100 µl of test serum was dispensed into the well of a coated PVC tray. The tray was then sealed with an adhesive cover.

The tray was incubated at 45°C overnight.

The trays were then washed three times in saline and flicked dry.

To each well was added 100 µl of ^{125}I anti-HBs. Incubation was for three hours at 45°C in a sealed tray. The ^{125}I anti-HBs was then recollected and the tray washed three times in saline. With scissors, the individual wells were cut out and placed into tubes for gamma counting, for 60 sec/tube.

CONTROLS

Three 20 ng/ml, two 4 ng/ml, two 2 ng/ml and seven negative control sera were tested with each batch of specimens.

The 4 ng/ml and the 2 ng/ml HBsAg positive control sera were made by diluting the Abbott 20 ng/ml positive control serum, 1/5 and 1/10 in the negative control serum.

CALCULATION

The negative control mean was multiplied by 2.1 to determine the cut off threshold for positive and negative results. The ratio of the positive control (20 ng/ml) mean to the negative control mean, had to exceed 5.0. All counts had the background mean count subtracted before calculations were made.

RECOLLECTION OF RADIOACTIVE ANTI-HBs

After each batch of tests had been completed the ^{125}I anti-HBs was recollected and re-used the following day. As greater than 99% of the blood donors were HBsAg negative most of the radioactive antibody was not consumed during the test procedure and was available for further use. It was stored at 4°C, and quality control procedures were performed daily on this antibody to ensure that adequate amounts of immunologically radioactive antibody were present.

COMPARATIVE STUDIES

14,452 blood donors were tested by mPHA and PVC-RIA. Positives were confirmed by Ausria II by specific inhibition.

The Australian Reference panel was tested by mPHA, PVC-RIA and Ausria II.

QUALITY CONTROL

The daily quality control on the radioactive hepatitis antibody was achieved by counting 200 µl of the material. Counts had to be greater than 80,000 cpm, and by incubating 200 µl of the material with a HBsAg coated bead (Ausab kit from Abbott) for one hour at 45°C. This was then washed and counted. The reagent was acceptable when counts were above 8,000 per minute.

The coating procedure of each batch of PVC plates was monitored by adding 100 µl of radioactive HBsAg (Ausab) to one well of the plate and incubating for three hours at 45°C. This was then washed and counted. Counts had to be above 1,000/minute to be acceptable.

Results

The 2 ng/ml HBsAg positive control serum could always be detected. When the radioactive antibody was fresh, sensitivities of 1 ng/ml could be achieved.

TABLE I

Comparison between PVC-RIA, Ausria II and Microhepatest

1. No. of blood donors tested	14,452
2. No. of blood donors positive for HBsAg by PVC-RIA and AUSRIA II	54
3. No. of HBsAg positive not detected by Microhepatest	2
Increase in detection rate of HBsAg	3.7%
4. False positivity rate:	
Microhepatest: 1.9%	
Ausria II: 0.13%	
PVC-RIA: 0.16%	
5. No. of HBsAg positives which were Ausria II +, PVC-RIA −, = 0	

HBsAg subtypes *ad* and *ay* could be detected, even when the concentrations were low. This was confirmed by the successful testing of the Australian HBsAg Reference Panel which has both high and low concentrations of *ad* and *ay* antigens.

Although new plates were prepared and used daily, it was found that the coated PVC plates could be stored, sealed at 4°C or -15°C for at least six weeks and still retain a 2 ng/ml HBsAg sensitivity.

The radioactive hepatitis B surface antibody could be recollected numerous times. With careful technique and quality control we were able to recollect and re-use the antibody up to 14 times.

A shortened initial incubation method, with an initial 2 hr incubation followed by the second incubation of 2 hr, both at 45°C, gave a sensitivity of 4 ng/ml HBsAg.

Table 1 shows that 54 HBsAg positives were detected in a survey of 14,452 blood donor sera. Two of these positives were not detected by the mPHA system. This is an increase of 3.7% in the detection rate of HBsAg.

The false positivity rate of PVC-RIA compares well with Ausria II and is less than that of mPHA.

No sera found positive by Ausria II were negative by PVC-RIA.

With the average re-use of the radioactive antibody being 10 times, our material costs are reduced to a tenth, to an average of 10 c/test. To this must be added an extra 2 c/test for the cost of other expendable materials. However, a potential saving of at least $50,000 per year could be made on material costs.

Discussion

The commercial costs for RIA, enzyme immunoassay (EIA) and the most sensitive PHA kitsets for HBsAg detection, currently exceed $1.00 per test. As large numbers of blood donors have to be tested annually, any test modification that can reduce costs and yet retain equivalent sensitivity is a useful advance.

Modifying commercial available reagents and using microtechniques can dramatically reduce costs for HBsAg and Anti-HBs detection[1, 3]. With the successful micro-modification of a radioimmunoassay method, it is now possible to use this technique for HBsAg at minimal cost.

However, a disadvantage of RIA procedures is the counting time involved. This can now be obviated using 12 or 16 channel gamma counters. For example, our normal daily workload of 400 donors could then be handled in 25 minutes, as compared to 7 hrs using a single channel counter.

Although the technology of the PVC-RIA system has proved successful, the routine introduction of RIA methods requires careful forethought. In areas of high European population predominance where HBsAg rates are much lower than in the Auckland region[5] and given the very low percentage increase in HBsAg positive donors detected by PVC-RIA or Ausria II over mPHA, it is debatable whether a RIA procedure, whether commercial or "home-made", will result in a significant increase in HBsAg detection rate in all transfusion regions. A stimulus to introducing more sensitive methods for HBsAg may come if post-transfusion hepatitis B remains a clinical problem or if the Commonwealth Serum Laboratories should define at what absolute level of HBsAg detection sensitivity, plasma would be routinely accepted for fractionation.

Acknowledgements

To Dr D. G. Woodfield, Medical Director.

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The Use of Cellulose Acetate as a Supporting Matrix for Counterimmunoelectrophoresis

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Received for publication November 1981

Abstract

The use of cellulose acetate membranes (CAM) as an alternative supporting matrix to agarose in counterimmunoelectrophoresis (CIE) for the detection of rotavirus antigen is described.

Introduction

Counterimmunoelectrophoresis (CIE) for the detection of either antigens or antibodies is usually carried out in either agarose or agar supporting media.[1, 2] Following electrophoresis unless precipitin lines are apparent in the unstained gel, it is normal practice in our laboratory to stain the gel to increase the sensitivity of the technique. In our experience this involves a time consuming washing step (8-24 hours), to remove unwanted soluble substances such as proteins which can interfere with the formation and or detection of a precipitate.[2]

In our laboratory we use CIE as an aid for the detection of antigens of *Haemophilus influenzae, Streptococcus pneumoniae,* group B Streptococcus and also for the detection of rotavirus. Recently we compared the use of cellulose acetate membranes (CAM) with agarose for CIE[3] and obtained comparative results within two hours instead of the 24 hours needed for a stained gel.

The following is a description of our method with particular reference to rotavirus:

Materials and Method

Tris-barbital buffer was produced by dissolving 5.8 g of Tris (hydroxymethyl) methylamine, 2.5 g Diethylbarbituric acid, 9.8 g Sodium barbitone, 0.4 g Calcium lactate in distilled water, making up to 1.0L and adjusting the pH to 8.6.

Agarose slides were produced by dissolving 1.0 g agarose B (Pharmacia fine chemical AB Uppsala Sweden), and 4.0 g dextran T 70 (Pharmacia fine chemical AB Uppsala Sweden), in 100 ml of Tris-barbital buffer and dispensing 3.0 ml of the cooled suspension on to 76 × 26 mm microscope slides. When set, 3.5 mm wells were produced using a No. 1 cork borer.

CAM Titan III (Helena Laboratories, Texas, USA), were soaked in Tris-barbital buffer for 30.0 min before use. They were then withdrawn and blotted dry before 8.2 mm depressions (for antigen) and 6.0 mm depressions (for antibody) were made using No. 5 and 3 cork borers respectively.

Antigen consisted of the supernatant of 20.0% (w/v) solution of faeces made up in 0.05 m phosphate buffered saline (PBS) pH 7.2, centrifuged at 3000 G/30 min.

Rabbit anti-rotavirus antibody (1 mg/ml) was a generous gift from Dr M. Schousboe, Department of Microbiology, Christchurch Hospital, Christchurch, New Zealand.

The washing solution consisted of pH 7.2 PBS + 1.0% w/v Tween 20 whilst the staining solution was Coomassie Brilliant Blue R-250 (CBB) (CBB 5 g, 95% ethanol 450 ml, glacial acetic acid 100 ml, distilled water 450 ml). Both the agarose slides and CAM were destained in the above solution without the CBB.

For the agarose slides 20 µl of both antigen and antibody were added to the cathode and anode wells respectively. When using CAM, 10 µl of antigen was used in the No. 5 depression and 5 µl of antibody in the No. 3 depression. Whatman No. 1 chromatography paper soaked in Tris-barbital buffer served as wicks and electrophoresis at a constant current of 4 m A/slide or CAM for 45 min each was carried out using a Shandon Volkham power unit.

All manipulations should proceed quickly to prevent drying out of the CAM and undue diffusion of both antigen and antibody.

After electrophoresis the CAM was washed for 30.0 min, rinsed in distilled water, stained in CBB for 5.0 min, destained for 20.0 min and then examined. The agarose slides were washed for at least 8.0 hours, compressed between filter paper, dried at 45°C, stained in CBB for 10.0 min, destained for 20.0 min and then examined.

Results and Discussion

Although several different staining methods for CAM were tried, CBB proved to be superior to Napthalene black, Nigrosin and Ponceau S. In all specimens examined no detectable differences in the formation and appearance of precipitin lines between CAM and agarose slides have been observed. Furthermore the convenience, simplicity and rapidity of CAM have proved advantageous to conventional agarose slides. This is of particular significance for CSF or other urgent specimens where a rapid result is useful in the clinical management of the patient. For example using CAM, the routine detection of rotavirus antigen by CIE can be completed with two hours instead of 24 hours required for conventional agarose CIE.[4]

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Centromeric Constitutive Heterochromatic (C-bands) in the Human Karyotype

D. R. Romain, FIMLS, FNZIMLT.
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Abstract

A technique for the demonstration of centromeric constitutive heterochromatin is described along with a review on C-band heteromorphisms found in the human genome.

Introduction

Constitutive heterochromatin in man is equated with the C-band positive regions in the human chromosomes. Craig-Holmes *et al.*[1] classified the heterochromatin into four types (1) centromeric heterochromatin (involving all centromeres, including the Y chromosome); (2) acrocentric heterochromatin (present in the short arms of the D and G group chromosomes); (3) secondary constriction heterochromatin (proximal long arms of chromosomes 1, 9 and 16), and (4) Y heterochromatin (distal long arm of Y chromosome).

In these terms, the human genome has about 20% of its DNA as C-banded heterochromatin,[2] which is thought to contain highly repetitive DNA sequences consisting of both simple sequence and more complex satellite DNA sequences, together with satellite-like sequences.[2] The function, if any, of highly repeated DNAs in constitutive heterochromatin is at present unknown.[3] Constitutive heterochromatin is not transcribed and, therefore, does not result in gross phenotypic changes, although this does not mean it is without genetic effect.[3]

Analysis of the C-band patterns in the human genome show variation: such variations are termed "heteromorphisms" or "polymorphisms" and are most prominent in the secondary constriction regions of chromosomes 1, 9 and 16 (Fig. 1). By-and-large, these heteromorphisms have been shown by twin and family studies to segregate in the expected Mendelian ratio (1:1),[4, 5] although exceptions do occur.[4]

There would also seem to be a difference in the distribution of heteromorphisms among different racial groups[10, 11] but, to date, no significant differences between males and females for size and position heteromorphisms.[12–15]

Perhaps the most striking feature of heteromorphisms of constitutive heterochromatin has been the finding of pericentric and partial inversions of chromosome 9 (Figs. 1 and 2). Depending on the study and the staining techniques used, the reported incidences in the population can be seen to range from 1% to 5%.[16–21]

The incidence of inversion in the centromeric constitutive heterochromatin of chromosomes 1 and 16, on the other hand, has been seen to be of a much lower level. Although studies for

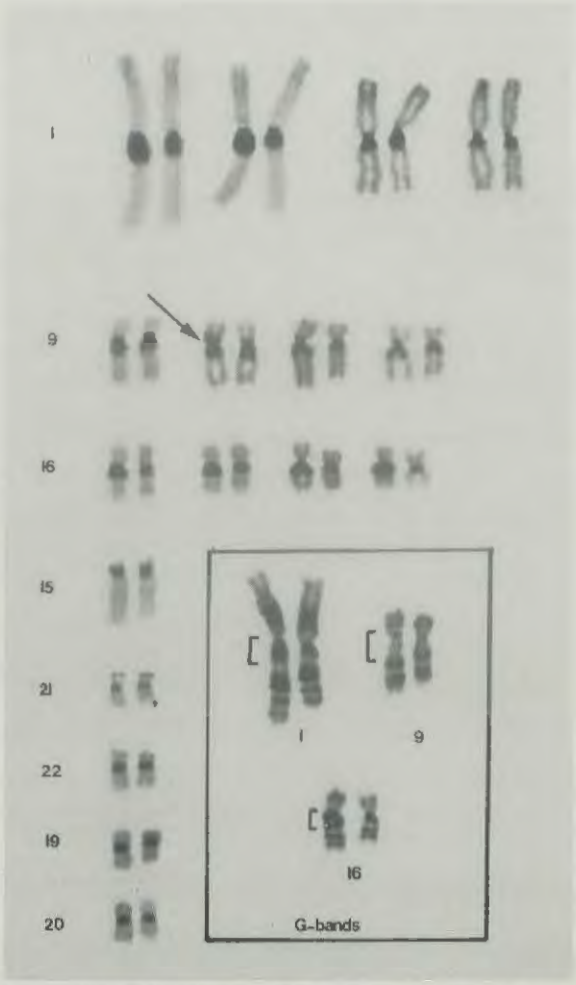

Fig. 1. C-band heteromorphisms: arrow indicates partial inversion. Inset: G-bands of heteromorphic regions in chromosomes 1, 9 and 16.

polymorphisms have seemed to have concentrated on chromosomes 1, 9 and 16, they have also been instrumental in showing heteromorphisms in chromosomes 19, 20 and the D and G groups[1, 19, 22] (Fig. 1). The procedure by which constitutive heterochromatin (C-bands) in the human genome could first be identified was introduced by Arrighi and Hsu[23] following on the observations made by Pardue and Gall[24] with reference to their work on mouse chromosomes.

