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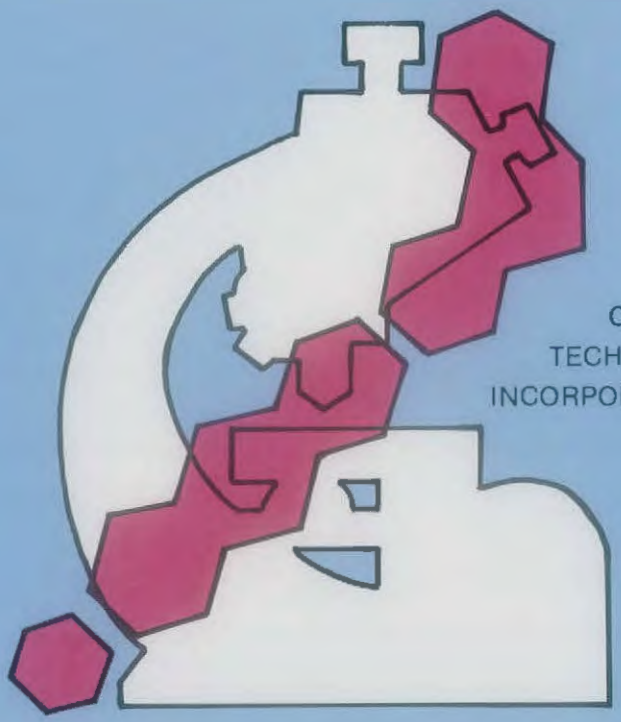

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Purification of Band 8, a Salivary Protein Implicated in Bloat Susceptibility

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Received for publication May 1982

Abstract

One of the main proteins that has been shown to be related to bloat susceptibility in cattle has been separated. This protein, designated band 8, has been preparatively separated as a pure protein as determined by polyacrylamide gel electrophoresis, thin layer chromatography, SDS- electrophoresis and electrofocusing. The preparative separation involved high speed centrifugation, alcoholic precipitation, preparative electrofocusing and ion exchange chromatography.

The purified protein had a mean molecular weight of 47 742 and appeared to be composed of three equal 16 496 dalton subunits. The isoelectric point of this protein was very close to that of bovine serum albumin.

Antibodies produced in the rabbit against this purified protein when used in an electro-immunoassay for band 8, showed a high correlation with the concentration of band 8 in saliva determined by quantitative electrophoresis.

Introduction

Bloat is a metabolic condition in cattle caused by the build up of gas and foam in the rumen. It has been demonstrated that it is possible to select cows for either high (HS) or low susceptibility (LS) to bloat,[1] and that some specific salivary proteins are involved in determining or predicting this susceptibility[2, 3]. Studies have shown that band 8 is related to band 7 protein and that these two salivary proteins may differ only by the number of sialic acid residues present.[4] A consistent negative relationship exists between the proportion of bands 7 and 8 in saliva and bloat susceptibility.

The work described in this paper related to the purification an characterisation of band 8 protein[5] and the production of antibodies against this protein using the rabbit as host animal. An electro-immunoassay was developed for quantifying band 8 protein and this technique was compared with the results obtained by electrophoresis.[5]

Materials and Methods

REAGENTS

Sephadex G75, G100 and G150 superfine, DEAE 50 sephadex anion ion exchanger were obtained from Pharmacia Fine Chemicals AB Uppsala, Sweden. Ampholytes pH 3.5-5.0 and pH 4.0-6.0 were obtained from LKB-Produkter AB, Bromma, Sweden.

All other reagents were of Analar grade.

EQUIPMENT

An ISCO model 494 constant power, 2000 volt maximum power pack was used for the isoelectric focusing. Supplied by ISCO, Lincon, Nebraska, USA.

The preparative isoelectric focusing was run using the LKB Multiphore apparatus supplied by LKB-Produkter AB, Bromma, Sweden.

The thin layer gel apparatus was purchased from Pharmacia Fine Chemicals AB, Uppsala, Sweden. The apparatus and its operation are described in "Thin Layer Gel Filtration with the Pharmacia TLG Apparatus" (booklet supplied with the apparatus).

A Radiometer GK2321C, 6 mm diameter combination pH electrode was used to determine the pH of each fraction separated by isoelectric focusing. Manufactured by Radiometer, Copenhagen, Denmark.

Ultrafiltration of individual fractions from the ion exchange chromatography was carried out using the Millipore immersible CX filters with a 10 000 molecular weight cut off. Supplied by Millipore Corporation, Bedford, Massachusetts, USA.

SALIVA SAMPLES

Saliva was collected from cows by means of a mouth bit which fitted under the tongue and behind the opening of the mandibular gland ducts.[2] Six cows were individually stimulated by placing 5 ml of an aqueous acetic solution, pH 2.0 on the middle of their tongues and saliva samples were immediately collected over a 5 minutes period.[2] The individual saliva samples were centrifuged for 10 min at 1500 x *g* to remove any debris and then frozen until required for purification.

METHOD

After thawing, the frozen saliva samples were thoroughly mixed, pooled, and centrifuged for 60 min at 10,000 x *g* to remove most of the high molecular weight mucin.[4] The salivary proteins were then selectively precipitated at 4 °C with absolute ethanol 1:4 (v/v) saliva: ethanol. After 16 h at 4 °C the saliva: ethanol mixture was centrifgued for 10 min at 8000 x *g* and the precipitated proteins were redissolved in 0.001 mol/l ammonium carbonate followed by dialysis against five changes of the ammonium carbonate over a 48 h period. The dialysed proteins were then freeze dried. The freeze dried protein was resuspended in 95 ml of distilled water, to which was added 5 g of prewashed Sephadex G75 superfine. This was allowed to stand for 1-2 h until water uptake of the Sephadex was complete. Ampholytes (2.5 ml of pH 3.5-5.0 and 2.5 ml of pH 4.0-6.0) were then added to the slurry and stirred.

The 110 mm x 245 mm plate was poured to a depth of 5 mm. Excess water was evaporated from the plate and the IEF was run as described by Winter *et al.*[6] The power pack was set at 2000 V, 18 mA and 8 W power limits, and run for 7 h during which time most of the mucoprotein had reached the anode end of the slurry. The run was stopped and a 3 cm zone was removed from the anode end of the slurry (this contained most of the mucoprotein along with some low molecular weight proteins). The remaining slurry was placed in elution columns[6] and the proteins were eluted out with distilled water, pooled and the total volume made up to 95 ml with distilled water. A second round of IEF was then run for 16 h under the same conditions as used previously. On completion of the run, a 30 compartment grid was placed into the slurry and a subfraction of slurry was removed from each compartment and the ampholytes and proteins were eluted with 0.5 ml of distilled water. These samples were used to determine the pH value of each segment by directly reading the pH with a 6 mm diameter combination electrode.

The remainder of the slurry in each compartment was removed and placed into the 30 elution columns and the proteins plus ampholytes were eluted out with 6 ml of 0.01 mol/l. Tris/maleic acid buffer pH 8.0. Protein concentrations were determined on all 30 fractions using coomassie G according to the method of Bradford.[7] Protein results were plotted (absorbance against tube number) and the peaks were examined by electrophoresis.[5] All tubes containing band 8 protein were pooled and the protein was further purified by ion exchange chromatography using DEAE 50 Sephadex.

Eight grams of A50 were weighed out and washed according to the manufacturer's recommendation. The A50 was then equilibrated in 0.01 mol/l Tris/Maleic acid buffer pH 8.0. The slurry was then packed to a height of 185 mm in a 25 mm diameter column and the column was further washed with 2 bed volumes of the Tris buffer. The pooled partially purified band 8 protein was dialysed overnight in several changes of the Tris buffer. The dialysed protein was then added to the column and several bed volumes of Tris buffer was used to eluate any unbound protein. Stepwise elutions were performed using the above Tris buffer

containing 0.1, 0.2 and 0.2 mol/l sodium chloride respectively. Band 8 protein was eluted from the column with the Tris buffer containing 0.33 mol/l sodium chloride.