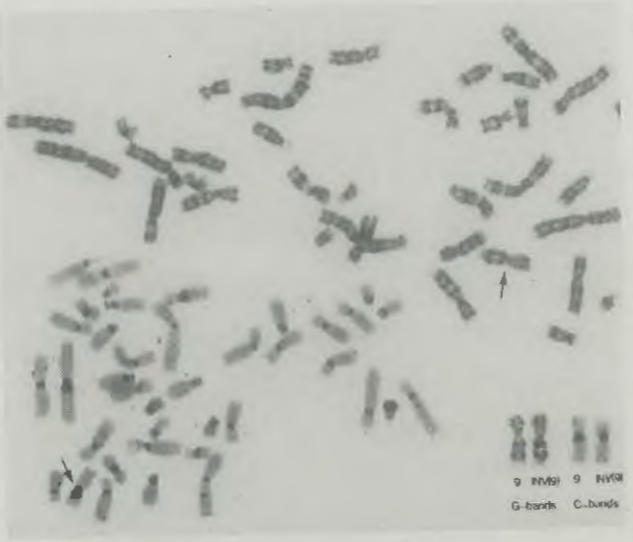

Fig. 2. Partial C- and G-banded karyotypes showing pericentric inversion of chromosome 9.

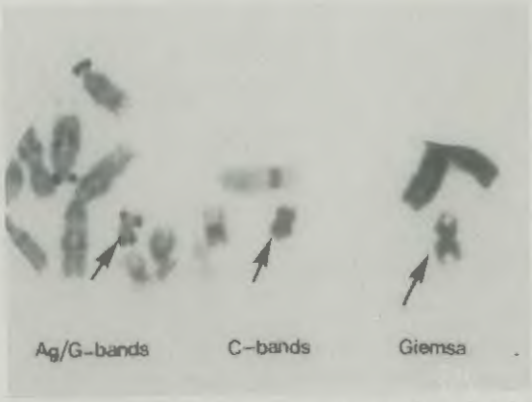

Fig. 3. Conventional Giemsa stain, Ag/G and C-bands showing bisatellited microchromosome.

Pardue and Gall[24] noted that the centromeric regions of the mouse chromosome were more densely stained than the rest of the chromosome body. They considered the centromeric areas of the mouse, heterochromatic. The procedure of Pardue and Gall[24] consisted of exposing fixed chromosomes to 0.07N NaOH for five minutes, then 2 × SSC (0.3M NaCl, 0.03M trisodium citrate) at 66°C overnight. The treatment was often referred to as a denaturation-renaturation procedure. There are reasons, however, to believe that this is not the primary mechanism of C-banding.[25] In an extensive study of the mechanisms of C-banding, Comings *et al.*[26] showed that the feature most clearly associated with C-banding was the extraction of non-C-band DNA and retention of C-band DNA on the chromosome. The Giemsa stain was simply side-stacking on the DNA that remained, resulting in intense staining of the constitutive heterochromatin.

The methodologies most commonly in use in routine cytogenetic laboratories are those based on techniques by Arrighi and Hsu,[23] Sumner,[27] and Salamanca and Armendares.[28] In this laboratory, a modification of the technique by Salamanca and Armendares[28] is employed.

Materials and Methods

Method for C-bands of metaphases from venous blood, marrow, fibroblast and amniotic cell cultures.

SOLUTIONS AND REAGENTS

1. HCl: Prepare 0.2N solution
2. Working solution of 2 × SSC
   Sodium chloride 17.53 g
   Trisodium citrate 8.82 g
   Deionised or Dist. H_2O 1000 cc
3. Giemsa R66 stain
   5 ml of Giemsa R66 made up to 20 ml with pH 6.8 Sorenson's phosphate buffer
4. Leishman stain
   5 ml of Leishman stain made up to 20 ml with pH 6.8 Sorenson's phosphate buffer
5. $Ba(OH)_2$: Prepare a 0.07N solution

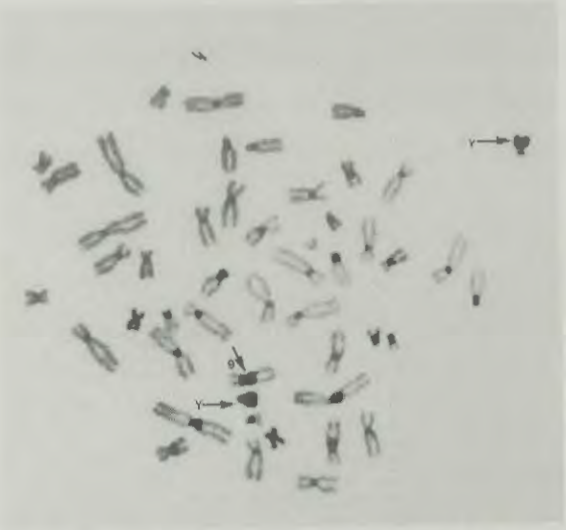

Fig. 4. Karyotype showing the two Y chromosomes in a 47,XXY male. Note also partial pericentric inversion of one chromosome 9.

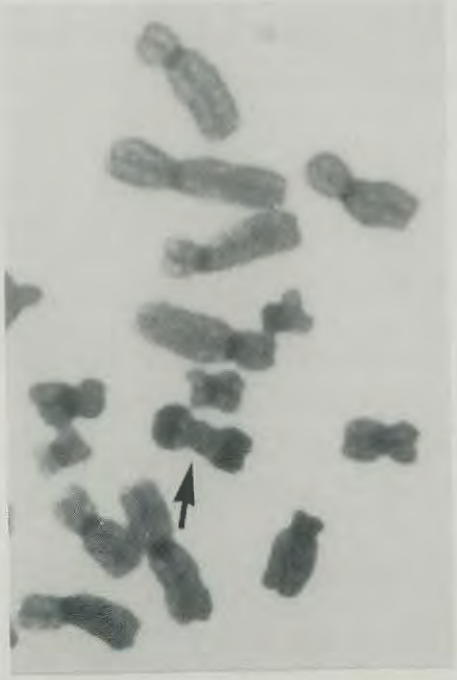

Fig. 5. Partial karyotype showing an isochromosome of Y.

MATERIALS
1. Coplin jars
2. 37°C water-bath
3. 60°C water-bath
4. Staining rack

PROCEDURE
1. Chromosomes are harvested in the normal way, spread by the drop technique and slides allowed to dry in the air.
2. Place the slides in 0.2N HCl at room temperature for 60 minutes (original method says 30 minutes).
3. Rinse × 3 in Dist. H_2O.
4. Place the slides in 0.07N $Ba(OH)_2$ at 37°C for 20-40 minutes.
5. Rinse × 3 in Dist. H_2O.
6. Place the slides in working solution of 2 × SSC at 60°C for 90-120 minutes.
7. Rinse × 3 in Dist. H_2O and × 1 in pH 6.8 Sorenson's phosphate buffer.
8. Stain in Leishman or Giemsa for 15-20 minutes, wash rapidly in 6.8 buffer and blot dry.
9. Mount in D.P.X.

NOTES ON PROCEDURE
1. Slides which have been left for five days or longer after spreading produce the best results.
2. Slides not left long enough in 0.2N HCl will still show G-bands.
3. If slides are left too long in $Ba(OH)_2$ the chromosomes will swell.
4. Staining times in Giemsa or Leishman will vary from batch to batch. Over-staining will obscure clearly defined C-band chromatin: lean towards slight under-staining for good photographic results.
5. Flame-dried preparations will not give such goods results as air-dried slides.
6. Always put through control slide of same age when not familiar with procedures. Except for staining, all procedure is carried out using Coplin jars.

Results and Discussion

The C-band techniques have much value in the cytogenetic laboratory as far as clinical medicine and research are concerned. They have been helpful in the identification of pericentric inversions, particularly in the centric regions of chromosomes 1, 9, 16 and 2.

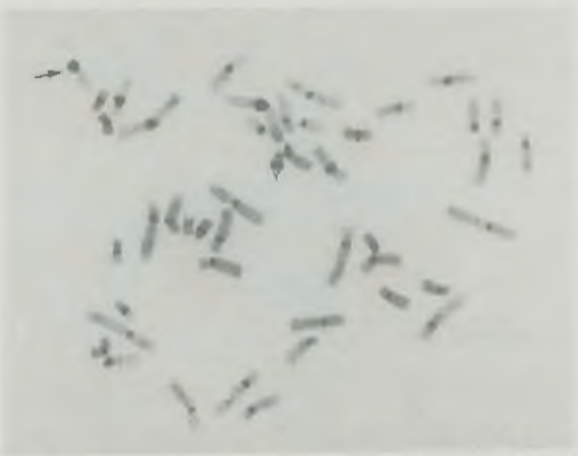

Fig. 6. Karyotype showing a translocation involving the terminal segment of the Y chromosome.

They have been used to determine the parental origin of supernumerary chromosomes in trisomic infants and foetuses. They have assisted in the assignment of genes to specific chromosomes and have aided the understanding of microchromosomes resulting from Robertsonian translocations[29-31] (Fig. 3). They have provided assistance in identifying the Y chromosome[32] (Fig. 4) and structural rearrangements of the Y chromosome (Figs. 5 and 6), instead of the employment of expensive fluorescent equipment. Likewise, they have given insight into the evaluation of

Fig. 7. (a) Partial karyotype showing a ring chromosome of the Y chromosome. Note single centromere. (b) Partial karyotype showing dicentric (two centromeres) ring chromosome of Y.

Fig. 8. Dicentric (two centromeres) recombinant chromosome from an isochromosome for the long arm of X.

the heteromorphisms present in the population, and their relationship to clinical conditions—of which more will be discussed. Obviously, too, they have been able to demonstrate dicentric chromosomes (two C-band regions) (Figs. 7 and 8) resulting from translocations, isochromosomes and ring chromosomes, supporting the postulations in some instances as to their formation. The fact that the C-band techniques have shown C-band polymorphisms to be present in the human genome has seen many studies conducted in their relationship to clinical conditions. Foremost in these assessments has been their application in chromosome studies of the mentally retarded.[10, 33-40] The significance of these reports is still not conclusive, except to say that more informative data is required. Likewise, in the field of congenital malformations,[41] the relation between heterochromatin variation and risk of malformation is in need of further exploration. Recent observations have pointed out the increased frequency of heterochromatic variants in patients with a variety of malignant diseases[42-46] but, again, caution must be exercised in

their interpretations. Perhaps the most significant data indicating correlation between clinical manifestation and heteromorphisms, including the pericentric inversions, has been in the studies on reproductive failure and foetal wastage. The results, for example, show that a large Y chromosome (Yq^+) in the father seems to carry an increased risk for abortion.[47] Likewise, numerous reports associating pericentric inversions for 9 with reproductive problems is widely acknowledged.[48]

Much research continues to flourish with regard to the C-band regions of human chromosomes.[49-52] Newer techniques are being applied to unravel the characterisation of DNA sequences, for example. All this leads us to conclude that the future prospects in medical cytogenetics continue to be exciting.

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CASE REPORT

A Cord Blood Sample with a Positive Direct Antiglobulin Test due to Anti M.

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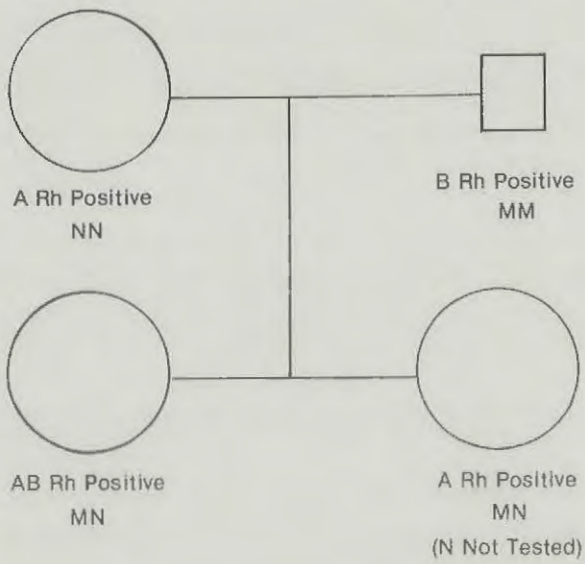
Abstract
Anti M was eluted from the cord cells of a stillborn infant though death was probably due to placental insufficiency. The antibody on the cells was IgG and may have affected the infant if it had lived.

Introduction
Anti M is a relatively rare antibody first identified in human serum by Wolff and Jonssan in 1933. Anti M can be a naturally occurring or an immune antibody and has been found as an auto-antibody. It has been implicated in haemolytic transfusion reactions and haemolytic disease of the new-born although the latter is extremely rare.

This is a short report on an example of Anti M which contained both IgM and IgG reactivity. Although the post mortem result did not implicate this antibody with the death of the infant, had gestation been able to proceed past seven months it may well have been important.

RESULTS OF FAMILY BLOOD GROUPS



Case Report
A 19-year-old woman was transferred from another hospital when complications were suspected. She had no history of blood transfusions and no irregular antibodies had been reported during her first pregnancy or during this pregnancy. Routine compatibility testing prior to delivery detected the presence of an antibody, Anti M, the patient being group A Rh positive, M negative.

The infant was born premature and stillborn and a direct Coombs test was done on the cord sample. Samples were then obtained and tested on the father and other child.

SEROLOGICAL FINDINGS
The direct antiglobulin test on the cord blood was a weak positive, both with broad spectrum and monospecific antihuman IgG reagent. The cord specimen was grouped as A Rh positive, M positive. The Rhesus D type was checked using a saline reacting antiserum. Using the elution method of Landsteiner and Miller, Anti M was detected and identified in the eluate.

RESULTS OF FAMILY BLOOD GROUPS

Conclusion
The results of the post mortem indicated that placental insufficiency probably from disease in the maternal vasculature was the cause of death. Although Anti M was not implicated in the death of the infant, the fact that it was present and gave rise to a positive direct Coombs test makes the case interesting and worth reporting.

Acknowledgements
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TECHNICAL COMMUNICATION

Trichomonas Vaginalis — A Comparison of Acridine Orange Stain and Direct Wet Film Examination

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Received 1 March 1982

A flagellate protozoan parasite, *Trichomonas vaginalis* may colonise both male and female genito-urinary systems. Many women, maybe up to 25% become symptomless carriers of this organism, but others, when infected, suffer from an acute vaginitis with a characteristic frothy discharge. Laboratory diagnosis is usually made by recognition of the organism in material collected by a vaginal swab. Until recently, this laboratory relied on direct microscopic examination of a wet, unstained preparation from a vaginal swab. Because of the low isolation rate when compared with that published by Levett[1] 1980, several other methods were investigated. As a result the acridine orange stain was introduced.