The recovered band 8 protein was checked for purity by electrophoresis and concentrations by the Lowry protein method.[8] SDS- electrophoresis, analytical isoelectric focusing, and thin layer gel chromatography were performed on the purified protein.

Antiserum against the purified band 8 protein was prepared in the rabbit according to the method of Harboe & Ingild.[9]

Table 1: Molecular weight determinations of purified band 8 protein using thin layer gel chromatography

(a) Calculation of results; the reciprocal of the relative migration was plotted against log molecular weight (thyroglobulin used as marker protein).

Standards used for each run:

Protein	Molecular Weight
Cytochrome C	12 500
Soybean Trypsin Inhibitor	21 500
Ovalumin	45 000
Bovine Serum Albumin	67 000

regression calculated $y_{1/R} = a + b \log x\ MW$

e.g. $y = 5.785\text{-}0.427 \times (n=3)$

$r^2 = 0.97$

(b) Purified band 8 protein
8 molecular weight determinations = 47742 ± 274 (SEM)
(5% confidence limits = 47094-48390)

Table 2: Molecular weight determination of band 8 protein subunit by SDS-electrophoresis

(a) Calculation of results; band 8 protein subunit molecular weight determination based upon the regression of the mean (n = 3) relative migration (R) of protein standards against log molecular weight.

$y_R = a + b \log x\ MW$

$y = 5.50\text{-}1.73x \quad (n=3) \quad r^2 = 1.0$

Standards used for each run:

Protein	Mean Relative Migration (n = 3)	Log MW
Cytochrome C	0.8168	4.0969
IgG light chain	0.6693	4.3252
Ovalbumin	0.4981	4.6335
IgG heavy chain	0.4470	4.7243
BSA	0.3901	4.8261
B-Galactosidase	0.2244	5.1139

(b) Purified band 8 protein
Single subunit, 11 molecular weight determinations
Mean molecular weight = 16496 ± 109 (SEM)

Results

The mean molecular of the pure protein as determined by thin layer gel filtration and shown to be 47 742. The subunit molecular weight was determined by SDS-electrophoresis and shown to be 16 496, which would indicate the protein was composed of three 16 496 molecular weight subunits. The isoelectric point of band 8 protein was shown to be almost identical to that of purified bovine serum albumin and the band 6 protein purified from saliva; pI 4.7. In several preparations the band 8 was seen as two bands which were separated by 2-3 mm.

When saliva collected by the mouth bit was run on two dimensional crossed electro-immuno diffusion using the band 8 antiserum one major precipitin rocket was detected which corresponded to the band 8 position. However there were minor precipitin rockets which showed cross reactivity with proteins in other band regions.

When band 8 protein was quantified by the electro-immuno assay[10] using band 8 antiserum, there was a good correlation with the concentration of band 8 in salivas (expressed in CI units) determined by the quantitative electrophoretic method.[5]

Discussion

Although preparative isoelectric focusing is a powerful technique for separating proteins which have different pI values, measuring the protein concentration in each fraction can be a problem as the ampholytes interfere with the Lowry protein assay. It is possible to read each of the 30 fractions at 280 nm as ampholytes have very low extinction coefficients at this wave length, however as facilities for reading the absorbance at 280 nm were not available the single reagent Coomassie G protein assay[7] was used. Ampholytes do not interfere with this assay and therefore it is a rapid and simple procedure for detecting the protein peaks separated by isoelectric focusing.

The band 8 protein, purified by preparative isoeletric focusing and ion exchange chromatography is one of the salivary proteins which have been implicated in the susceptibility of an animal to bloat.

The amount of band 8 protein present in saliva when quantified by the electro-immuno assay, gave a high correlation with the concentration of band 8 protein present when measured by electrophoresis. The intercept of the regression line passed through zero, and this would support the hypothesis that all the protein present in the band 8 region, detected by electrophoresis was being measured by the electro-immunoassay.

Work is in progress on characterising the other proteins implicated in determining an animal's susceptibility to bloat. The aim of the work is to ultimately find the biological function of these proteins and determine their role in bloat.

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Medical cytogenetics (a personal viewpoint)

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Introduction and the Early Days

The acceptance of cells as being the structural units of all animals and plants came about by their identification in plant tissues by Robert Hooke in 1665. Two centuries later, Virchow described the process of cell division, which showed that cells always arise from other cells, thereby establishing the principle for genetic continuity. Flemming gave the first detailed account of a somatic cell division and used the word 'mitosis' to describe the procedure. The reduction division during gametogenesis was observed by Boveri in 1887, and was later called 'meiosis'. Hence, by the late nineteenth century, the cytological events and elements responsible for genetic continuity had been identified. Nevertheless, their role in the factor of inheritanee was not appropriated until the rediscovery in 1900 of Mendel's experiments with peas, originally published in 1865. The significance of the regular transmission of chromosomes, and the inheritance of biological characters led to the Sutton-Boveri Hypothesis and the founding of cytogenetics at the beginning of the twentieth century.

Evidence supporting the chromosome theory of inheritance grew during the following three decades. Major contributions were the correlation of sex determination and sex chromosomes, that specific chromosomes carry specific genes, and the interpretation of chiasmata observed during meiosis. Nevertheless, it was not until 1931 that Creighton and McClintock showed that the exchange of identifiable homologous regions was accompanied by an exchange of genes assigned to these regions. The exact number of human chromosomes, though, still proved an elusive goal until 1956, when the correct number was shown to be 46 by Tjio and Levan, and confirmed in the same year by Ford and Hamerton.

The advances in tissue culture and chromosome identification techniques of the late 1950s and 1960s saw a dramatic increase in studies on mammalian chromosomes, but the identification of chromosomes was still largely based on relative size, the position of the centromere and, to a lesser degree, the absence or presence of such structures as satellites and secondary constrictions. Nevertheless, specific syndromes were identified with specific chromosomes, and the finding of the Ph' chromosomes in cases of CML by Nowell and Hungerford in 1960 was a decisive aid in diagnosis. The late 50s and 60s, too, saw the setting up of small cytogenetic units in hospital laboratories as the significance of the technology being performed in university and other research establishments filtered through. The small hospital units were staffed, in the main, by senior medical technologists qualified in other major disciplines, and by science graduates who were employed as hospital Scientific Officers. From these humble beginnings came the existence in many countries of the world of the larger regional cytogenetic centres catering for populations of three million and upwards.

If the late 1950s and early 1960s was an exciting time to be engaged in this 'new' discipline of medical cytogenetics, then the 1970s and subsequent 1980s have proved to be electrifying! An explosion of scientific data and technology burst upon the scene, leaving the incumbents shell-shocked and gasping for breath.

The Present and the Future

Foremost amongst these startling advances was, of course, the complete identification of the human karyotype, made possible by Casperason in 1970 when he demonstrated that chromosomes, when stained with quinicrine dyes, produce characteristic and reproducible patterns of fluorescence when activated with UV light. These patterns were termed 'bands'. This was followed by a deulge of techniques, now in common use, called 'G-banding' which also produce bands with an almost identical distribution to that of the fluorescent bands. The identification methodologies came thick and fast, becoming more and more sophisticated to the degree where it is now possible to clearly demonstrate distinct segments or portions of chromosomes. Many laboratories now also engage in the production of High Resolution chromosome bands, which is the examination of cells in the late prophase and early metaphase stage of division. This procedure has seen an emergence of new syndromes and the correlation of known syndromes with previously 'unseen' chromosome aberrations.

Ranking alongside the 'importance' of identification procedures must surely be the use of amniocentesis for the diagnosis of chromosome disorders, biochemical disease and neural tube defects. Some quarter-of-a-century ago, Fuchs and Riis,[1] and Saches *et al.*[2] first demonstrated the feasibility of determining the sex of an unborn child. The first successful attempt to determine foetal karyotype was made by Klinger in 1965, as noted by Steele and Breg.[3] Since then, the use of amniocentesis has expanded rapidly in all parts of the world where the technology is available for such tests to be performed. Related new developments include foetoscopy, ultrasonographic and other methods of foetal imaging, foetal blood sampling and increased possibilties for the diagnosis of biochemical disease in the foetus.