The method used was that described by Fripp and Mason.[2] It was found that the swab should be gently rolled onto the slide so as to reduce the amount of non-specific fluorescence. It was also found that ordinary new plain slides were suitable. There was no need to use the special slides described.[2] The slides were briefly rinsed successively in 70% alcohol, distilled water, 1% acetic acid, more distilled water, and then immersed for three minutes in acridine orange. After washing in phosphate buffer, the slides were decolourised for two minutes in calcium chloride. The slides could then be left in the buffer in the dark for up to six hours until there was time to examine them. An ultra-violet light source for fluorescence was used in this study but a Halogen light source is just as satisfactory for the microscopy. *Trichomonas vaginalis* and other parasites fluoresce a brick red colour with a yellow nucleus. Epithelial cells and polymorphonuclear cells fluoresce a bright green. Bacteria and yeasts fluoresce a brick red colour.

In September 1980, 763 specimens were examined both by the wet film method and the acridine orange stain. Eleven specimens were positive by the wet film method and 33 were positive by the acridine orange method. Examination of the bench workbook for a similar period 12 months previously showed that 884 specimens had been examined and 20 had been reported positive for Trichomonas. In September 1981 when the acridine orange had been in use for a year the workbook was again examined over a similar period. One thousand and thirty-three specimens were examined and it was found that 42 positive identifications for *Trichomonas vaginalis* had been made. The figures showed that we had increased our isolation rate from 1.9% to 4.2%. During the period when specimens were examined by both methods all specimens positive by the wet film method were also positive by the acridine orange method.

In 1980 Levett[1] reported the results using five different methods for identifying *Trichomonas vaginalis* from vaginal swabs. He reported that the wet preparation was the least effective way of identifying Trichomonas when compared with a Leishman stain, the Diff-quick haematological stain or by culture. Levett[1] reported that the acridine orange stain gave twice as many positive results as any of the other methods. The results reported in our study are in agreement with those of Levett in that they confirm a 100% increase in isolation rate by using the acridine orange stain.

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MANAGEMENT

Are You Receiving Me?

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Communication is more than just saying or writing words for if we speak or write and our meaning is not understood we have in fact not communicated at all. True communication is the ability to convey ideas and meanings to another person without them losing or gaining anything in the transmission. Flippo[4] defined it as 'the act of inducing others to interpret an idea in the manner intended by the speaker or writer'. It has been said that listening is the other half of speaking and to be really effective communication must be a two way process with a free interchange of ideas and imformation

Klemmer & Snyder[6] carried out a large study of the time spent in communicating by the staff of a research and development laboratory. Several different sections of staff were monitored and the average percentage of the working day spent in various activities calculated. For the 900 + laboratory staff the results were as follows:

Face-to-face conversations	27%
Telephone conversation	5%
Reading	8%
Writing	10%
Working with equipment	43%
Office chores	2%

The balance of the time was spent in personal activities variously defined and in thinking or walking about. Their conclusion was that communication is the major activity of technical, professional and administrative personnel. Aurelius[5] put the estimate of time spent on communication processes even higher, ranging from 75 to 90 percent of our working hours. It must therefore rank as a very important subject to any manager. Management after all entails getting things done through others and in order to achieve this it is essential to communicate with them. Any appreciable mis-

understanding about what someone is required to do will lead to an appreciable degree of error in the carrying out of the task. Successful interactions on the other hand will reduce uncertainty and provide a medium through which activities of the organisation can be carried out. Because we are all continuously involved in the process of sending and receiving communication signals we often blithely assume that we are experts in the process and have nothing to learn.

The State Services Commission[1] in a booklet called 'Person to Person' pointed out that good communication doesn't just happen—it must be worked at. Every day in the laboratory we have dealings with people in three ways.

(1) Face-to-face—orderlies arrive with specimens or to collect material for delivery elsewhere, medical and nursing staff come with enquiries, and patients present for tests. Are they made to feel as though they are intruders and you are in a hurry to be rid of them or is each one treated courteously and competently? Is the information you are handing out correct or 'off the top of your head' because it is too much trouble to go and check? It is very easy to brush off complaints without following them up and explaining why something happened and if necessary apologizing. Laboratory jargon with its abbreviations and pet terms can be very bewildering to the uninitiated. A new staff member in Chemical Patholoy told to use the Cal from the SMA asked me rather tartly to please explain myself. A more junior and less forceful newcomer would probably have spent a miserable half hour trying to decipher the instructions. Patients are asked if they have brought a fasting specimen with them and may be unsure about either term. One patient I well remember fasted overnight for a glucose tolerance test then proceeded to eat hard jubes for the duration of the test because 'I was only told not to eat breakfast'.

(2) Telephone enquiries—always keep a notepaper and pen next to the phone, identify yourself clearly and take note of who is ringing. I learnt this lesson as a young girl, daughter of the manse and frequently responsible for taking messages in my father's absence. On one memorable occasion a parishioner rang with the message that her mother had died and could the funeral take place the following Tuesday. I carefully checked his diary, okayed the date and passed the message on, minus the name of the dead women. Phone calls to several undertakers fortunately identified the corpse. How often in the laboratory are messages passed on as 'some doctor rang' or 'there is an urgent test coming from a patient in 5A' but the essential details which would allow further contact are missing. If you are giving out results or other information allow time for the message to be written down and if locating the information will take some time say so and offer to ring back. If, on the other hand, the caller elects to hold on while you find the details mind what they can hear. In our laboratory we have had long-standing problems with several clinics who seem incapable of matching patients' results with their files and they ring up wanting details from months before. Laboratory staff are inclined to get rather short but a loudly muttered 'it's that silly old b..... from !!!!! again' which was clearly audible at the other end did nothing to improve already strained relations.

(3) Written communication—a letter is a permanent record and care should be taken to make them accurate, prompt and brief. Copies of outgoing mail should be kept and filed in a locatable manner together with incoming mail for a set period of time (for some types of correspondence this may be years). As few laboratory managers are fortunate enough to have a secretary, one large filing cabinet and a good degree of organization are essential prerequisites. All correspondence must be authenticated and locatable. If you wrote to the hospital board some months ago about some detail of laboratory safety and nothing has been done it is important to be able to locate the original letter before proceeding. That person who contacted you six months ago about the possibility of part-time work might still be available if you could only find the letter.

Calander[2] stated that 'leadership takes place through communication and poor communication means poor leadership.' For a laboratory to run smoothly with the minimum of conflict there must be full communication downward from the laboratory manager to all staff, upward from the staff to the manager and horizontally between employees of equal status.

The downward flow of information is often regarded as the easiest to maintain, consisting as it does largely of instructions and directions. There must be formal channels existing for the downward flow or some groups or individuals are liable to be missed. The easiest and most efficient way to organize this in the laboratory is to hold regular planned meetings of all staff. For such meetings to be effective an agenda should be prepared and distributed a day in advance to allow people time to prepare and put forward ideas. A typical agenda is shown in figure 1. By holding meetings at a regular time they will become accepted as part of the laboratory routine and become a valuable vehicle for discussion and information interchange. A time must be selected which best suits the largest number of staff bearing in mind that the laboratory cannot be left unattended and that night workers and those on day release should be able to attend. Late afternoon is generally the time when the bulk of the work is through and the minimum of disruption will result. The meeting does not require to be lengthy and the task of the laboratory manager is to keep discussions to the point while encouraging all staff to participate. By keeping some degree of formality it is possible to keep the more garrulous members of the staff in check while giving the more reticent a hearing. After the meeting is over the manager can then evaluate and summarize the various points dealt with, record approaches to problems and use the information in planning.

CHEMICAL PATHOLOGY STAFF MEETING

15 DECEMBER 1981,

TEAROOM, LABORATORY SERVICES
4.15 P.M.

AGENDA

1. Call and Shift Roster	—utilisation of laboratory assistants —weekdays Sunday-Friday night —weekend shift 8 a.m.-midnight
2. Special Test Directory	—amendments complete
3. Staff Distribution 1982	—features —possible staff savings
4. SMA 6.60 parts	—ex-Wellington Hospital
5. Data Processing Project	—D.P. Division involvement
6. Test Developments	—cholesterol —urine protein —manual calcium method —cortisol —progesterone
7. Word processor	—Procedure Manual —Laboratory Services—Users Guide
8. Checking of Result Reports	—new procedure

Fig. 1.

Garnett[3] classified four subjects for consideration at such meetings and called them the four P's—'progress', 'people', 'policy', and 'points'. Progress reports on projects which are under way in the laboratory are of interest to all staff and may be presented for instance by an individual who is working on setting up a new method or by a project group working on revamping the reporting system. News of what is happening to people is of general interest and new appointments, examination successes or other achievements can be brought to their attention as soon as possible, not left to filter through from other departments or appear in the media. The final P is points of interest or relevance to the job and could include pertinent journal articles or case histories of interest in the preceding week. Once the laboratory meeting has become an accepted vehicle for disseminating information and tackling problems staff will feel free to bring requests for inclusion and the interchange becomes upward as well as downward.

The upward flow of information is a more difficult avenue to follow and indeed Calander[2] maintained that 'the upward path is seldom travelled'. Pleasant matters are always more likely to be communicated upwards than unpleasant ones, achievements rather than information about errors—particularly if they reflect on the competence of the individual concerned. We talk glibly of open door policies but it is a rare individual whom all staff can approach sure of a fair and unbiased hearing and secure in the knowledge that what they say will not be the subject of conversation at the next teabreak. Hierarchy is very conducive to concealment and misrepresentation because even if the initial message is accurate and clear it may be alte red or even completely blocked by other individuals in the communication chain. For this reason it is vital that the laboratory manager maintains communication channels as direct and short as possible with all staff. The grievance procedure should be familiar to all staff and should make provision for appeal beyond their immediate superior. A manager has to be skilled in the art of counselling because there will inevitably be occasions when emotional conflicts in the workplace will necessitate intervention. People are not machines, their behaviour and productivity in the workplace is strongly influenced both by relationships at work and what happens to them outside work. A shaky marriage, problem teenagers, or alcohol abuse may have just as much influence on results as a machine malfunction and the effective manager will pay due attention to the 'people' aspect of the job and maintain a true open door policy. People's opinions and problems must be listened to and dealt with and their feelings respected at all times.

Communication between peers is the third major area of importance. Colleagues are not opponents and can provide social support not available elsewhere in the organization. A departmental heads monthly assessment meeting can go a long way towards problem solving, conflict resolution and information sharing. There is no substitute for face-to-face consultation to avoid misunderstandings so wherever possible forget the internal telephone and go and see the person concerned. Revans[7] in a series of studies relating to communication and change in hospitals in the United Kingdom found that human relationships and communication were the two areas that gave the most ground for criticism throughout hospitals and there was a need for increased contact, particularly among senior staff.

Having considered the formal channels of communication over which one has some degree of control it is important not to forget that informal channel, widely known as 'the grapevine'. The formal command chain is largely determined by the chain of command but the grapevine owes its existence to physical contiguity and group affiliations. Because it cannot be controlled it is often regarded as a bad thing which should be discouraged at all costs, but in point of fact it can be influenced. Davis[3] made an intensive analysis of the grapevine in a manufacturing company. In his study he noted that the grapevine is highly selective and discriminatory. News was not passed on if it was learnt late (who wants to admit they did not know?) and it was not found to operate away from the workplace. It is very rapid—try keeping a job appeal or a pregnancy secret—and often very accurate. The grapevine can be utilized by telling people about what will affect them and what they want to know, and tell them soon before the rumours have a chance to begin. There is very little information which actually requires to be confidential and if staff are given full access to all other information they will respect confidentiality when it is imperative.

Good communication does not just happen, it has to be worked at and built on so that it becomes an integral part of the workplace. The laboratory functions as a team planning and working together and such a group will only be effective if they are kept informed.

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LETTER TO THE EDITOR

Dear Sir,

Measurement of direct bilirubin by diazo techniques is subject to wide inter-laboratory variations due to a multitude of methods and modifications available and the absence of any direct bilirubin standard. This fact is well documented.[1, 2, 3, 4, 5] Experience in our own laboratory has also supported this, a direct method based on Jendrassik and Grof's technique revealed considerable differences between manual and automated techniques and at this stage we are not performing direct bilirubin assays.

A direct bilirubin result provided by the laboratory may have considerable importance placed on it by clinicians when considering exchange transfusions of neonates. Admittedly the result is one of many factors considered but for a result to be provided in any situation when it is uncertain what is being measured is not acceptable. Depending on the method chosen a laboratory may be measuring some of the direct bilirubin in a sample, all of it or all of it as well as some indirect.

It is possible to standardise using an artificial standard, 1-Napthyl Ethylenediamine Dihydrochloride,[6] compared with a pool of known direct bilirubin, some laboratories may in fact be doing this, but how do they obtain a pool of known direct bilirubin? Watkinson *et al.*[5] in a recent study found that laboratories in Australia and New Zealand are unable to accurately report conjugated bilirubin results, they state results should be ranked as follows: (umol/l) 25. 25-50. 50-100. 100-150. 150-200.

They maintain that this approach should be adequate for patient care and not lead to over interpretation of re sults. I do not agree with this. An example given in the same paper shows a sample assayed for direct bilirubin by 75 laboratories, gave a range of results so spread that one or more laboratories results would fit into four of the above ranks! Two other examples given filled two and three ranks. This is definitely not adequate for patient care, and I suggest that no diazo technique is suitable for assay of direct bilirubin.

Another approach is to measure the indirect bilirubin using an acetone extraction/spectrophotometric method measuring absorbance at 460 nm. This method was first described in 1924, modified in 1941 and 1956[7] and has been mentioned in recent publications[4, 8] as superior to diazo techniques. It is also claimed to be better than methods based on spectrophotometry of serum at one or more wavelengths, which should be regarded with reservation due to the variability of the bilirubin-albumin spectrum.[4]

Standardisation is achieved using commercial bilirubin which is all indirect reacting.[9] This to me seems the method of choice.

I would be most interested to hear comments from those laboratories still performing direct bilirubin by diazo techniques as to how they justify this assay. Any constructive comments on the other assays available would be most welcome.

Yours sincerely,
Rob McKenzie,
Biochemistry Department,
Nelson Hospital.
16/3/82.