These developments have, nevertheless, raised social, legal and ethical issues, to say nothing of the controversy surrounding selective abortion! Fortunately, these complex issues are on the sidelines as far as the majority of technologists and scientific officers are concerned and hopefully, in time, will be successfully solved by the legislators, medical persons, the consumer and lay-persons concerned.

There is no question, however, of growing public awareness of prenatal diagnosis and, although the demand for amniocentesis is growing, only a small part of the potential is being met at present, hence, considerable increases have to be anticipated in the future.

The present-day methodologies have seen great interest placed on human chromosome polymorphisms, and their possible effect in such areas as reproductive problems and foetal wastage. For answers to be conclusive, however, large population studies are an essential requisite. Similarly, international symposia have been considering such topics as 'human behaviour and genetics'. Clarification of the long-term prognosis for the behaviour and mental status of patients with genetic diseases, identification of the best treatment for such patients, and development of the best methods of genetic counselling are all items which continue to come under scrutiny in this sector. Gene-mapping of chromosomes, the organisation, mechanisms and functions of DNA, RNA and H/Y antigen studies are all areas in which research continues to flourish.

However, what of the routine laboratory providing a cost-effective service to an aware public; how are they to view these advances and future developments? The answers, as always, are not easy, but a balanced approach to each new development would seem to be an appropriate avenue to pursue. It is sufficient to recall that, even after a decade from their conception, some establishments are still in debate over the cost-effectiveness of proceeding even with routine G-banding! Fortunately, the more aware majority recognise the very real importance of complete karyotype identification techniques and have introduced them into their routine. It is also good to remember that analysis by routine G-banding is faster than endeavouring to stumble through a conventionally-stained preparation (try asking a student!), which more than makes up for the time element lost in the banding procedure itself. Obviously, what procedures are to be adopted by larger laboratories with bigger specimen turnovers is governed by the number of trained staff available but, nevertheless, to be stagnated by tradition and blind to progress is detrimental to all concerned. I think a Charge Cytogeneticist with any shred of motivation would be hard put to continue to bury his head in the sand if he were to listen to, or even try to imagine, the complete impotence forced upon his Medical Geneticist when confronted by patients for counselling, when all he has at his disposal is incomplete karyology reports—the burden is intolerable. No

wonder, then, that the qualifications and training necessary to fill the role of *Charge* Cytogeneticist, recently introduced by the HGSA (Human Genetic Society of Australasia) for their accreditation examination in cytogenetics are so high. Also, in a recent report from an international workshop on prenatal diagnosis, the recommendation for the Charge Cytogeneticist was that he be of doctoral status.[4]

Perhaps it would be pertinent at this juncture to consider the training and staffing for cytogenetic laboratories/units in New Zealand. Historically, as in other countries, there have been no external training curricula, no staff structures, and certainly no rotating student technologists. This has resulted in an assortment of workers from various backgrounds, ranging from housewives to PhDs. It has also, quite understandably, resulted in massive staff turnovers, eventuating in a situation where there are workers with few years' experience, and who are self-taught to boot! A quite considerable number of these people have faced a daunting task over the past few years, endeavouring to keep abreast of progress; most, however, have found little support and, being employed in the historical position of laboratory assistant, have been abused and misused to an unimaginable degree by hospital boards trying to get a service for nothing! Hopefully, these horror conditions are on the way out.

It would seem to be an inevitable fact that medical cytogenetics, as an efficient modern service, will become more and more a regional concern. This has nothing to do with the big fish swallowing the little fish, or the total exclusion of a trained technologist or scientific officer from performing chromosome studies for a haematological diagnostic purpose, etc. It does mean, however, that no longer can 'one-person units' hope to cover the now existing wide range of techniques available for diagnosis. To do a job well, one has to do it often, and the facts are that, in New Zealand we have a small population, which inflicts (especially in cytogenetics) limitations on experience. Quoting again from its recommendations, the International Symposium on Prenatal Diagnosis[4] states that "one hundred amniotic fluid specimens are considered to be the *minimal* annual workload for a prenatal cytogenetics laboratory to maintain adequate quality control." It also states that the case-load for one Technologist/Scientific Officer should not exceed one hundred and fifty specimens per year, including cell culture, slide preparation and chromosome analysis. It is good to see now that in New Zealand we have cytogenetic examinations for Part II and Part III, which means that we have made a start towards obtaining a nucleus of well-trained persons. Nevertheless, what is sad, is the number of student technologists who never have the opportunity to spend time in the cytogenetic laboratory and, thus, never have the chance to make a career in the discipline. This criticism is not, of course, confined only to cytogenetics; Cytology, Histopathology and other smaller-numbered disciplines suffer the same fate. Therefore, the inevitable employment of science graduates occurs which, in the long-term, might not be such an outrageous thing (as some suggest) in the light of the now ongoing negotiations with Massey University for our future training programme in Medical Laboratory Technology.

It would take a brave, or perhaps foolish, person to try to predict the future scientific development in this exciting 'new' discipline. Who would have even dared to suggest the rate of progress obtained in the last decade, for example? However, whatever the outcome, we can be assured that life will never be boring for persons engaged in this fascinating subject.

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ESTIMATION OF CONJUGATED BILIRUBIN

Sir,

The interesting letter from McKenzie[1] highlights the many problems inherent in the estimation of conjugated bilirubin. I agree with him that clinicians place considerable importance on the direct bilirubin level in spite of the many technical inadequacies in the methods used for its measurement.

In adult patients with jaundice, most sera give only a slight direct reaction, but in hepatitis or other obstructive liver disease the direct reaction is high and is thus a helpful indication of the cause of the jaundice. A high level of precision is not required for this purpose. The position with infants is similar to that with adults except that the direct reaction, when slight, is often not ignored as it should be but is subtracted from the total bilirubin to calculate the indirect bilirubin level which is used as a guide to clinical management. It is known that conjugated bilirubin is not harmful, so it seems reasonable to subtract this fraction from the total but in doing so, a fundamental error is being made. Direct bilirubin is being equated with conjugated bilirubin. While this may be true in a qualitative sense, quantitatively and especially at low levels it is quite wrong. Direct bilirubin levels of 10-30μmol/l are common in infants but conjugated bilirubin levels are very much lower. Conjugated levels average only 1.5μmol/l in 31 jaundiced infants studied by Brodersen and Jacobsen[2] using an isotope dilution method and ranged from 0-0.035μmol/l in another group of 42 infants (direct bilirubin levels 10-53μmol/l) studied by Winsnes and Bratlid[3] using a highly specific ethyl anthranilate method.[4]

Where then, do these high direct bilirubin levels come from? There is good evidence that they are caused by the slight direct reaction of unconjugated bilirubin. On one occasion while at National Women's Hospital I prepared a bilirubin standard using

very high purity material from the National Bureau of Standards (Washington, USA). This bilirubin is prepared by crystallisation from chloroform and certainly does not contain any conjugates but a solution of 344μmol/l prepared in almost colourless pooled serum gave a direct reaction of 31μmol/l. A similar response is obtained with most high level bilirubin control sera. The detailed studies of Nosslin[5] confirm that unconjugated bilirubin will indeed give a direct reaction to an extent depending on the analytical conditions. An increase in the reaction pH or the concentration of sulphanilic acid or sodium nitrite increases the reaction of unconjugated bilirubin. Under optimum conditions Nosslin found a direct reaction for unconjugated bilirubin of about 10%.