References

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7. Mertz J. E., West C. D., A Rapid Micromethod for the Determination of Indirect Bilirubin. *American Journal Diseases of Childhood* **19**, 91 (1956).
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BOOK REVIEWS

Microbiological Methods. C. H. Collins and Patricia M. Lyne, London. Butterworths. Copy supplied by Butterworths N.Z. Ltd, C.P.O. Box 472, Wellington. $ 36.50

Technologists who attended the recent NZIMLT Conference in Wellington were impressed by the practical down-to-earth addresses given by Mike Collins. This approach is also apparent in his textbook *Microbiological Methods*. First published in 1964, the current fourth edition was printed in 1976, and reprinted with additions in 1979.

The book is a soft covered volume consisting of 513 pages divided into 33 chapters. Presentation and layout are good. The first 52 pages are devoted to the prevention of laboratory acquired infections. This is a particularly valuable section written by an acknowledged expert in this field. The 75 references supplied should also prove to be useful.

The book deals in a basic way with equipment commonly found in a microbiology department; glassware including types, choice and preparation; and sterilisation by physical chemical and mechanical methods. Culture media and cultural methods are covered briefly but the section includes a very comprehensive list of types of culture media, their uses, and the names of manufacturers for each medium. A chapter is devoted to the more common biochemical tests but generally principles are not given. Mycological methods including elements of serology; total and viable counts; general serological methods; antibiotic sensitivity testing; and the examination of clinical material are all dealt with adequately but these chapters are unlikely to add to the information which is contained in other text books commonly found in microbiology laboratories.

Technologists with an interest in food microbiology will find the 33 pages devoted to this subject of particular value. The systematic bacteriology section is concise, but supplies a surprising amount of information covering a wide range of bacteria species. The final 22 pages are devoted to yeasts, moulds and pathogenic fungi. Once again, typical of the book, a wealth of information is contained in a few pages.

The authors have achieved their objectives in producing a concise easy to read manual on practical microbiology.

The credentials of the authors and contributors are impressive, and it is not surprising that *Microbiological Methods* is a popular textbook both in the UK and overseas.

Microbiological Methods can be recommended as a useful bench book and a very acceptable textbook for medical technologists with an interest in microbiology.

A. F. Harper.

Harper's Review of Biochemistry. D. W. Martin, P. A. Mayes, V. W. Rodwell. 18th edition. Lange Medical Publications. Los Altos California. 1981 614 pp. NZ$31.50. Supplied by Peryer Educational Books, C.P.O. Box 833, Christchurch.

This volume is a modification of the well known Lange publication **Review of Physiological Chemistry** by H. A. Harper, V. W. Rodwell, P. A. Mayes. The contents have been changed by the removal of chapters on Immunology, The Kidneys, Epithelial and Connective Tissues and by the amalgamation and inclusion of new material notably on the Cell Membrane which in the previous edition was dispersed and inadequate.

The aim of the book remains the same as before, that is "to serve as a concise survey of those aspects of chemistry most relevant to the study of biology and medicine."

The intended readership of the book must be wide but is not specifically intended for the junior student.

Given the intentions stated the book succeeds, it does provide a review of Biochemistry and particularly those parts of Biochemistry which are of use in the clinical laboratory, though it would not replace a text intended solely for the clinical chemistry laboratory.

The chapters which remain from the previous edition have been revised, irrelevant material has been excluded and diagrams modified where necessary and some wordy paragraphs reduced substantially. The effect of this editorial work has been to produce a book with 88 fewer pages but with those parts of the original text most relevant to medical laboratory science expanded.

The index remains in the same proportion to the text and appears to be well constructed.

The references which are given at the end of each chapter are adequate and more numerous than in the 17th edition. The table of contents lists 41 chapters and follows the style of previous editions with subheadings for areas of interest. Important statements and key words are in a bold typeface and this makes for easier identification of relevant paragraphs.

There is no colour in this book; this could be considered a defect, I could not find a humorous comment or wry remark. This may or may not be a defect but these points are the only criticisms I can make against this worthy successor to the **Review of Physiological Chemistry.** I recommend this book for the advanced student and as a reference text for those departments where chemistry is not the main occupation.

Hugh Matthews.

Advances in Clinical Cytology (1981). Edited by L. G. Koss and D. V. Coleman. Butterworths Co., London, and available from Butterworths, C.P.O. Box 472, Wellington. 355 pages, illustrated, hardback. $87.00 approximately.

This excellent book presenting the reader with updates and modern trends toward the diagnosis of disease by cytological techniques and examination, is neatly presented on quality glossy paper.

The text is divided into 11 chapters each being written by individual authors including the editors. Easy reference is made to crisp photomicrographs and illustrations which complement the content well, along with valuable tabulated statistics when necessary. Factual statements have supporting references which are indicated numerically and listed at the end of each chapter. An alphabetical index concludes the text.

The endometrium is common to chapters one and two. The first examines neoplasia and hyperplastic conditions at ultrastructural level using the transmission and scanning electron microscopes. Criteria for normal cyclic endometrium introduces the chapter and is essential to appreciate the subtle changes in atypical conditions.

Therapy with exogenous progesterones is discussed by examining their effect on cell morphology. Chapter two, written by a cytotechnologist, discusses direct endometrial aspiration and its value in cytological detection of hyperplasia and neoplasia and the clinical applications. Both cytological and histological criteria are described for diagnosis and supported by a series of colour plates.

The following chapter evaluates population screening for cervical cancer. Much statistical data is offered with special reference to the "British Columbia Cohort Study". Emphasis is made toward the aim of decreasing the mortality rate from the disease by using this often controversial type of programme.

Chapter four evaluates cytology screening for the early detection and localisation of occult lung lesions. The suitability and application of various methods are listed along with the cytological criteria used for diagnosis. Patient management and examination of resected specimens complete the chapter which is enhanced by three case studies and colour plates.

Human Polyomavirus infection heads chapter five. The cytological appearance of infected cells is presented by light and electron microscopy and the cytodiagnostic value of the virus in clinical practice is evaluated.

An interesting and extremely helpful chapter on cell relationships in epithelia reminds the reader of the ultrastructure of cell membranes and cell adhesion and continues to explain changes seen with intracellular adhesion under pathological conditions.

Chapters seven and eight present fine needle aspiration of the thyroid, and ophthalmology cytology respectively. Sample collection, preparation and cytodiagnosis of disease of each organ is precise and complete.

The diagnosis of malignant lesions of the central nervous systems introduces chapter nine. Touch and squash preparations are used for rapid diagnosis of the various pathological conditions presented. Colour plates complement the chapter.

Scanning electron microscopy is used in chapter 10 to reveal the surface morphology of cells found in body cavity fluids in both benign and disease conditions.

With technology fast becoming automated, the final chapter shows the feasibility of computerised high resolution scanning of cervical smears. The potential diagnostic accuracy and the place of computed cell images in cytology is discussed making the chapter a fine conclusion for the whole text.

Advances in Clinical Cytology is an asset for all cytopathology laboratories. A series of this type of book would complement both the established standard texts and journals. It will provide and update the cytologist with current advances and concepts in the progressive fields of diagnostic cytology.

H. J. Neal,
Cytology Department,
Dunedin.

Cumulative Index to Nursing and Allied Health Literature. Published by Glendale Adventist Medical Centre, P.O. Box 871, Glendale, CA 91209, United States of America.

This hard covered text, of approximately one thousand pages, offers a well organised reference to a selection of articles and journals which are of importance and relevance to progressive nurses and related health professionals.

The original text only contained articles of interest to the nursing profession. This text has been expanded with the addition of selected material from other allied disciplines and this has added to its general usefulness.

This text lists all the ancillary journals scanned, gives dates for articles indexed, includes journals of state nursing organisations, provides a guide to audio visual materials, book reviews and pamphlets. The use of this text is well explained and in general, is easy to use.

This CINAHL publication provides a good cumulative index for nursing and related medical disciplines. One problem which may arise, is the local availability of some of the indexed journals, which may have to be obtained outside the region. This text would be of more practical value to the Medical Technologist if it included material from selected journals.

Les M. Milligan.

Report of a Scientific Meeting

Molecular Mechanisms of Coagulation

Christchurch February 1982

Although the bulk of the lecture programme was designed for the molecular biochemists, there were many interesting points and new ideas displayed for the coagulationists.

The guest speaker, Dr Staffan Magnusson from the University of Aarhus, Denmark introduced the programme by talking about the many similarities and differences which occur between the various components of the coagulation system.

Similarities such as amino acid sequences, proteolytic cleavage sites, positions and numbers of disulphide bridges and carbohydrate side chains were discussed while many chains of amino acids were flashed across the screen.

The exact molecular configuration of Prothrombin was displayed as "Kringles" (finger-like projections) which consisted of an A or number 1 fragment, an S or number 2 fragment plus A and B chains.

The effect of dicoumarol drugs producing α Carboxyglutamic residues which cannot bind Ca^{++} was shown on the N terminal end of the molecule, and a thrombin specific cleavage site between the A and S fragment was displayed.

It was of particular interest that the various cleavage sites of prothrombin by $\overline{X}a$ all have the same lead up sequence of amino acids i.e. ile—glu—gly—arg.

The N terminal end of IX and X showed similarities to prothrombin whereas the middle structures of plasminogen, plasmin and prothrombin are all similar.

Plasminogen was shown to contain five heavy chain structures which are very similar to prothrombin with the 5th structure being the only one necessary for activation by uro- and streptokinase. Activation of plasminogen due to proteolytic cleavage by leucocyte elastase (inflammatory) was also mentioned with the exact point of cleavage having been determined.

Structure and composition of plasma inhibitors such as Antithrombin III (AT_3,)α_1 antitrypsin,α_1 anti chymotrypsin, C_1 inactivator,α_2 anti plasmin, inter α trypsin inhibitor and α_2 macroglobulin were also determined with many similarities being noted.

The mechanism by which α_2 macroglobulin inactivates serine proteases was discussed in detail and summarised as such; two pairs of identical S-CO structures are cleaved at a specific disulphide bridge site by trypsin (Stages I and II) followed by a thiol ester mechanism which leaves a covalently bound tetramer of HS-CO's (Stages III and IV).

Finally, α_2, macroglobulin and C_3 were shown to have similar amino acid sequences in their structures. This concluded the morning programme and we adjourned for lunch.

Ross Boswell from Christchurch started the afternoon session with a paper showing the similarities and differences between AT_3 and α_1 antitrypsin. α_1 antitrypsin being a major proteinase inhibitor was shown to be homologous to AT_3 in primary structure, with several identical amino acids in sequence.

e.g. antitrypsin met—ser—ile—pro—pro—glu
AT_3 (human) arg—ser—leu—asn—pro—asn
trypsin cleavage point

The M.W. of both proteins is almost identical (approx 55,000) but α_1 antitrypsin will not complex with heparin, possibly due to the difference in the number of hydrophobic amino acid components in the first part of the molecule.

e.g.	AT_3	antitrypsin
Basic components	20	16
Acid components	15	25
Hydrophilic components	45	49
Hydrophobic components	20	10

John McKay from Auckland then gave a paper on Heparin which was introduced as a high M.W. polysaccharide with a high specificity for AT_3, with mast cell heparin having a much higher M.W. than the extractable anticoagulant form (M.W. approx 5-6,000). It was shown that only a small amount of the

anticoagulant heparin injected is involved in anticoagulation i.e. only a small amount at AT_3 is bound.

He mentioned how AT_3 speeds up thrombin inhibition by heparin due to formation of a thrombin-heparin-AT_3 complex and showed that the heparin-AT_3 complex on electrophoresis shows no excess at the end of the reaction with 'high affinity' heparin while an excess does occur with low or 'no affinity heparin'.

Normally, AT_3 migrates as an α_2 globulin but complexed to heparin it is found as a fast prealbumin.

Using 'laurel rocket' precipitation he demonstrated that there may be two different binding sites on the heparin molecule, one for AT_3 and one for the inactive AT_3 complex. He also suggested a molecular series of heparin which reacts with other proteases such as anti-factor $\overline{X}a$, $\overline{XI}a$ and $\overline{XII}a$.

Dr Magnusson then gave the second half of his session which concentrated mainly on prothrombin. He demonstrated how the amino acids numbered 275 to 343 of prothrombin resemble the A chain of thrombin, and that the B chain of thrombin, which contains 259 amino acids (M.W. 30,000 plus a CHO group) resembles chymotrypsin in many respects.

There are also similarities between the B chain and haptoglobin, leutinising hormone and angiotensin.

Right angle base hydrolysis of prothrombin with and without heating was used to demonstrate the γ carboxyglutamic acids. Carbohydrate sites were also determined as were the positions of disulphide bridges where many similarities were established between the vitamin K dependent clotting factors and also proteins S and C.

It was interesting to note that the N terminal end of protein C has a very similar structure to that of factors $\overline{IX}$ and $\overline{X}$. Even electron microscopy was employed to show the conformational changes of crystalline structure when the different fragments bind $Ca^{\neq}$.

Finally, some similarities in the amino acid sequences of the light and heavy chains of plasminogen to trypsin and chymotrypsin were demonstrated, with the sites of cleavage by urokinase being determined. Several 'kringles' occur with these molecules also and they show many similar characteristics between them.

The next speaker was John McIntosh from Massey University where he has been doing research on 'synthetic substrates'. He described the synthetic substrate as a blocking group (NH_2-B) with a series of amino acids similar to the natural substrate, plus a $\overset{\circ}{c}$-residue and paranitroaniline detector group at the amino terminal end.

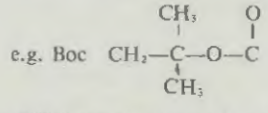
Blocking group $-A_3-A_2-Arg-\overset{\circ}{c}$-detector group

e.g. S2222 B_2—ile—glu—gly—arg—PNA is similar to prothrombin

S2160 B_2—phe—val—arg—PNA is similar to fibrinogen

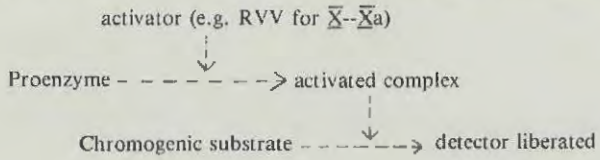
He has found that better sensitivity is obtained if an amino-methy coumarin molecule is used instead of PNA and showed that free PNA must have a different absorption band to peptide bound PNA if using this as the detector group.

The blocking groups all have the $\overset{\circ}{c}$-residue to stop cleaving of amino acids from the amino terminal end.