Despite the problems, I belive that direct bilirubin assays can be justified. Values below about 10% of the total bilirubin level do not represent conjugated bilirubin and should be ignored. Values above this level increasingly indicate conjugated bilirubin and serve to alert the physician to an obstructive element in the jaundice. The poor precision commonly found for direct bilirubin assays in interlaboratory studies partly reflects the wide variation found for many common constituents and is probably compounded by the critical dependence of the direct diazo reaction, especially at low levels, on reagent strength and reaction time. It would be interesting to compare direct bilirubin levels from different laboratories using samples that actually contain some conjugated bilirubin.

Estimation of clinically significant levels of conjugated bilirubin in infants with obstructive jaundice remains a problem, but not a very common one. I found only 12 infants with direct bilirubin levels above 50μmol/l in a study of 4232 direct bilirubin estimations. Most of these infants had obstructive jaundice or had received intrauterine exchange transfusions, a treatment known to be associated with subsequent high conjugated bilirubin levels. In this small population, subtraction of the direct bilirubin from the total is justified, I believe, but the results must be interpreted with caution. The ethyl anthranilate method mentioned above[4] gives a more accurate estimation of conjugated bilirubin and might also be useful in this group of patients.

The acetone precipitation method of Mertz and West[6] mentioned by McKenzie may indeed be a step in the right direction. One criticism I would make of this method is that, as published, it is standardised on the basis of indirect rather than unconjugated bilirubin. An assessment of this method in terms of its validity as an assay for unconjugated bilirubin could be a useful contribution, especially in the neonatal area.

Yours sincerely,

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Carrington Hospital
Auckland.

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Uniform requirements for manuscripts submitted to biomedical journals

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Preface

In January 1978 a group of editors from some major biomedical journals published in English met in Vancouver, British Columbia, and decided on uniform technical requirements for manuscripts to be submitted to their journals. These requirements, including formats for bibliographic reference, were published in three of the journals early in 1979. The Vancouver group evolved into the International Committee of Medical Journal Editors. At the October 1981 meeting of the Committee the requirements were revised slightly and are presented as the main part of this document.

Over 150 journals have now agreed to receive manuscripts prepared in accordance with these requirements. It is important to emphasise what these requirements imply and what they do not.

Firstly, if authors prepare their manuscripts in the style specified in these requirements, editors will not return manuscripts for changes in detail of style. Even so, manuscripts may be altered by journals to conform with details of their own publication styles.

Thus, secondly, the requirements are instructions to authors on how to prepare manuscripts, not to editors on publication style.

Thirdly, authors sending manuscripts to a participating journal should not try to prepare them in accordance with the individual publication style of that journal but should follow the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals".

Nevertheless authors must also follow the instructions to authors in the journal as to what topics are suitable for that journal and the types of papers that may be submitted (for example, original articles, reviews, case reports). In addition, the journal's instructions are likely to contain other requirements unique to that journal, such as number of copies of manuscripts, acceptable languages, length of articles, and approved abbreviations besides those listed in this document.

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This document will be revised at intervals. Inquiries and comments from Central and North America about these requirements should be sent to Edward J. Huth MD, Annals of Internal Medicine, 4200 Pine Street, Philadelphia, PA 19104, USA; those from other regions should be sent to Stephen P. Lock FRCP, British Medical Journal, British Medical Association, Tavistock Square, London WC1H 9JR, United Kingdom.

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Type the manuscript double spaced, including title page, abstract, text, acknowledgments, references, tables, and legends.

Each manuscript component should begin on a new page, in this sequence: Title page; Abstract and key words; Text; Acknowledgments; References; Tables: each table, complete with title and footnotes, on a separate page; Legends for illustration.

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2. Corporate Author
   The Royal Marsden Hospital Bone-Marrow Transplantation Team. Failure of syngeneic bone-marrow graft without preconditioning in post-hepatitis marrow aplasia. Lancet 1977; 2: 242-4.
3. No Author Given
   Anonymous. Coffee drinking and cancer of the pancreas (Editorial). Br Med J 1981; 283: 628.

4. Journal Supplement
Mastri AR. Neuropathy of diabetic neurogenic bladder. Ann Intern Med 1980; 92 (2 Pt 2): 316-8.
Frumin AM, Nussbaum J, Esposito M. Functional asplenia: demonstration of splenic activity by bone marrow scan (Abstract). Blood 1979; 54 (suppl 1): 26a.
5. Journal Paginated by Issue
Seaman WB. The case of the pancreatic pseudocyst. Hosp Pract 1981; 16 (Sep): 24-5.

Books and other monographs

6. Personal Author(s)
Eisen HN. Immunology: an introduction to molecular and cellular principles of the immune response. 5th ed. New York: Harper and Row; 1974: 406.
7. Editor, Compiler, Chairman as Author
Dausset J, Colobani J, eds. Histocompatibility testing 1972. Copenhagen: Munksgaard, 1973: 12-8.
8. Chapter in a Book
Weinstein L, Swartz MN. Pathogenic properties of invading microorganisms. In: Sodeman WA Jr, Sodeman WA, eds. Pathologic physiology: mechanisms of disease. Philadelphia: WB Saunders, 1974: 457-72.
9. Published Proceedings Paper
DuPont B. Bone Marrow transplantation in severe combined immunodeficiency with an unrelated MLC compatible donor. In: White HJ, Smith R, eds. Proceedings of the third annual meeting of the International Society for Experimental Hematology. Houston: International Society for Experimental Hematology, 1974: 44-6.
10. Monograph in a Series
Hunninghake GW, Gadek JE, Szapiel SV, et al. The human alveolar macrophage. In: Harris CC, ed. Cultured human cells and tissues in biomedical research. New York: Academic Press, 1980: 54-6.
(Stoner GD, ed. Methods and perspectives in cell biology; vol 1).
11. Agency Publication
Ranofsky AL. Surgical operations in short-stay hospitals: United States—1975. Hyattsville, Maryland: National Center for Health Statistics, 1978; DHEW publication no (PHS) 78-1785. (Vital and health statistics; series 13; no 34).
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Use only standard abbreviations (see below for lists of commonly used abbreviations). Consult the following sources for additional abbreviations: (1) CBE Style Manual Committee. Council of Biology Editors style manual: a guide for authors, editors, and publishers in the biological sciences. 4th ed. Arlington: Council of Biology Editors, 1978; and (2) O'Connor M, Woodford FP. Writing scientific papers in English: an ELSE-Ciba Foundation guide for authors. Amsterdam: Elsevier-Excerpta Medica, 1975. Avoid abbreviations in the title. The full term for which an abbreviation stands should precede its first use in the text unless it is a standard unit of measurement.

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In most countries the International System of Units (SI) is standard or is becoming so. Report measurements in the units in which they were made. Journals may use these units, convert them to another system, or use both.

COMMONLY USED APPROVED ABBREVIATIONS

Standard Units of Measurement.

Term	Abbreviation or Symbol
ampere	A
ångström	Å
barn	b
candela	cd
coulomb	C
counts per minute	cpm
counts per second	cps
curie	Ci
degree Celsius	°C
disintegration per minute	dpm
disintegration per second	dps
electronvolt	eV
equivalent	Eq
farad	F
gauss	G
gram	g
henry	H
hertz	Hz
hour	h
international unit	IU
joule	J
kelvin	K
kilogram	kg
liter, litre	l or L
meter, metre	m
minute	min
molar	*M*
mole	mol
newton	N
normal (concentration)	N

Term	Abbreviation or Symbol
ohm	Ω
osmol	osmol
pascal	Pa
revolutions per minute	rpm
second	s
square centimeter	cm
volt	V
watt	W
week	wk
year	yr

Combining Prefixes

tera-	(10^{12}) T
giga-	(10^{9}) G
mega-	(10^{6}) M
kilo-	(10^{3}) k
hecto-	(10^{2}) h
deca-	(10^{1}) da
deci-	(10^{-1}) d
centi-	(10^{-2}) c
milli-	(10^{-3}) m
micro-	(10^{-6}) μ
nano-	(10^{-9}) n
pico-	(10^{-12}) p
femto-	(10^{-15}) f
atto-	(10^{-18}) a