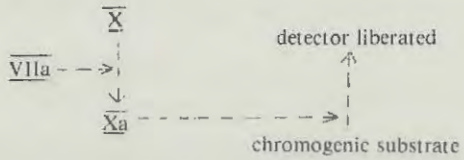


Benzoyl (B_2) can also be used as can succinyl (suc) which tends to make the synthetic substrates more soluble due to its overall negative charge. This was an interesting point because the synthetic substrates are generally quite insoluble.

He then talked briefly about the procedure for manufacturing synthetic substrates with several time consuming steps involved using quite volatile organic compounds, thus it immediately became obvious why they are so expensive. Finally the 3 methods of assay were mentioned i.e. (i) **Direct method** (e.g. Prothrombin and $\overline{X}$) using Tris Nacl buffer (pH 7.5) to dilute the sample



(ii) **Indirect method** (e.g. use $\overline{X}$ to estimate $\overline{VII}$)



(iii) **Inhibitor assay**—3 steps

a) AT_3 + heparin / activated inhibitor

b) activated inhibitor + thrombin → thrombin inhibitor complex + residual thrombin

c) residual thrombin + chromagenic substrate → detector liberated

John McIntosh then concluded his paper by mentioning the limited role and advantages plus disadvantages of synthetic substrates. The main two disadvantages are expense and non-specificity which may occur. Advantages were speed and stability of reagents.

Following tea, John McKay spoke again, this time on Antithrombin Budapest—A Hungarian variant studied in a Norwegian in Sweden by a New Zealander. Using agarose gel migration he categorised AT_3 as having high, low or no affinity to heparin as mentioned in his earlier paper. Then, using crossed immunoelectrophoresis with antibodies to AT_3 he demonstrated two different populations i.e. AT_3 and AT_3 Budapest.

Laurel rockets were used to show functional activity using EDTA, heparinised and serum samples. Functional assays and immunochemical techniques were also carried out and it was concluded that all the other variants of AT_3 are structurally abnormal whereas AT_3 Budapest is functionally abnormal.

He showed that with 30-40% protein concentration, the majority of AT_3 types will have 30% functional activity and that a thrombin clotting time of 100% corresponds to 100% protein concentration.

In contrast AT_3 Budapest has high concentrations of protein with low functional activity.

Christine Hickton from Christchurch then presented a family study showing Hereditary AT_3 deficiency of which approximately 25 cases have been reported so far.

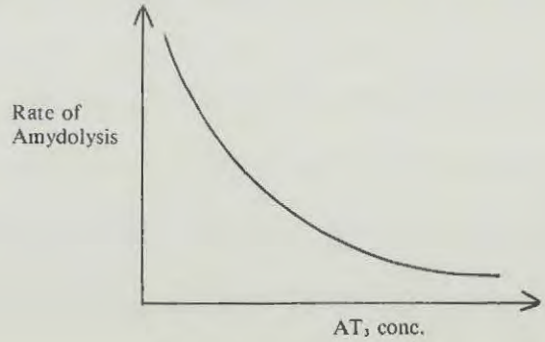
The family showed a history of pulmonary embolism and deep vein thrombosis. Those receiving treatment required higher than normal doses of heparin and some developed thrombosis when on warfarin.

Using Laurel rockets and Biggs assay technique (thrombin neutralisation without heparin) she tested 17 members of the family and found 6 were deficient in AT_3.

It was mentioned that AT_3 levels decrease with age and that one may have a functional and/or biological deficiency. She suggested that α_2 macroglobulin may be responsible for the difference between functional and biological levels.

Ken Scott from Auckland then gave a paper entitled "An Antithrombin—Inhibitable Cell Surface Proteinase".

He has isolated an enzyme of M.W. 75,000 from the surface membrane of lymphocytes and granulocytes. Antiserum to this enzyme was produced and the effect it had on cell cultures was noted. e.g. With fibroblasts decreased cell growth occurred compared with thrombin which is mitogenic and stimulates growth.



Various cells were described on which the antiproteinase had little or no effect e.g. fibrosarcoma cells, 1° cultures from melanoma and mastocytoma cells. With this group of cell cultures, 100% growth occurred when only the enzyme was present. This was reduced to 22% when AT_3 was added and 7% when heparin was added.

It was also noted that the rate of amydolysis decreased as the concentration of AT_3 increased.

At the conclusion of his paper it was suggested that the enzyme may be 'protease nexin' which is similar to AT_3, has thrombin inhibitory activity and is also found on the cell surface of the leucocytes mentioned.

The final paper of the day was a case of Antithrombin Pittsburgh which was presented by Maurice Owen and Professor Robin Carrell both from Christchurch.

A child which presented with a bleeding problem was found to have an increased prothrombin time and P.T.T.K. with borderline low Fact or $\overline{II}$ and $\overline{X}$. When column electrophoresis was carried out an abnormal α_1 antitrypsin was found.

Although the study was not conclusive due to salt contamination of the isolate, it was suggested that the antitrypsin variant had converted to an AT_3.

BRENT BISHOP
Haematology Department,
Dunedin.

LIBRARY

The following journals have recently been received by the NZIMLT and may be borrowed by applying to The Librarian, Mr J. Lucas, Haematology Department, Dunedin Hospital.

Laboratory World October 1981
(1) Protecting Against Hepatitis
(2) Control the Cost of Microbiology Patient-Care Data
(3) Elevating and Maintaining Blood Bank Policies Procedure
(4) Instrument Review: Abbott VP Biochromatic Analyzer

Laboratory World November 1981
(1) Passing the Crossmatch by Screening Antibodies
(2) Paternity Testing Utilizing the HLA System
(3) Seeking Paternity Standards
(4) Instrument Reviews (a) Gilford Stasar Spectrophotometer
(b) Access Corporation Selectronic
(c) System 800
(5) Enzyme Linked Antiglobulin Test used to Detect Foeto-Maternal Haemorrhage.
(6) Staining of Fungi in Plastic Embedded Material
(7) EA-Achote: A New Stain for Cytology?
(8) Darkfield Examination of Germ Tube Preparations
(9) False-Positive Catalase Slide Test Results

Laboratory Medicine Vol. 12, 12
(1) Neutron Activation Analysis
(2) Therapeutic Plasma Exchange
(3) The Sensitivity and Specificity of Nitrate Testing for Bacteriuria
(4) Accuracy of the MS-2 Urine Screen and Antibiobtic Susceptibility System
(5) Quality in Urinalysis
(6) An ABO Typing Discrepancy

Canadian Journal of Medical Technology Vol. 43, 4
(1) The Relative Importance of Tissue Antigens and Antibodies in Immunohaematology
(2) An Evaluation of Three Methods of Estimation of Plasma Fibrinogen
(3) Same Day Electron Microscopy
(4) Investigation of a Serum with Peculiar Agglutinating Properties
(5) Thyroid Tests in Sick Patients

Laboratory World December 1981
(1) Progress in Diagnosis and Treatment of Polycythaemia Vera
(2) The Importance of Clinical Details when Dealing with Abnormal Coagulation Screens
(3) Uncovering Some of the Eosinophil Mystery
(4) Safety and Disposal Changes that Affect Regulations in Radioassay Laboratories
(5) Instrument Report: Technicon H 6000 Haematology Analyser

Laboratory Medicine Vol. 12, 10
(1) Foetal Maturity—Clinical Biochemical Evaluation
(2) Use of Exchange Transfusion in Neonates
(3) Heparin Neutralization—A New Approach to the Prolonged P.T.T.
(4) Enterotoxin Synthesis by Clinical Isolates of Staphylococci
(5) Investigation of Unexpected Serologic Results
(6) Eliminating Disintegrated Cells on Haematologic Smears
(7) Identification of Cutaneous Myasis Larva (W. vigil)

Laboratory Medicine Vol. 12, 11
(1) Education Update: Heavy Metals
(2) Education Update: Is the Crossmatch Needed?
(3) Antibiotic-Tolerant *S. aureus*
(4) Non-exclusion of Paternity due to a Silent (?) Allele
(5) Post-Transfusion Hepatitis—Update

ABSTRACTS

HAEMATOLOGY

Chronic Myeloid Leukaemia in Myasthenia Gravis after Long-Term Treatment with 6-Mercaptopurine.
Wanders, J., Wattendorff, A. R., Endtz, L. J., den Niji, J. J. and Leeksma, C. H. W. (1981) *Acta Med Scand* **210** 235.
A woman with myasthenia gravis was treated with 6-, mercaptopurine. After 12½ years she developed Ph positive chronic myeloid leukaemia. Because the therapeutic agent is potentially leukemogenic the possibility cannot be excluded that the CML in this patient was a late side-effect of the treatment.

Diagnosis of Myeloproliferative Disease by Analysis of the Platelet Volume Distribution.
Small, B. M. and Bettigole, R. E. (1981) *Am J Clin Pathol* **76** 685.
Analysis of platelet volume distribution curves was performed on whole blood specimens from patients with myeloproliferative disease, reactive thrombocytosis and a control group. Estimates of the mean platelet volume and the megathrombocyte index were made, and their ratios enabled a distinction to be made in most cases of myeloproliferative disorders.

Analysis of Manual Reticulocyte Counting.
Peebles, Deborah A., Hochberg, A. and Clarke, T. D. (1981) *Am J Clin Pathol* **76** 713.
A statistical appraisal of manual reticulocyte enumeration was extensively investigated. The proportional error associated with each technologist can exceed 30%. The technologist-to-technologist variation is the major source of inaccuracy at all reticulocyte levels and is attributed to the consistent application of individual criteria in reticulocyte identification. Although results may be clinically useful, it is extremely difficult to obtain manual results with sufficient accuracy to serve as reference reticulocyte method.

The Value of the Saline Dilution Curve in the Prothrombin Time Estimation.
Milicich, G. S., Starr, Helen I. and Lam-Po-Tang, P R L C. (1981) *Aust. J. Med. Lab. Sci.* **2** 111.
Saline dilution curves were performed on pools of fresh normal plasma using Australian Reference Thromboplastin and British Comparative Thromboplastin to investigate the reproducibility and reliability of the test as part of the standardisation procedure for thromboplastin.
It was concluded that saline dilution curves should not be used as the only or the main method of quality control in thromboplastin standardisation. The authors also recommend that reporting of prothrombin time results in terms of percent activity should be discontinued.

Production of Cryoprecipitate of Intermediate Purity in a Closed System Thaw-Siphon Process.
Mason, E. C., Pepper, D. S. and Griffin, Brenda. (1981) *Thrombos. Haemostas.* **46** 543.
The Thaw-Siphon procedure for routine production of cryoprecipitate is described and the authors suggest that this procedure offers an alternative pathway to the production of factor VIII concentrate of intermediate purity that can be operated in any blood bank with a minimum of equipment.

Histochemical Demonstration of Terminal Deoxynucleotidyl Transferase in Leukaemia.
Hecht, T. et al (1981) *Blood* **58** 856.
The authors describe a light-microscopic peroxidase-antiperoxidase technique that permits a rapid, specific and highly sensitive screening for TdT. The authors studies demonstrated that the PAP technique allowed detection of a higher proportion of TdT—containing cells in five of six specimens than the immunofluorescent method.

A New Unstable Haemoglobin Iwata, F8 (alpha 87) His—Arg.
Hattori, Y. (1981) *Bull. Yamaguchi Med. Sch.* **27** 65.
A new unstable haemoglobin was discovered during a screening programme for haemoglobin anomalies in the newborn. Hb Iwata migrated between Hb A and A_2 in starch gel electrophoresis at pH 8.6.

Problems in Microscopic and Automated Cell Differentiation of Blood and Cell Suspensions.
Talstad, I. (1981) *Scand J Haematol.* **26** 398.
The author discusses problems in producing adequate smears from peripheral blood by both manual spreading and spinslide techniques and compares cell differentials with the Hemalog D.
E.R.C.

HISTOLOGY

A Quantitative Histological Comparison of the Thymus in 100 Healthy and Diseased Adults.
Smith, S. M. and Ossa-Gomez, L. J. (1981), *Amer J Clin Pathol.* **76** 657.
The controversial area of normal and disease-induced changes in the thymus is subjected to quantitative histological comparison. This paper provides an excellent example of the scope and application of such methods in pathology.

The Uncertain Consequences of Formaldehyde Toxicity.
Yodaiken, R. E. (1981), *JAMA.* **246**, 1677.
Evidence of carcinogenicity associated with formaldehyde has been added to the everyday sniffing and snorting. While not intending to cause any alarm this paper asks the question—how lax are we in the handling of this reagent?

A Technique for Identifying Areas of Interest in Human Breast Tissue Before Embedding for Electron Microscopy.
Ferguson, D. J. P. and Anderson, T. J. (1981), *J Clin Path.* **34**, 1187.
A simple method which reduces the tedious and time-consuming task of searching for parenchymal structures in breast tissue.

An Automated Technique for the Rapid Processing of Breast Tissue for Subgross Examination.
Manton, S. L., Ferguson, D. J. P. and Anderson, T. J. (1981), *J Clin Path.* **34**, 1189.

An automated method for obtaining additional three dimensional information on the breast parenchyma is described.

The Use of Avidin-Biotin-Peroxidase (ABC) in Immunoperoxidase Techniques: A Comparison Between ABC and Unlabelled Antibody (PAP) Procedures.
Hsu, S. M., Raine, L. and Fanger, H. (1981), *J. Histochem. Cytochem.* **29** 577.
The Hsu "ABC" technique employs primary antibody, biotinylated secondary antibody, and a preformed avidin: biotinylated horseradish peroxidase complex ("ABC"). This proves to be a more sensitive technique with less background staining when compared with PAP. It is an economic technique which can take less than three hours to complete.
B.C.T.

NEW PRODUCTS AND SERVICES

A NEW SCANNING AND INTEGRATING MICRODENSITOMETER

Designed for convenient clinical use (assaying hormones, enzymes, DNA) as well as medical, biochemical and agricultural research.

The new M85a scanning and integrating microdensitometer introduced by VICKERS INSTRUMENTS, York YO3 7SD, England, is a direct development of the earlier M85 instrument, but is faster-scanning and has improved optical performance. Instrument layout and controls have been ergonomically redesigned to allow much simpler, quicker operation, especially when taking multiple readings from one slide. Digital readout of stage position and easily fitted closed-circuit television are two new features. All techniques developed for the M85 can be transferred to the M85a.

The new instrument is intended not only for conventional biochemical research applications in medicine, zoology, biotechnology and plant genetics, but for an increasing array of sensitive clinical tests based on the techniques of quantitative cytochemistry. Particularly important is a series of hormone bioassays which require very small volumes of plasma and are typically 1000 times more sensitive than equivalent radioimmunoassays. Clinical assays for enzymes, proteins, nucleic acids (to distinguish maligant tumours and other abnormally proliferating tissues) and haemoglobin are also well developed.

Small Spot-Size

The instrument is a flying-spot microdensitometer built around the optics of a Vickers M17 research microscope. A narrow beam of monochromatic light is projected into the specimen plane by the microscope objective, and scans the specimen in the form of a raster pattern of separate points. The sampling-spot is variable in size, the smallest spot diameter, 0.25 μm with a 100x objective, being near the limit of microscope resolution. Wavelength is selectable in the range 400-700 nm to coincide with the absorption peak of a coloured cell constituent or reaction point.

The size of the scanning raster is independently variable along each axis in three steps and the area over which optical density is integrated can be further restricted by a set of circular and rectangular masks. With the aid of the microscope eyepiece and stage movements, these masks can be used to select a cell or a single chromosome of interest, for example. There is also an optical-density threshhold control which allows the integrated area of objects within the mask and above a specified density level to be measured.

New Features

The main changes in the new instrument are:

* scanning time, fixed at 5 seconds in the older instrument, is now variable between 1 and 16 seconds. The faster scans save significant amounts of time when taking many readings from one slide. The slower scans can produce acceptable results from specimens formerly too faint;
* routine operation has been greatly simplified. When taking several readings on one slide, the operator now presses one switch to measure integrated density and/or area, reverts to visual mode to select a new object of interest, presses again to measure, and so on. Results are displayed on front-panel meters and may also be taken to an external recorder or digital printer. Digital readout of stage position enables previously found objects of interest to be relocated at will;
* large, directly labelled monochromator controls (for wavelength, bandwidth and spot-size), mounted on top of the instrument, are easier to set and read precisely;
* the higher-quality microscope allows finer focusing. Differential interference contrast viewing makes it easier to identify objects of interest in unstained specimens;
* closed-circuit television (a useful aid in demonstration work) or a photographic camera can be conveniently fitted on top of the instrument without interfering with use of the eyepiece.

Hormone Bioassays

Scanning/integrating microdensitometry is essentially a method of estimating coloured reaction products precipitated (usually non-uniformly) within individual cells. It is thus a quantitative biochemical technique, but one that uses a histological tool, the microscope, to identify cells or organelles of interest in tissues containing a variety of cell types. Importantly, it is a non-disruptive technique which leaves the cells in their normal structural—and presumably functional—relationship with one another.

Estimations of DNA contents in cell nuclei, using Feulgen staining techniques, were for a long time the major application of the M85 instrument. Recently, bioassays for polypeptide hormones have become increasingly important. These are many times more sensitive than equivalent radioimmunoassays—the detection limit for ACTH is 5×10^{-15} g/ml, for example. Clinical samples can be very small, therefore, and normal and low circulating levels as well as high levels can be measured. The methods are also highly specific, responding only to biologically active rather than immunologically active molecules. They can frequently achieve precisions of ±3-5%. Proven cytochemical bioassays now exist for PTH, ACTH, TSH, LH and gastrin. Further information from: VICKERS INSTRUMENTS, (A Division of Vickers Limited), Haxby Road, York YO3 7SD, England. Telephone: York (0904) 31351. Telex: 57-660.

THE HP85 PERSONAL COMPUTER SCIENTIFIC : MEDICAL : ENGINEERING : COMMERCIAL

No more waiting for data to be processed and returned. The HP85 by Hewlett-Packard makes available to the professional full computer power in a portable desktop unit.

The HP85 gives you capabilities you would expect in a large computer system. And a few capabilities you will have trouble finding anywhere else.

Hewlett-Packard chose BASIC as the programming language for the HB85 to keep the system simple to use, yet powerful. And you don't have to load either the operating system or the BASIC language capability in order to get started. Both are permanently stored in the HP85.

A highly detailed graphics system is a standard of the HP85. These amazingly flexible graphics capabilities can be controlled either from the keyboard or in programmes to add clarity and meaning to your output.

Each part of the HP85 complements the others to give you an extremely efficient computer. The operating system, BASIC language graphics systems, keyboard adjustable intensity, CRT display bi-directional whisper-printer and tape drive—all are integrated.

Quickly and easily double the size of the HP85's memory by plugging in an optional 16K Memory Module. Plug-in ROMs (Read Only Memories) will enhance the power and capability of the HP85's operating system and BASIC language.

And you can add powerful peripherals to the HP85. Like a full size plotter, high-speed full-width line printer, or floppy disc drive for repeated on-line data storage and quick access to many large programmes.

Magnetic tape cartridges supply the HP85 with high quality digital storage. The high density large capacity tape cartridges are used for temporary or archival storage of data and programmes. High search speed is assured.

Experience Hewlett-Packard's principle of excellence by design for yourself. The HP85 offers performance at an affordable price that appeals to professionals in technical, industrial, and business applications. Very impressive.

HIGH PURITY GASES FOR LABORATORY USE

Laboratory gases which have a guaranteed minimum purity are now being prepared in New Zealand for use in analytical instruments.

The instrument gases are specifically formulated, and ideal for use in high precision or complex analytical work. Until now, industrial grade gases—which are not made to analytical accuracy—have had to be used.

The range of instrument gases is prepared specifically for sophisticated laboratory use by New Zealand Industrial Gases.

"To get the best results from highly specialised analytical equipment, it is essential that the correct purity of gas be used," said NZIG's Product Manager for Special Gases (Mr Philip Best).

Many laboratories use oxygen, nitrogen, carbon dioxide and hydrogen in their work, but until now, the gas has been of industrial grade.

"While such gases are perfectly adequate for a multitude of industrial grade uses, they are not satisfactory for use in precision analytical work," he said.

"Selecting the correct purity of gas—for use in equipment such as gas chromatographs, flame ionization, atomic absorption and the like—can have a great bearing on the success of the project. After all, gases form an integral part of this analytical equipment."

For example, nitrogen with a little oxygen in it, does not cause problems for the average user of nitrogen. But for use in a laboratory—in analytical instruments—that small amount of oxygen could waste many laborious hours of analytical work.

To accurately measure the gases, NZIG has specially imported a German gravimetric balance—the only one of its type in New Zealand.

The scale, which measures and mixes the gases at the same time, allows a full and complete analysis to be made of all components. This includes the type and amount of each impurity present.

It is the first time such comprehensive information on impurities has been available to the user of the gas. A certificate, which accompanies each of the 1.2 cubic metre cylinders, lists these components and their amounts.

An example, which compared the purities of the various grades of nitrogen, highlights the accuracy of the new service:

Industrial dry nitrogen is about 99.5 percent pure. Its principle contaminants are oxygen, carbon dioxide, hydrogen, neon, helium, argon and water.

Instrument grade nitrogen is guaranteed to be better than 99.9 percent pure. The contaminates are: oxygen (less than 10 vpm); carbon dioxide (less than 5 vpm); hydrogen (less than 1 vpm); and neon, helium and argon (together not totalling 7 vpm). Water vapour is less than 0.01 grams per cubic metre. The gas has a frost point of less than −60°F.

As another example, hydrogen usually runs at around 99.7 percent pure. Instrument grade hydrogen is guaranteed to have:

— less than .1 percent oxygen;
— less than .1 percent nitrogen;
— less than 100 vpm of carbon dioxide;
— less than 15 vpm of other carbon compounds (measured as carbon dioxide). The frost point could be guaranteed to be less than −60°F.

A specially developed instrument grade gas is Zero gas, for use in flame ionization detectors. Zero gas refers to a material which has a low hydrocarbon content, necessary to prevent high background noise. An unstable flame reduces sensitivity and the possibility of loss of accuracy.

High purity helium is used in gas chromatographs, which use thermal conductivity detectors. Some more sensitive instruments use ultra high purity—about 99.9999 percent pure. But, depending on the amount of analysis being made, the analyst could use argon, hydrogen, or nitrogen—the normal alternatives, although there are others. Oxygen or air cannot be used as these would burn out the thermal conductivity filaments.

Analysts will certainly obtain better results from their equipment by using the correct purity of gas. But they should also use the correct gas equipment. This should be equipment of an instrument grade nature—not of an industrial grade. The user can then be certain that the instrument grade gas leaving the cylinder to enter the analytical equipment will not be altered by the equipment through which it must pass—which could affect the result of work being undertaken.

BECKMAN CENTRIFUGE PRIMER

A fully illustrated, 21-page primer on centrifugation available from Beckman Instruments Inc., tells in simple language how to use a general-purpose laboratory centrifuge effectively. It covers such topics as operating principles, rotors and their uses, duplicating runs in different rotors and how to balance the rotor load for best results. The primer also provides a nomogram for speed selection, a brief glossary and shows how to make basic calculations.

This primer, designed to fill the gap between instruction manuals and highly theoretical textbooks on centrifugation, is especially useful for students and new centrifuge operators.

For a copy of the booklet, DS-575, contact Beckman Instruments Inc., Asia/Pacific Analytical Sales Operations, 2500 Harbor Boulevard, Fullerton, California 92634; telephone (714) 773-8842.

"MICRODIFF" LEUCOCYTE DIFFERENTIAL COUNTER

A collaboration between consultant haematologists from two leading British hospitals and a team of microcomputer engineers has resulted in the design and development of the "Microdiff" leucocyte differential counter which can memorise a patient's individual total leucocyte count in cell ratio to blood volume and calculate the various differentials automatically as absolute leucocyte quantities.

Patents have been applied for covering this unique function which eliminates the need for time consuming calculations necessary when using existing types of diffcounter.

Newly available integrated components and specially designed microprocessors have been built-up to the instrument. It is being marketed exclusively by Hagner International (UK) Limited and manufactured by the Sussex based electronic specialists Microtech Laboratories Limited.

Instruments from the initial production have been completed and already won the approval of several major hospitals. The current production has been geared to meet an expected substantial demand from hospital laboratories world-wide.

Up to nine different types of leucocytes can be counted on the MICRODIFF to any selected pre-set total between 1 to 9,999. In addition to calculating leucocytes keyed to cells/volume blood, the instrument calculates the total differential counts and displays their percentage differences.

An additional register provides an independent count excluded from the total differential count for determination under thalasemic conditions of separated nucleated red cells.

The selected present total may be changed at any stage during the count without disrupting the totals already registered and an audible signal inhibits further counting when the preset total has been reached.

The chosen mode for calculation is visually displayed together with the selected register to eliminate "wrong key" error and count results are shown on easily read four-digit LED display.

A feature of the instrument is the ergonomic design and layout of the controls and keyboard to allow maximum operational efficiency.

For further details: J. Mayer (telephone: 0243/781290), Hagner International (UK) Ltd, 42, Little London, Chichester, Sussex, PO19 1PL.

INSTITUTE BUSINESS

Office-Bearers of the N.Z.I.M.L.T. 1981-82.

President
A. F. Harper
11 Turere Place, Wanganui

Immediate Past President
C. S. Shepherd
P.O. Box 52, Hamilton

Vice-Presidents
C. Campbell
K. McLoughlin

Secretary
B. T. Edwards
Haematology, Christchurch Hospital

Treasurer
W. J. Wilson
Blood Transfusion Service, Auckland

Council
G. McLeay, C. S. Curtis, J. Elliot, J. E. Lucas, P. McLeod

Editor
H. Matthews
Immunohaematology Dept., Dunedin Hospital, or, The Editor, Box 6168, Dunedin.

Membership Secretary
C. S. Curtis
Hamilton Medical Laboratory, P.O. Box 52, Hamilton

Membership Fees and Enquiries
Membership fees for the year beginning April 1, 1981 are:
For Fellows—$37 reducible to $32 if paid by June 30 that year.
For Associates—$35 reducible to $30 if paid by June 30 that year.
For Members—$26 reducible to $21 if paid by June 30 that year.
For Student Members—$21 reducible to $16 if paid by June 30 that year.
For Non-practising Members—$13 reducible to $8 if paid by June 30 that year.

The fee for Student Members commencing their initial employment in a medical laboratory between October 1, 1980, and September 30, 1981 is waived.

New members who do not qualify as Student Members and also Reinstated Members are required to pay the full fee.

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

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

COUNCIL NOTES

Council met at Auckland on the 18th and 19th February 1982, Mr A. F. Harper in the chair

CONDITIONS OF EMPLOYMENT

Salaries

See insert for latest developments

Grading

The Secretary is to write to the Department of Health enquiring as to progress in the review of grading regulations.

Limitation of tenure

Council has received an enquiry from C.. Meads (New Plymouth) concerning the continued employment of technologists after they have gained a C.O.P. and the requirement of the Taranaki Hospital Board that trainee technologists on appointment sign a legal document which states that they the appointee understands that employment is not guaranteed after graduation.

After some discussion it was felt that the procedure adopted by the Taranaki board was that normally followed throughout the country and that it was to the eventual benefit of technologists. Members who have experienced any difficulty with this system are asked to write to the Convener of the Negotiations Committee, Mr Colvin Campbell, Pathology Department, Palmerston North.

Interservice Matters

These are dealt with by the State Services Co-ordinating Committee (SSCC). The Combined State Unions (CSU) acts as our representative in these matters. The CSU produces regular newsletters (some ninety-one in 1981) and also provides background material on larger issues.

There are always some matters being discussed between the SSCC and C.S.U. Most of these do not apply to persons employed under D.G. 48. At present Housing Loans, applicability to Hospital sector, redundancy payments and allowances if required to move to another post because of redundancy are being discussed.

Hospital Boards Retirement Policy

This is being negotiated with the Hospital Boards Association by the C.S.U.

Study Leave

The Secretary is to write again to the Department of Health seeking a reply to our letter of 8.4.81.

Review Committee

The Minister of Health has in terms of Sections 51A (3) of the Hospitals Act 1957 amended by Hospitals Amendment Act 1981 Section 4 recognised the NZIMLT as representing the interests of Laboratory staff employed under DG19 for the purposes of Section 51A.

Staff Exchange Scheme

The Hospital Boards Association is continuing its investigation of the merits of this proposed scheme and will contact the NZIMLT when they have finished their assessment.

EDUCATION

Due to the long break in the academic year there have been no further negotiations with Massey University but see MLT report.

MANAGEMENT

Canadian Workload Units

The Dept of Health has agreed to transfer the function of the Co-ordinating Committee for Clinical Workload Assessment to the Management Committee of the NZIMLT.

BRANCH NEWS

Hamilton Branch of the NZIMLT

The A.G.M. of the Hamilton Branch of the N.Z.I.M.L.T. was held on December 21st at Eion Scarrow's Crystal Nurseries.