Statistical Terms

correlation coefficient	r
degrees of freedom	df
mean	x
not significant	NS
number of observations	n
probability	p
standard deviation	SD
standard error of the mean	SEM
"Student's" t test	*t* test
variance ratio	F

Others

adenosinediphosphatase	ADPase
adenosine 5'-diphosphate (adenosine diphosphate)	ADP
adenosine 5'-monophosphate (adenosine monophosphate, adenylic acid)	AMP
adenosine triphosphatase	ATPase
adenosine 5'-triphosphate (adenosine triphosphate)	ATP
adrenocorticotropic hormone (adrenocorticotropin)	ACTH
bacille Calmette-Guerin	BCG
basal metabolic rate	BMR
body temperature, pressure, and saturated	BTPS
central nervous system	CNS
coenzyme A	coA
deoxyribonucleic acid (deoxyribonucleate)	DNA
dihydroxyphenethylamine	dopamine
electrocardiogram	ECG
electroencephalogram	EEG
enteric cytopathogenic human orphan (virus)	ECHO
ethyl	Et
ethylenediaminetetraacetate	EDTA
gas-liquid chromatography	GLC
guanosine 5'-monophosphate (guanosine monophosphate, guanylic acid)	GMP
hemoglobin	Hb
logarithm (to base 10; common logarithm)	log
logarithm, natural	ln
methyl	Me
Michaelis constant	K_m
negative logarithm of hydrogen ion activity	pH
partial pressure of CO_2	P_{CO_2}
partial pressure of O_2	P_{O_2}
per	/

Term	Abbreviation or Symbol
percent	%
radiation (ionizing, absorbed dose)	rad
respiratory quotient	RQ
specific gravity	sp gr
standard atmosphere	atm
standard temperature and pressure	STP
ultraviolet	uv
volume	vol
volume ratio (volume per volume)	vol/vol
weight	wt
weight per volume	wt/vol
weight ratio (weight per weight)	wt/wt

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MEDICAL LABORATORY SCIENCES Vol. 3, 1.

1. Selective culture media—a "renewed" activity.
2. A selective medium for non-pathogenic aerobic Gram negative cocci from the respiratory tract.
3. *Mycobacterium tuberculosis:* recovery from contaminated culture media.
4. The growth of Chlamydia in McCoy cells treated with emetine.
5. Fluorescent antibody to membrane antigen procedure for determining susceptibility to varicella.
6. Low ionic strength saline in a fully automated blood grouping system.
7. Approaches to the preparation of oxygen carriers for use as blood substitutes.
8. Antitumour antibiotics.
9. Blood grouping in a hospital laboratory with a fully automated (MiniGroupamatic) system.
10. Hepatitis B virus transmitted by HBsAg-negative blood containing anti-HBc.
11. Modification of the Helena electrophoretic procedure for urinary VMA.
12. Demonstration of neurofibrillary tangles in paraffin sections.
13. A chemical test to determine the end point of EDTA decalcification.
14. Staining intestinal spirochaetes.
15. Growth of nutritionally variant streptococci on media supplemented with animal blood.
16. Rapid presumptive diagnosis of gonococcal urethritis in males.
17. Embedding bacteria and tissue culture cells for electron microscopy.
18. A modified immunofluorescent test for detection of antibody against human cytomegalovirus.
19. Development of high throughput radioimmunoassay systems for steroid hormone analysis.
20. Peptidoglycan synthesis in B-lactamase and non-B-lactamase producing *Neisseria gonorrhoeae.*

ABSTRACTS

HISTOLOGY

Questions About Histochemical Methods for Steroid Receptors.
Chamness, G. C. and McGuire, W. L. (1982) *Arch. Path. Lab. Med.* **106,** 53.

An editorial which outlines the problems that must be overcome to remove the present serious uncertainties concerning histochemical methods for estrogen receptors in breast tissue.

Peroxidase-Antiperoxidase Method for Tissue Antigens: Improved Shelf Life for Reagents.
Yamase, H. T., (1982) *Arch. Path. Lab. Med.* **106,** 102.

A method is described for indefinitely prolonging the shelf life of PAP kits by freezing suitable aliquots of antibody reagents.

Ultrasonic Decalcification of Bone.
Milan, L. and Trachtenberg, M. C. (1982), *Am. J. Surg. Path.* **5,** 573.

A method is described in which decalcification of bone specimens 2-5mm thickness can be achieved in 5 hours or less when the decalcifying fluids are agitated by ultrasonic energization.

Double Labeled-Antigen Method for Demonstration of Intracellular Antigens in Paraffin-Embedded Tissues.
Falini, B., De Solas, I., Halverson, C., Parker, J. W. and Taylor, C. (1982), *J. Histochem. Cytochem.* **30,** 21.

A double 'labeled-antigen' method has been developed for the simultaneous staining of both kappa and lambda light chains in fixed paraffin sections. The method is a two step procedure utilizing a mixture of antisera in the first stage, followed by the addition of a mixture of kappa antigen labeled with horseradish peroxidase and lambda antigen labeled with alkaline phosphatase. The selection of substrates yielding reaction products of contrasting colour enable the observer to distinguish kappa and lambda containing cells.

Double Embedding in Agar/Paraffin Wax as an Aid to Orientation of Mucosal Biopsies.
Blewitt, E. S., Pogmore, T. and Talbot, I. C. (1982), *J. Clin. Path.* **35,** 365.

A method is described which ensures the correct orientation of intestinal mucosal biopsies so that histological sections can be cut perpendicular to the epithelial surface.

Staining Method for Hepatitis B Surface Antigen (HB_SAg) and its Mechanism.
Senba, M. (1982), *Am. J. Clin. Path.* **77,** 312.

A modification of Shikata's method is described using iron alum or uranium nitrate as a sensitizer after oxidation to overcome the variations experienced with batches of orcein dye.

Scanning Electron Microscopy.
Carr, K. E., Toner, P. G. and Saleh, K. M. (1982), *Histopathology.* **6,** 3.

The technology of scanning electron microscopy is described in brief. Its applications to the study of cells and tissues is demonstrated and the evolution of the subject of 'topographical histology' is discussed.

Brian Thackeray.

HAEMATOLOGY

The Phenotype of the Neoplastic Cells of Hairy Cell Leukaemia Studied with Monoclonal Antibodies.
Jansen, J., LeBien, T. W., and Kersey, J. H. (1982) *Blood* **59** 609.

The results of this study, using monoclonal antibodies, support the hypothesis that hairy cells most likely belong to the B-cell lineage.

Sex Related Differences in Platelet Function: The Effect of Aspirin.
Kelton, J. G., Carter, C. J., Santos, A. and Hirsh, J. (1982) *Blood* 59 625.

The antiplatelet activity of aspirin is mediated by the acetylation of the enzyme cyclooxygenase which in turn prevents the synthesis of the platelet aggregatory substance, thromboxane A_2. The results of clinical trials and one animal study indicate that aspirin had a greater antithrombotic effect in males than females. Given the limitations of extrapolating results of animal studies to man, the greater sensitivity of male rabbit platelets to in vivo collagen induced aggregation and the associated increase in thromboxane B generation could explain the greater thrombotic tendency[2] reported for males and their greater response to aspirin.

Comparison of Antithrombin III Assays Using Biological and Chromogenic Substrates.
Philo, R. D. and Gaffney, P. J. (1982) *Br J. Haematol* 50 147.

Antithrombin III levels in plasma samples were determined by incubation of diluted plasma with thrombin, either with or without heparin, followed by measurement of residual thrombin using clotting and amidolytic methods. Assays without heparin showed only a small difference between amidolytic and clotting methods, but assays with heparin showed a much larger difference between clotting and amidolytic methods which is shown to be attributable to the heat defibrination step used in the clotting assay. This loss of activity after heat defibrination does not occur when ancrod is used for defibrination.