Following a social hour, election of committee took place, and the evening was concluded with a barbecue and tour of the grounds.

The following were elected: Chairman:—Tony Day; Secretary:—Sharyn Wood; Treasurer:—Alastair Kerr; Committee:—Dave Scarrow; Jackie McFadden; Doug Napier; Dianne Mannering; Bev Dowling; Brian Hancock.

Auckland Branch of the NZIMLT

The Auckland branch has recently elected a new committee. The composition is given below.

The address of the Secretary is the Pathology Laboratory, National Womens Hospital, Claude Road, Epsom, Auckland 3.

Chairman, David Pees. Secretary, Bruce Dove. Treasurer, Alan Johns. Members, Dennis Dixon-McIvor, Heather Henderson, Ina Te Wiata.

MEMBERSHIP REPORT FEBRUARY 1982

Membership

	Feb 82	Nov 81	Feb 81
Membership as at 17 February	1560	1550	1571
Less Resignations (6), G.N.A. (9), Duplications (1), Unfinancial Members (148).	164	8	93
	1396	1542	1478
Plus Membership Applications (40)	40	18	100
Total Membership	**1436**	**1560**	**1578**
Our Membership Summary is as follows:			
Hospital Laboratories	993	1102	1118
Other Government Employment	55	61	59
Private Medical Laboratories	166	183	184
Other Employment	25	28	23
Non-practising	110	113	105
Overseas	55	65	72
Unknown Employment	7	8	16

We received $930 in fees owing and new subscriptions since November.

151 members failed to either resign or renew their 1981-82 membership, and thus, in accordance with rule 9 (C), have had their names removed from the Membership Roll.

Applications for membership as at 17 February 1982

H. J. Baird, Wellington; S. J. Baird, Invercargill*; B. Bowron, Auckland; J. A. Caffery, Auckland*; J. R. Clough, Dunedin*; C. F. Crowther, Auckland; M. E. Dixon, Auckland*; J. J. Ewans, Auckland*; A. R. Farquhar, Wellington; Y. A. Flood, Auckland*; J. H. Froggatt, Wellington*; M. J. Gaskin, Nelson*; J. F. Hendry, Palmerston North; D. M. Hodges, Hamilton; A. Y. Holmes, Dunedin*; S. M. Holliday, Auckland; E. D. Howarth, Auckland*; J. A. Jenner, Wellington; M. C. Kilby, Tauranga; J. A. Lane, Auckland*; V. J. Martin, Auckland; J. B. Morgan, Auckland*; D. J. Nixon, Palmerston North; D. L. Phillips, Auckland*; J. A. Robinson, Dunedin*; J. M. Robinson, Auckland*; M. C. Robinson, Auckland; B. I. Sayer, Auckland*; M. R. Sharp, New Plymouth*; T. M. Smith, Wellington; K. A. Stevens, Invercargill*; A. H. Stoddard, Auckland; S. L. Sutton, Dargaville; R. S. Tapp, Auckland; A. M. Thomas, Auckland*; M. J. Thomas, Nelson; D. B. Wallace, Auckland*; J. Watts, Auckland; P. M. Whitehouse, Auckland; S. L. Wilkins, Auckland*; D. P. Yep, Auckland.

* Complimentary Membership

Associateship Ratification as at 17 February 1982

L. J. Anderson, Hamilton; T. M. Bakker, Auckland; H. M. Bell, Dunedin; K. E. Best, Napier; R. M. Chew, Dunedin; J. E. Chisholm, Te Kuiti; P. M. Cleave, Napier; D. M. Coburn, Palmerston North; J. M. Compton, Auckland; F. Connolly, Christchurch; R. M. Cottell, Hamilton; S. G. Fisk, Palmerston North; M. M. Grantham, Hamilton; S. M. Greenwood, Auckland; K. A. Gregoriadis, Wellington; J. A. Hart, Rotorua; P. J. Hill, Auckland; S. A. Hill, Wellington; R. K. Hinton, Christchurch; R. E. Jenkins, Dunedin; S. R. Johnson, Palmerston North; R. I. King, Gisborne; B. R. Little, Auckland; W. G. Mackie, Gisborne; H. J. Maguire, Wellington; J. M. McPherson, Hamilton; D. S. Melling, Auckland; G. M. Mills, Christchurch; D. L. Mitchell, Christchurch; L. P. O'Shea, Invercargill; G. J. Parslow, Dunedin; J. S. Pearce, New Plymouth; L. B. Pogson, Auckland; R. A. Reeve, New Plymouth; S. A. Roberts, Auckland; J. M. Rutherford, Auckland; R. M. Rutledge, Christchurch; H. M. Sanson, Ashburton; R. S. Sargon, Auckland; G. R. Sherwood, Christchurch; J. Shue, Dunedin; J. A. Spurdle, Auckland; I. W. Steed, Auckland; L. A. Tate, Auckland; L. M. Taylor, Auckland; A. D. Thompson, Auckland; J. Walkingshaw, Invercargill.

Resignations as at 17 February 1982

J. Chisholm, Te Kuiti; J. M. Fox, Amberley; D. L. Mitchell, Christchurch; T. Timmino, Hamilton; T. Vaughan, Auckland; L. Woodworth, Dunedin; L. Levenbach, Nelson; A. D. Thompson, Auckland.

Left, Last Address—no Resignation or Forwarding Address

S. D. Darling, Dunedin; I. W. Finlayson, Dunedin; G. L. Knox, Wellington; L. M. Midwinter, Auckland; S. Newman-Hollis, Christchurch; A. E. Powlesland, Wellington; S. M. Prendergast, Wellington; J. M. Purvis, Whangarei; A. J. Stevenson, Auckland; S. K. Thurlow, Dunedin.

Deceased

Dennis Francis Henry, Tauranga.

MTB NEWS

A digest of reports of recent meetings of the Medical Technologists Board.

Board Meetings were held on the 9th and 10th of December and the 23rd and 24th of February.

Examinations

The points which are presently under discussion are, a standardised protocol for in-laboratory practicals, standardised length of time of practical components, a move towards in-laboratory practicals in all disciplines, any changes to examination paper wording etc to be resolved between the moderator and senior examiner, not the board.

Education

It was felt that the NZIMLT and MTB should express their strong disapproval of the action of AAVA in removing Histology from the Medical Biology section of the MLPI syllabus. The MTB restated its opinion that the formalisation of the last two years of qualification was essential and that NZCS should remain as a pre-requisite.

It is proposed that the MTB and the advisory board of studies of Massey University meet to discuss further the curriculum.

The MTB has written to the D.G. Health and the D.G. Education asking for their support for the Massey course.

Syllabi

There was general concern expressed by Board members, Institute Council members, at the lack of Histology in the Medical Biology Section of the N.Z.C.S. Course. A letter has been sent to the A.A.V.A. Syllabus committee recommending that there be some practical and theoretical tuition in Histology during this course. One of the reasons is so that students will at least have some exposure to histological technique before they gain their N.Z.C.S. with the hope that some will proceed to Part II and Part III in this discipline.

Both the Immunology and Histology syllabi for Parts II and III are to be revised for examination in 1983.

Work Experience

A circular is shortly to be published from the Board outlining the requirements in work experience in each discipline at each level.

There have been some minor changes over the years and it was felt necessary to publish a consolidated circular. It will be noted that hours in Immunohaematology for B.T.C. is reduced to 600

hours minimum, from 800 hours, with 160 hours of these to be in practical crossmatching technique. These circulars should be available to laboratories shortly.

Marking

Beginning from, and including, 1982 there will be an expanded marking system similar to those used in some universities. Instead of a Grade C they will be a C−, C, C+, similarly in Grades B and A. D mark will indicate between 45-49 while and E mark indicates less than 45 percent. These will give a candidate, and the supervisors in laboratories, a much greater indication of the merit of performance of the candidate, and perhaps a guide as to whether they should proceed to Part III in that discipline or attempt another Part II examination.

Notification of Marks

The Board will officially notify all candidates gaining highest marks in each discipline from and including the 1982 examination.

Enquiries as to Marks Attained

All other enquiries, for annual awards, etc., be made to the Board's Examination committee through the Secretary of the Board.

Release of Results

There will be no further interim release of examination results. All results will be released by the Board's secretary to all candidates following the December Board meeting.

Practicals

It is the Board's recommendation that from and including 1983 all practical examinations in all disciplines will be "in laboratory" practicals. In the case of virology and cytogenetics, because of special conditions, there may be some variation to the practical system of examination.

Fees

Examination fees may have to be raised in the near future to cover increased expenditure. A figure of $20.00 per paper is being considered. Registration fees will probably rise to $15.00 per annum beginning from 1 April 1982.

Name Changes

New Zealand Certificate in Science Paramedical has now had a name change to N.Z.C.S. (Medical Science).

Need to Register

There has been a question asked in the past as to whether laboratory personnel employed in Animal Health Laboratories have a need to register to practise. It was the Board's decision that as they are not practising medical laboratory technology as defined in the Act it is not necessary for them to register.

Changes to regulations

These have now been completed and should go before order of council to come into effect from 1 April 1982. These are:
A change in title to "Medical Laboratory Technologists' Board."
A change allowing trainees to proceed to limited registration in disciplines other than major disciplines if the subjects taken for N.Z.C.S. are substantially equivalent to but not exactly N.Z.C.S. paramedical. A proviso allowing graduate trainees to undertake their 1-year fulltime training (without examination) at any time during their 3-year course. A change in title to Diploma rather than Certificate of Proficiency. A replacement of the lists of all subjects required for B.T.C. with "N.Z.C.S. Paramedical Option A", which of course is awarded in every case. The Board still maintains the right to prescribe the subjects within that course. Addition of cytogenetics and virology as subjects at parts II and III level.

OTHER SOCIETIES

NZACB

The NZACB has elected a new committee; the details are given below. The address of both the President and Secretary is Dept of Clinical Biochemistry, Box 913, Dunedin. President: Dr C. Watts. Secretary: Dr C. Lovell-Smith. Treasurer: Mrs S. Douglas. Council:—Dr. Small, Auckland. Dr P. Larking, Otago. Dr J. Evans, Christchurch. Mr R. Cooke, Wellington.

IAMLT

The IAMLT has developed its relations with the World Health Organisation (WHO) and is now recognised as a Non-Governmental Organisation (NGO) in official relations with W.H.O.

The IAMLT has recently adopted the following resolutions.

(a) Mindful of its international involvement in all aspects of health laboratory technology and the extensive experience in this field represented by its large membership in many regions of the world, this Council pledges itself to establishing a framework of collaborative activities with the World Health Organisation.

(b) The Council charges its Representatives to W.H.O. and its Executive Director to enter into collaboration immediately with the responsible WHO Technical Officer in order to establish a framework of activities at the earliest possible date.

(c) Mindful of its limited financial resources the Council requests the Executive Director, in conjunction with its Representative to WHO and the Treasurer to prepare a budget for the framework of activities and to seek funds from other agencies to initiate and maintain the programme.

Discussion with the officers of WHO were commenced in June, 1981 and have recently reached agreement whereby the following projects will be initiated.

(i) The preparation of a document on the planning, establishing and organising of training centres for medical laboratory technicians and technologists in developing countries.

(ii) The preparation of a document on the curriculum for the training of health laboratory workers in the administration and management of peripheral level laboratories.

(iii) The establishment of a machinery for the regular publication of a "newsletter" for medical laboratory technicians working at district and peripheral level laboratories in developing countries.

In order to support these activities WHO has given an initial grant of US$2000.

The IAMLT has a reciprocal affiliation arrangement with the International Hospital Federation and exchanges journals and other relevant information.

The IAMLT has been accepted as a member of the Council for International Organisations of Medical Sciences.

ECCLS

The European Committee for Clinical Laboratory Standards (ECCLS) conducts meetings and seminars; the following is a resume of a report contained in ECCLS News.

The 2nd ECCLS seminar called 'Professional Societies and Clinical Laboratory Science' was held at Lyon in November 1981. There were over one hundred participants and the meeting was held in the Part Dieu a new complex of buildings of futuristic appearance.

The papers and subsequent discussion fell into two broad groups—philosophy and learning, the learning papers covering such items as systems for specimen collections, transport and storage, method and instrument evaluation, quality assessment and data handling. In a session entitled "The Industrial Scientist" attention was drawn to the extent to which our dependence for efficiency and quality has moved to industry, the new Kodak layer chemistry being cited as a recent example. It was pointed out that professional societies have two main functions, improving the quality of medicine to the benefit of mankind and improving the quality of life for members, some societies operating exclusively for one and some for both and that it was to be hoped that the former is all important and the latter a means of achieving the former. A participant from industry made the point that to industry profit is all important for without profit there is no contribution to health care and therefore conflict with the previous statements.

The point was made that we must not go into our laboratories and close the door behind us and the story was told of how a committee member of the ECCLS whilst visiting New York went to bed in his hotel with a bottle of Chablis, inevitably awoke to visit the bathroom but forgeting he had changed hotels, went through the corridor door instead of the bathroom door and closed it behind him. He happened to be in his birthday suit and

the embarrassing though hilarious consequences of the subsequent events illustrate the dire consequences of going through the wrong door and closing it.

FORUM

Dear Sir,

In reply to the letter from Mr M. Legge of November 1981. We must congratulate him for hitting the nail on the head.

We agree with him regarding the institute's preoccupation with salary negotiations and that they have lost sight of the equally important subject of working conditions.

Most senior and charge technologists would agree that the majority of problems in the laboratory are related to conditions and are not necessarily salary related.

We would like to add the following points to those raised by Mr Legge:

1. The organisation of a Technologist Exchange Scheme whereby a technologist from an underdeveloped country changes place with one from New Zealand. This is a double edged sword situation with definite advantages to both parties, let alone being an exercise in goodwill.
2. The above system could also work well with developed countries e.g. NZ-UK, NZ-Canada, NZ-USA, NZ-Australia.
3. A more liberal attitude by employers to attend work related courses for all grades of staff, from Trainee to Head of Department.
4. Encouragement and financial assistance to set up specialised training workshops and related courses including retraining sessions. Perhaps the C.I.T. could play a leading role in this area.

We believe that by making the job of a Medical Technologist a more vibrant occupation, not only does it become more satisfying but we are also doing something to improve the quality of the profession and ultimately the welfare of the patient. If we can achieve all these things then perhaps we have a better case to argue for salary increases. So let's stop grizzling about money and do something about our own standards and ideals first.