Treatment of Congenital Antithrombin III Deficiency with Concentrates
Mannucci, P. M., Boyer, C. Wolf M., Tripodi, A. and Larrieu M. J. (1982) *Br. J. Haematol* 50 531.

Antithrombin III concentrates were administered to a patient with hereditary AT III deficiency undergoing orthopaedic surgery. The authors strongly suggest that a biological assay for AT III is preferable to the immunological assay in monitoring replacement therapy with AT III concentrates.

Granulocyte Chemotaxis: Multiple Assay Screening Using a Raft Technique.
Jayaswal, U., Roper, S. and Roath, S. (1982) *J. Clin Pathol* 35 182.

The assessment of granulocyte chemotaxis is complicated by the difficulty of precisely reproducing results in serial estimations and deciding on the best end point which would reflect most accurately the degree of travel taken by the cells under observation. The methods in use are generally based on the Boyden chamber. The authors have further developed the "raft" technique of chamber based migration.

Carboxyhaemoglobin: A Possible Reference Material for Haemoglobin Assay.
Rideout, J. M. and Louderback, A. (1982) *J. Clin Pathol* 35 292.

The inter and intra laboratory quality control of haemoglobin estimation in remote laboratories requires a more rugged control haemolysate then is commercially available. The stabilities of oxyhaemoglobin and carboxyhaemoglobin forms of an ethanediol-containing haemolysate were studied over a 3 year period. From the results obtained, carboxyhaemoglobin under nitrogen is proposed as a possible candidate reference material for haemoglobin assay.

Errol Crutch.

MICROBIOLOGY

Chlamydial Ocular Infection. Darougar, S. (1981), *J. antimicrob. Chemo.* 8, 350

This is a short review of the role of chlamydiae in trachoma, including laboratory diagnostic methods.

Enrichment Medium and Control System for Isolation of Campylobacter fetus subsp. Jejuni from Stools. Chan, F. T. H. and Mackenzie, A. M. R. (1982), *J. clin. microbiol.* 15, 12

A semi solid medium is described which was useful as a transport media for Campylobacter fetus as well as an enrichment medium. It consisted of semi solid motility test medium (BBL) with 7 percent lysed horse blood, vancomicin, polymixin B, trimethoprim and cephalothin and yielded 6 percent more isolates than primary plating as well as giving a more luxuriant growth. A control system consisting of a blood agar plate streaked with Pseudomonas aeruginosa, Clostridium perfringens and Campylobacter fetus s.s. jejuni was found to be a useful monitor for the atmospheric conditions necessary for isolating C. fetus s.s. jejuni.

Identification of Gardnerella (Haemophilus) vaginalis. Piot, P., Van Dyck, E., Totten, P. A. and Holmes, K. K. (1982), *J. clin. Microbiol.* 15, 19

Different tests for the identification of G. vaginalis were evaluated on over 200 strains of G. vaginalis and unclassified diphtheroids. It is suggested that a presumptive identification of G. vaginalis may be made on colonial morphology, catalase test, morphology in gram stain and beta haemolysis on human blood bilayer - Tween agar which will correctly identify 90-98 percent of G. vaginalis isolates.

Hippurate Hydrolysis by and Triphenyltetrazolium Tolerance of Campylobacter fetus. Luechtefeld, Nancy W. and Wang, W. L. W. (1982), *J. clin. Microbiol.* 15, 137

135 strains of C. fetus subsp. jejuni and 18 strains of C. fetus subsp. intestinalis were tested for ability to hydrolyse hippurate and tolerate triphenyltetrazolium chloride (TTC). 84 percent of the C. fetus subsp. jejuni hydrolysed hippurate and 97 percent were resistant to TTC. All 18 strains of C. fetus subsp. intestinalis failed to hydrolyse hippurate and were sensitive to TCC thus showing these two tests to be useful for distinguishing between these two species.

Differentiation of Haemophilus spp. in Respiratory Isolate Cultures by an Indole Spot Test. Welch, D. F., Ahlin, Peggy A. and Matsen, J. M. (1982), *J. clin. Microbiol.* 15, 216

The majority of Haemophilus influenzae isolates were found to be indole positive using a spot test whereas H. parainfluenzae isolates were negative. This test was used as a rapid screening test on non haemolytic colonies of Haemophilus species to detect H. influenzae.

Two Rapid Pigmentation Tests for Identification of Cryptococcus Neoformans. Kaufmann, C. S. and Merz, W. G. (1982), *J. clin. Microbiol.* 15, 339

Cryptococcus neoformans colonies were found to produce a brown pigment on corn meal Tween 80 agar with caffeic acid within 24 hours. No other yeasts produced the pigment. For same day identification of C. neoforman isolates, paper strips impregnated with L-β-3,4 dihydroxyphenylalanine-ferric citrate solution were inoculated. Black or brown pigment was produced by C. neoformans within 3 hours.

Shirley Gainsford

EDITORIAL

A Two-Way Street

A personal view on N.Z.I.M.L.T. Membership

Paul R. McLeod, ANZIMLT, DHA,
Microbiology Department, Nelson Public Hospital,
Nelson.

I recently had the opportunity to speak with many Laboratory Staff throughout the Christchurch region on numerous subjects relating to Institute affairs including membership. I asked those who were not members their reasons for not joining the Institute and the usual answers were along the lines that "it's too expensive" or "what's in it for me!" Another reason given was "why should I pay when I end up getting the benefits anyway?" At the time, I found it difficult to answer these comments and I resolved to write this article in answer to them.

It is my belief, that those who give the above reasons for not joining the Institute are misinformed or ignorant of the functions of this organisation. Equally, I have found it a very interesting exercise to put the Institute under a microscope to evaluate its functions. I will not attempt to include all of the Institute's functions here but I wish to present my views on what the Institute is doing in regard to education and negotiations for all laboratory workers, both members and non members alike.

The obvious functions of the Institute include the activities of our Journal, the Annual Conference and the recently held South Pacific Congress. Other functions which come to mind are the laboratory assistant and fellowship examinations. Of course there are the negotiation activities and the controversial education committee which recently have enjoyed fairly high profiles. So there you have it! That is what you get for your annual subscription. It does not on the surface appear to be much at all and I believe it is for this reason that many laboratory personnel who are eligible to join the Institute, do not. For example, many potential members see their chances of ever getting to a conference as remote. They are not interested in the pros and cons of the university degree course and they know that their negotiations for salaries and conditions are going to be looked after regardless of whether or not they are members of the Institute. It is for these reasons that I wish to expand on the Institute's functions and demonstrate that there is more depth in its involvement for all medical laboratory staff than what is apparent at first glance.

Our Annual Conference and the South Pacific Congress are obvious activities of the Institute. They do not happen by chance and anyone who has been involved in serving on conference committees will need no further convincing of the level of commitment required. The Institute is financially committed to these conferences which give the opportunity to those attending to partake in numerous forums on various laboratory disciplines. The value of the South Pacific Congress was highlighted by the number of world authorities in their various disciplines, who have visited our country. The knowledge they brought to share with us is impossible to ascertain in academic or financial terms. The point I wish to make, is, that it is the enthusiasm of the Institute and its members which make such events possible.

Our Journal is now published and sent to us every two months. It may or may not contain items of interest for everyone with every publication but more consideration than this needs (and deserves) to be given. This Journal is given to every member for no additional cost to their annual subscription for membership. It is very expensive to produce and it might be of interest to know that the 1982-83 budget subsidy for the publication now stands at $9000. That is a lot of money for the Institute to find and it is only reasonable to expect members to question the Journal's value and function. I personally see the Journal as the focal point of the entire Institute. It reflects the views of the Institute's elected council. It offers a platform for technical papers and communciations. It allows members the opportunity to air their views and it gives commercial companies a medium in which they can advertise their products. To put it briefly, the Journal acts as the main means we have as a professional group to communicate with each other and it pays to keep in mind that without the Institute this Journal would not exist.