Yours sincerely,
R. I. C. Sills,
R. Pohl,
D. M. Coburn,
M. Whineray,
Palmerston North.
15/2/82

Dear Sir,

In his reply to Mr R. T. Kennedy's letter in the NZIMLT September 1981 Newsletter, Mr Harper stated "If, some time in the future, it was decided to discountinue the C.O.P., students currently in training would have to be allowed to complete their training under the old system". This raises an interesting point.

With students qualifying under the proposed degree route and others through the current C.O.P., a two-tiered Medical Technologist structure would have been created; on the one hand, those with the BSc (Med. Tech.) with, as we are told, "increased status and vocational responsibility" (are we to assume from this that those with the C.O.P. are any less vocationally responsible?) and, on the other hand, those with the present C.O.P., a qualification which, at the present time, faces increasing difficulty in gaining overseas reciprocity for its holders.

Will the people with C.O.P. continually lose out in the competition for positions to those with degrees?

Conversely, will those with the degree suffer from the possible prejudice of pro-C.O.P. superiors?

What options have been investigated for technologists, post-C.O.P. to at least put them on an equal footing with these "more versatile technologists" we'll be producing.

The current membership and those of the next few years have a right to know about their future security, what efforts have been made or are being made to widen their job opportunities, and guarantee their future.

Yours faithfully,

H. C. Potter.

Dear Sir,

To claim that the membership have been made aware of the informal talks being held with Massey aimed at the establishment of a degree course is quite incorrect. If we look back at the history of discussions with Massey it appears that the proposed degree is a relatively recent development; the establishment of post-Diploma specialist courses appears to have been the main thrust of negotiations with Massey in the past. Certainly we were told that, in July and November 1978, and January 1979, Council had met with various members of the Massey academic staff where ideas for a structured degree had been discussed; these ideas, it must be stressed had been put by *Massey* as Council, at that time, were still committed to the Diploma and post-Diploma structure.

In July 1979, we were told that "it appears that financial constraints do not permit the development of new courses at present and, consequently, this project (the proposed Massey degree course) has had to be shelved in the meantime", only to be informed twelve months later that "Syllabi for the proposed Massey degree course is being drafted . . ." The membership were certainly not made aware of any resumption in negotiation with Massey, or any other universities for that matter. Have approaches been made to other universities? If so, what was the outcome? If not, why not?

Massey may not be the best place for such a course; indeed from the correspondence appearing in recent newsletters, this appears to be the belief shared by many of the membership.

What do the membership, in fact, want in the way of Education reform? Have they been asked? Do they want a degree course at all?

When do we get the chance to have our say, or do we just leave reform in the hands of a few!

I certainly hope an opportunity can be found, at this year's Conference, for the membership to state its case.

Your faithfully,

H. C. Potter.

SCIENTIFIC MEETINGS

Glycoslylated Proteins

A Seminar on glycosylated proteins is to be held in conjunction with the next meeting of the New Zealand Society for the Study of Diabetes at Massey University.

The purpose of the Seminar is to establish guidelines for future research into glycosylated proteins in diabetics and specifically to make recommendations on the methods of measurement and quality control of glycosylated haemoglobin.

The Seminar will be held on Saturday 29th May 1982. Further information can be obtained from Dr Paul Dixon, Department of Medicine, Palmerston North Hospital, Palmerston North.

2nd Asian Pacific Congress of Clinical Biochemistry 19th-24th September 1982 at Singapore

Organised by the Singapore Association of Clinical Chemistry and held under the auspices of the Ministry of Health Singapore, Academy of Medicine, Singapore, National University of Singapore and the International Federation of Clinical Chemistry. The Congress is held at the Mandarin Hotel, Singapore and the official language is English.

Registration Fee before June 19th 1982 is for scientific participant Singapore dollars $320, after June 19th SD$360. Accompanying person SD$170 and SD$200.

Full details are available from:

The Congress Secretariat, 2nd Asian Pacific Congress of Clinical Biochemistry, C/- Singapore Professional Centre, 129 B Block 23 Outram Park, Singapore 0316, Republic of Singapore. Tele 2215417.

15th Congress of the I.A.M.L.T. Vrije University, Amsterdam, Netherlands, 13-18 June 1982. Registration and Hotel Bookings Forms are available from the Conference Secretariat, 15th Congress of I.A.M.L.T., 6 Porter Street, Baker Street, London W7 M7H2, United Kingdom.

An arrangement to travel from Australia to Amsterdam has been made. There is also available a Post Conference tour of Europe. Full details are available from the Secretary N.Z.I.M.L.T. Mr Barrie Edwards, Haematology Department, Christchurch Hospital, Christchurch.

Annual Conferences of the New Zealand Microbiological Society.

1982 May 16-19 at University of Canterbury, Convener—Dr A. L. J. Cole, Botany Department, University of Canterbury.
1983 May (dates to be determined) at Wellington. Convener—Dr K. Bettelheim, National Health Institute, Wellington.
1984 May 14-18 2nd Joint Meeting with Australian Society for Microbiology in Sydney.
1985 May (dates to be determined) in Palmerston North.

XV Pacific Science Congress Dunedin N.Z. February 1-11 1983. Full details from, Secretary General, 15th Pacific Science Congress, P.O. Box 6063, Dunedin, New Zealand. This congress includes a section on Public Health and Medical Science (Section L.). The section convener is Associate Professor F. A. de Hamel, Dept. of Preventive and Social Medicine, Medical School University of Otago. The preliminary programme for section L includes (1). The Ecology of Influenza Viruses; (2). The Nidality of Disease (diseases with an endemic natural source); (3) Metabolic Disease in the Pacific (Jointly with the section on Nutrition); (4) Environmental Carcinogens, Mutagens and Teratogens.

Health Agencies and Clinical Laboratory Science Veldhoven Holland 3rd-4th June 1982

This seminar is held by the ECCLS and follows the AGM of the ECCLS; full details are available from Irene Batty, Executive Director ECCLS, C/- Wellcome Research Laboratories, Langley Court, Beckenham, Kent BR3 3BS U.K. Tele 01-6582211 Ext 480 Telex WELLAB G 23937.

The Editor has a copy of the prospectus.

SOUTH PACIFIC CONGRESS
CHRISTCHURCH TOWN HALL
9-13 AUGUST 1982

CONGRESS VENUE

Workshops

These will be held on Monday 9 and Tuesday 10 August 1982 at a number of locations throughout Christchurch. More detailed information will be supplied at a later date.

Congress

The whole Congress, including meetings, trade exhibition, lunches and social events will take place in the Christchurch Town Hall.

TRADE EXHIBITION

A Trade Exhibition will be held in conjunction with the Congress from 11-13 August. A large number of national and international companies have already agreed to participate in the exhibition. During morning tea and afternoon tea breaks refreshments will be served in the Trade Exhibition area to allow delegates every opportunity to inspect displays.

For further information regarding the Trade Exhibition inquiries should be addressed to the Trade Exhibition Convener, Mr Gilbert Rose, Pathology Services, Christchurch Hospital, Christchurch, New Zealand.

ORGANISING COMMITTEE

Congress Chairman—Barrie Edwards, Haematology Department, Christchurch Hospital, Ph: 792-900 Ext. 446. After Hours 45-505.

Trade Exhibition Convener—Gilbert Rose, Pathology Services, Christchurch Hospital, Christchurch, N.Z. Ph: 68-563.

Scientific Committee Convener—Raewyn Bluck, C/- Laboratory, Middlemore Hospital, Otahuhu, Auckland, N.Z.

Christchurch Co-ordinator—Kevin McLoughlin, Blood Bank, Christchurch Hospital, Christchurch, N.Z.

Social Committee Convener—Graeme Paltridge, Microbiology Department, Christchurch Hospital, Christchurch, N.Z.

Treasurer—Sandra Beckingham, Haematology Department, Christchurch Hospital, Christchurch, N.Z.

SCIENTIFIC PROGRAMME

If you are interested in presenting a paper or in mounting a poster display at the Congress, for further instructions please contact your subject convener, as listed.

Notification of intent to present either a paper or poster display must be with the subject convener by 31 January 1982. Abstracts will be required for publication by 31 March 1982.

Biochemistry—Eric Johnston, Biochemistry Department, Auckland Hospital, Auckland, New Zealand.

Cytology—Michael Churchhouse, Cytology Laboratory, National Women's Hospital, Auckland, New Zealand.

Haematology—Marilyn Eales, C/- Laboratory, Middlemore Hospital, Otahuhu, Auckland, New Zealand.

Histology—Mary Sorenson, C/- Laboratory, National Women's Hospital, Auckland, New Zealand.

Immunology—Maurice Roberts, C/- Blood Transfusion Service, Park Road, Auckland, New Zealand.

Immunohaematology—Walter Wilson, C/- Blood Transfusion Service, Park Road, Auckland, New Zealand.

Management—Terry Martin, C/- Laboratory, Princess Mary Hospital, Auckland, New Zealand.

Microbiology—Brian Cornere, C/- Laboratory, Green Lane Hospital, Auckland, New Zealand.

INSTITUTE CALENDAR 1982

May 6-7	Council meeting.
May 11-12	Q.T.A. examination.
May 14	Receipt of Annual Reports from sub-committees by Secretary.
June 15	Nomination forms for the election of Officers and Remits for the Annual General Meeting to be with the Membership (60 days prior to A.G.M.).
July 5	Nomination forms for the Election of Officers to be with the Secretary (40 days prior to A.G.M.).
July 24	Ballot papers to be with the Membership (21 days prior to A.G.M.).
July 31	Annual Report and Balance Sheet to be with the Membership (14 days prior to A.G.M.).
August 7	Ballot papers and proxies to be with the Secretary (7 days prior to A.G.M.).
August 7-8	Council Meeting—Christchurch.
August 9-13	South Pacific Congress—Christchurch.
August 14	A.G.M. and S.G.M.—Christchurch.

News from the Hill

A report compiled with the co-operation of the Public Relations Section of the Department of Health and the Public Relations Officer of the Minister of Health.

In a recent series of speeches the Minister of Health, the Honourable A. G. Malcolm, has explained his intentions as to the future of the Health services and the level of and the distribution of the funds which are to be made available. In his speeches he has presented the historical background to the present level of finance which the health services enjoy. It seems that during the past 20 years the amount of money available to the health services both public, private and voluntary has increased by 93 percent in real terms. This figure being only a bare statistic cannot tell the whole story.

The amount of money spent on health care in this country and the value received compares favourably with other sophisticated health services. There is no doubt that the New Zealand taxpayers get value for their money though I doubt whether the Swiss citizen whose health care costs 156 percent more in real terms can be anything but unhappy.

It is the stated intention of the Minister to stop all further growth in the tax funded share of health costs and that from now on all funds for growth are to be met by finding money elsewhere in the health system. Mr Malcolm describes some ways in which this can be achieved. The most controversial of these is the policy of basing Hospital Board allocations on the number of persons who live in a board's area with certain allowances for variable needs.

As a result of this policy the funds made available to some boards in the south of New Zealand have been reduced in real terms, Marlborough, Southland, Otago, West Coast, Wellington by 1 percent and Waikato and Nelson by 0.74 percent. Conversely some extra expenditure has been approved for the Auckland Board but this would be capital expenditure.

This policy will undoubtedly have an effect on the careers of Medical Technologists.

The other main proposal is that funds for growth be found by more efficient use of existing finance. This will mean a demand for laboratories to increase their efficiency and will force technologists to adopt modern management methods and thus become trained in the application of these methods. This again will have considerable effect on the careers of all technologists.

CLASSIFIED ADVERTISEMENTS

Classified Advertising is received by the Editor P.O. Box 6168, Dunedin. The closing dates for 1982 are April 7th, June 2nd, August 4th, October 6th, December 1st. The rate is $5 a column centimetre.

SITUATIONS WANTED

Medical Technologist registered by the American Society for Clinical Pathologists and regarded as a graduate technologist by the Medical Laboratory Technologists' Board of New Zealand desires work in a laboratory in a New Zealand hospital. I have ½ year part-time and 1 year full-time experience postgraduate in a modern four hundred bed hospital, the laboratory of which is approved by national accrediting organisations. My main experience is in immunohaematology, haematology, and the basic chemistries performed on modern equipment.

I will be happy to supply any information you may need.

Please contact:
Cheryl A. Neckers
2227 Windsor Ave. S.W.
Roanoke, Virginia 24015
U.S.A.

Wieke Reiss, age 23 who is resident in New Zealand seeks a position. Wieke is registered for biochemistry only and seeks a training position to obtain full registration by the M.L.T.B. Please contact Wieke Reiss, C/- Jan Kock, 74 East Street, Pukekohe. Phone 88-012.

American Medical Technologist registered in New Zealand by MTB seeks employment in New Zealand. Six years experience in Haematology and Urinalysis, three years experience supervision. Teaching experience in these areas. Please contact: Mary L. Duffy, 444 Custer Avenue, Evanston, Illinois, 60202 U.S.A.

Christchurch biochemistry vacancy required for Grade 1 or 2 laboratory officer with 15 years hospital biochemistry experience in United Kingdon, New Zealand, registration confirmed. Mr R. S. Counter FIMLS, 8 Marlbrook Lane, Marlbrook, Bromsgrove, United Kingdom.

Registered ASCP, MLT Age 25, single, Wayne State University, BSc. Medical Technology 1979. Seeks post in New Zealand, preferably North.

Main interest Microbiology but accomplished in other areas. Involved in teaching Medical Technology and continuing education. Please write to: Miss Beverly J. Klaty, 345 Beverley Island Drive, Pontiac, MICHIGAN 48054, U.S.A.

FOR SALE By Tender

COULTER D. N., DADE 2D DILUTOR, GRANT SB 35 WATERBATH.

All equipment in good condition. Highest or any tender not necessarily accepted. Tenders close at 12 noon on 5th April 1982. Any enquiries to The Manager, Waikato Veterinary Pathology Services, Box 314, Cambridge.

FOR SALE

OFFICIAL N.Z.I.M.L.T. TIES

These are once again available for sale and supply is limited, so be in early to avoid disappointment. The ties are in the official Institute dark blue and are decorated with discreet rampant microscopes and will become a genuine collector's item. Price $2.50 Available from The Librarian N.Z.I.M.L.T. Haematology Department, Dunedin Hospital, Dunedin.

COUNTER INTELLIGENCE

The more you know about haematology counters, the more you'll be convinced:

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ELT-8 Haematology Counter from Ortho is the most advanced 8-parameter haematology counter available today. Its low-level platelet precision is unequalled. Its accuracy is more consistent. Its operational and data handling features are unquestionably superior. And it costs substantially less to operate than competitive systems!

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