The Institute's present interest in education appears on the surface to be entirely devoted to a proposed university degree course. Nothing could be further from the truth as this proposal is in fact only one part of educational activities in which the Institute is involved. There are several subcommittees which fringe on to education. For example, the Safety Committee is involved in educating laboratory staff through various programmes which are aimed at protecting us from the numerous hazards in which we all work. The Audio Visual Aids Committee has recently launched the very popular educational programmes and the Management Committee is involved in the distribution of various assessment reports of laboratory equipment which were compiled both in England and Australia. These three examples of Institute committees working towards better education are low profile and so do not attract much interest from most members. Although capital outlay for these three programmes was only moderate, maintenance and postage costs are not inconsiderable and are met from Institute funds. Another factor to consider is the time involvement for the various members involved on these committees.

The Institute is also financially involved in the Pacific Training Centre at Wellington Hospital and has a representative on the Training Centre's Management Committee. This type of involvement has some political significance and consequently has not gone unnoticed by Health Department authorities. So not only is the Institute involved in improving health care in the Pacific Basin but it is increasing its standing in New Zealand's health scene. While on the subject of international dealings, the Institute in conjunction with some commercial companies makes financial awards to successful applicants for overseas conferences and these are in addition to the financial awards made to top candidates in examinations.

Despite the fact that it is the Medical Laboratory Technologist Board who controls our Part II and Part III examinations, the Institute conducts two other very important examinations, namely the Laboratory Assistant and the Fellowship qualifications. Both are carried out entirely by enthusiastic Institute members and are financially backed by the Institute. Both would become non existent were it not for these members and the Institute. Those laboratory assistants who value their qualifications but refuse to become members must surely see the hypocrisy in their reasoning whatever it may be.

The involvement of the Institute in education is obvious, however, the areas discussed above are often overlooked or forgotten when this subject is raised as most see only the controversy of the Massey degree course. Again though, this is a very important issue and I do not intend to side step it. I simply wish to raise a point which I feel is pertinent to this article. The Institute has been requested to investigate the possibility of establishing a degree course at Massey University. No matter how controversial this subject may be, the fact is, the Institute is involved and concerned about this issue. Whichever way the final decision goes, this exercise has highlighted the necessity for our profession to be represented by our own Institute who will be acting in good faith and in the interests of the membership, to come up with a consensus conclusion. In other words, without the Institute the future educational interest of our profession would be left to other organisations who may not necessarily have the same degree of commitment to this task. I believe this point is worth considering as it demonstrates a very important function of the Institute.

Another major function of the Institute is its role in negotiations. The complexity of this function has been highlighted in recent years with the problems our negotiating committee has had in trying to achieve its goals. The two major conditions under which laboratory staff work are D.G.19 and D.G.48. The latter

was in the past negotiated by S.H.E.O. with whom the N.Z.I.M.L.T. had representation. Since the demise of that organisation a different structured representative group of all those working under D.G.48 is being set up and hopefully will become the new negotiating group for that determination. The Institute will be represented in this group.

The Institute's negotiating committee has been very involved in recent years with D.G.19. It is this award which sets out the rates of pay on the various scales, and only the N.Z.I.M.L.T. can negotiate this award with the Hospital Services Committee and the State Services Coordinating Committee. These two committees are the negotiators for the Department of Health and they equally, recognise our Institute as the only negotiating group for D.G.19. Therefore, the functions of the Institute in negotiations are reasonably straightforward . . . we have sole claim to negotiating D.G.19. (salary scales etc) and we have representation on the committee who will be negotiating D.G.48 (conditions of our employment). It follows that if the Institute ceased to exist then another organisation or group who felt that they represented a large proportion of the laboratory workers could vie with other similar groups for the right to represent them at the negotiation table. Equally, if the membership numbers of the Institute dropped to a level which the Department of Health felt no longer represented a significant percentage of laboratory workers, it is conceivable that they may allow another organisation to perform this function. A sizable group of workers like ourselves, without a representative organisation could make us "good picking" for self interest groups or unions.

For these reasons it is important that membership remains strong both in numbers and resolve. The Institute has two major functions, namely education and negotiations. If another group was to take over it is my belief that it would be orientated towards negotiations. I have already explained the educational functions of the Institute and it is these functions which would probably disappear should the Institute cease to exist. As a member it is in your interest to encourage new membership and to become involved in Institute affairs.

Those who claim that the cost of membership is too high are possibly not aware of the costs involved with similar hospital groups such as Physiotherapists, Occupational Therapists, Radiographers, Pharmacists, Dietitians and Nurses. Of all these groups, we are amongst the highest paid, however, membership costs to several of these associations is twice what we pay and one group pay three times the amount we do! I am not advocating that we pay more, what I am saying is that the Institute is not an expensive organisation to belong to, in fact, it is the opposite.

The "what's in it for me" comment has hopefully been answered but the attitude of "why should I pay when I get the benefits anyway" is a little more difficult to deal with. It simply comes down to a matter of attitude and it is wishful thinking if an organisation the size of the N.Z.I.M.L.T. expects not to come across such amongst potential members. This type of attitude is an insult both to the Institute and its members who (and let us be honest) are financing the only organisation which can look after all the interests of all medical laboratory staff. By refusing to take up membership, both you and the Institute are disadvantaged because you need the benefits and the Institute requires your membership for strength. Like a lot of things in this life . . . it is a two way street.

INSTITUTE BUSINESS

Office-Bearers of the N.Z.I.M.L.T 1982-83

President
A. F. Harper
11 Turere Place, Wanganui

Vice-Presidents
C. Campbell
K. McLoughlin

Secretary
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Haematology, Christchurch Hospital

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Blood Transfusion Service, Auckland

Council
M. Young, D. Reilly, J. Elliot, J. E. Lucas, P. McLeod

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

Membership Secretary
Margaret Young.
Laboratory, Waikato Hospital, Hamilton

Membership Fees and Enquiries
Membership fees for the year beginning April 1, 1982 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 no 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 Christchurch on the 8th, 9th and 14th August, Mr A. F. Harper in the chair.

CONDITIONS OF EMPLOYMENT

Salaries

The following letter has been received from the Department of Health.

CIRCULAR LETTER (INDUSTRIAL RELATIONS) NO 1982/42
Ref. 54/11/108
Chief Executives of Hospital Boards
Officer for Enquiries: Alan Medder
D.O.H., P.O. Box 5013. Wellington.

Dear Sir/Madam

WAGE FREEZE REGULATIONS 1982

1. You will be aware that the above Regulations came into force from midnight on 22 June 1982.

2. The effect of these Regulations is to impose a complete freeze on all Hospital Service Determinations with the exception of the two outstanding claims from the 1981/82 negotiating round i.e., DG35 Laundry Managers and DG40 Social Workers. The Regulations do not prevent service organisiations from lodging applications for increases in rates of remuneration under Section 23(1) of the State Services Conditions of Employment Act 1977, and the department could refer these claims to the State Services Co-ordinating Committee for consideration under 23(2), but this is as far as the claim could proceed. There would be little point in holding negotiations with employee groups for the intent of such meetings would be to reach agreement on a salaries and conditions claim and this would be clearly contrary to the substance and spirit of the Regulations.

3. The Regulations also contain specific provisions dealing with the regrading of individual positions. There is nothing to prevent anyone receiving an increase in any rate of remuneration as long as that increase can be justified under the following criteria:

(a) where the increase is made as a result of the promotion of the individual from one established position to another established position;
(b) where the increase is made in accordance with an existing salary scale or arrangement providing for the increase on the grounds of age, service, merit or qualifications;
(c) where the increase is made on the grounds that the duties or responsibilities of the individual have substantially increased.

The main emphasis for regrading purposes is found in (c) above. The application of (b) is only to normal salary scale movements, eg:

Age—someone moving onto the adult rate because they have attained 20 years of age.
Service—normal annual increments within a scale.
Merit—progression for a hospital aid from grade 1 to 2 in terms of DG21.
Qualifications—a laboratory trainee gaining NZCS (medical) and progressing to $14,447 (10.11.81) from a lower step.

However, this does not preclude boards from forwarding regrading applications to the department where this is necessary through the implications of broadbanding (eg a laboratory officer holding a position with a maximum of grade 5, having been initially graded personally at grade 4 requires Grading Committee approval before proceeding to grade 5) or as part of the usual grading procedures where the duties or responsibilities of the position have substantially increased.

4. It is unclear at the present time whether the biennial review of hospital scientific officers will be able to proceed but boards will be advised in due course.

5. Any matters of doubt or difficulty should be referred to this office for decision.

Yours faithfully,

T. J. Neilson
for Director-General of Health.
26 July 1982

Membership Sub-Committee Report August 1982

Membership

	AUG 82	MAY 82	AUG 81
Membership as at 6th August	1478	1446	1586
LESS Resignations (33), G.N.A. (39), Duplications (6), Deaths (1)	79	6	78
PLUS Membership Applications (61), Reinstatements (4)	65	38	42
TOTAL MEMBERSHIP:	1462	1478	1550
Membership summary			
Hospital Laboratories	1040	1042	1100
Other Government Employment	59	58	61
Private Medical Laboratories	171	170	177
Other Employment	24	25	28
Non-practising	109	115	108
Overseas	53	58	67
Unknown Employment	8	8	9

A total of 357 reminder statements were sent out in July, and to date, 242 members remain unfinancial. Our membership seems to be steadily declining and is now back to our August 1980 total of 1463.

Applications for Membership as at 6th August 1982

G. Baker, Hamilton; H. M. Barnes, Whakatane; E. Bennett, New Plymouth; K. L. Beveridge, Auckland; S. J. Bishop, Ashburton; L. Blundell, Hamilton; G. M. Brandsen, Invercargill; D. M. Broadhead, Auckland; J. K. Crowe, Hamilton; A. de Lautour, Hamilton; V. B. Dullabh, Thames; C. I. Durrant, Auckland; C. E. Ebbett, Hamilton; R. J. Edlin, Thames; C. M. Fletcher, Hamilton; J. Gainsbury, Auckland; J. P. Gebbie, Christchurch; M. J. Geurts, Hamilton; K. R. Griffen, Thames; L. L. Hall, Auckland; K. T. Harding, Auckland; B. Hastie, Auckland; C. M. Hill, Christchurch; G. J. Hooker, Christchurch; J. E. Houston, Wellington; W. M. Jackson, Hamilton; E. Janson, Malaysia; D. M. Johnson, Auckland; L. J. Kape, Hamilton; J. J. Kenny, Hamilton; J. E. McFarlane, Ashburton; R. Mandal, Hamilton; S. B. O'Brien, Auckland; N. A. O'Conner, Invercargill; W. J. Parr, New Plymouth; M. N. Petrasich, Auckland; J. J. Plunkett, Auckland; Z. M. Poczua, Dunedin; N. A. Reville, Palmerston North; C. L. Rouse, Hamilton; H. M. Rowe, Rotorua; K. L. Scotney, Auckland; D. J. Stanley, Palmerston North; C. E. Tulloch, Auckland; P. J. Wakem, Wellington; S. J. Young, Thames; L. Welman, Auckland.

Applications for Associateship as at 6th August 1982

A. M. Campbell, Auckland; M. R. Clarke, Whangarei; S. A. Gallagher, Wellington; S. Hilhorst, Auckland; B. A. Hoy, Hamilton; H. Kerr, Auckland; G. Kuru, Palmerston North; D. G. McKenzie, Auckland; P. J. McManus, Wellington; M. Patel, Auckland; S. H. Perry, Wellington; J. J. Salt, Auckland; M. C. Sinclair, Australia, T. G. Langford, Palmerston North.

Deceased

The death of the following member is noted with regret.

Bruce Anthony Rae, Christchurch.

Resignations as at 6th August 1982

K. J. Anderson, Otorohanga; L. M. Benfell, Auckland; I. C. Bundza, Christchurch; B. A. Carter, Auckland; C. I. Clarke, Whangarei, K. M. Colquhoun, Auckland; D. S. Duke, Christchurch; I. J. Ellwood, Auckland; A. Everiss, Auckland; S. E. Ewen, Hamilton; J. C. Fitzgerald, Hamilton; S. M. Frisby, Invercargill, F. J. Gilbert, Auckland; L. E. Gribble, Hamilton; J.

M. Hagenson, New Plymouth; A. Huymans, Hamilton; N. A. Johnston, Christchurch; R. F. Keene, Hamilton; G. Kempton, Balclutha; J. A. Lewis, Auckland; K. R. Mason, Hamilton; S. J. Neilson, Gisborne; S. J. Pearce, New Plymouth; G. D. Rowe, Hamilton; A. J. Riley, Auckland; J. E. Scheib, Napier; R. H. Smythe, Wellington; G. Tait, Wellington; A. D. Thompson, Auckland; G. I. Urlich, Kaitaia; K. Watts, Auckland; M. C. Wilson, Dunedin; D. J. White, Hamilton; G. M. Williams, Auckland.

Mail Marked—Gone no Address and no Resignation received as at 6th August 1982

S. E. Anderson, Invercargill; A. M. Bailey, Auckland; G. O. Bell, Auckland; L. A. Chilwell, Dunedin; L. B. Dromgool, Auckland; V. M. Field, Taumarunui; S. W. Heard, Auckland; J. R. Hopkirk, Auckland; J. S. Jeppeson, Wellington; W. J. Jonasen, Auckland; T. M. Jurkovich, Auckland; D. K. Keen, Hamilton; K. Key, Hamilton; E. L. Meyer, Australia; J. D. Montgomery, Wellington; A. E. Morpeth, Auckland; A. F. Paterson, Kawakawa; G. K. Poat, Auckland; R. A. Pohl, Palmerston North; K. L. Pohl, Palmerston North; S. Prendergast, Wellington; J. M. Purkis, Whangarei; J. M. Robinson, Auckland; P. R. Stevens, Hamilton; L. A. Tate, Auckland; V. L. Walden, Auckland; A. M. Walker, Palmerston North; S. E. Whitmore, Hastings.

NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY TECHNOLOGY 1982 TECHNICAL ASSISTANTS' EXAMINATION PASSES

Q.T.A. in Clinical Biochemistry
Affleck Jayne Maree, Bracher Louise Jane, Burgess Adrienne, Collier Kim, Cooper Donna Nicole, Davidson Maree Christine, Downey Joanne Catherine, Godby Natalie Joy, Harrison Charmaine Heather, Harvey Cynthia Yvonne, Herb Janine, Ings Deirdre Roasalyn, Littlewood Kay Maree, MacLeodsmith Jenny Linda, McKay Alastair Duncan, Power Joanne Maree, Pritchard Jan Maree, Roach Sharon Elizabeth.

Q.T.A by General Certificate
Howell Shirley Anne, Johnstone (nee Hore) Naomi Adrienne, Martin Ian Andrew, Sheely Susan Mairie, Shine Sally Patricia.

Q.T.A in Haematology
Bowden Simone Wendy, Compton Raewyn Anne, Cornes Vicki Lee, Davidson Kathy Mary, Davies Kim Antoinette, Going Janette Lynne, Gutteridge Teresa Frances, Hall Judith Ann, Heatherwick Donna Beverly, Hendry Janet Frances, Humphreys-Grey Patricia, Kennedy Dale Annette, Manga Damante, McNoe Patsy Rose, Middelkoop Jillian Fay, Watts Jackie Carmel.

Q.T.A in Histological Technique
Anderson Janene, Brydon Annette Patricia, Chauhan Ramila Nancy, Flynn David William, George Robyn Valerie, Gorter Sandra Lea, Harcombe Jacqueline Lillian, James Nicolette Maree Jeana, Jameson Michelle Lorraine, Williams Jocelyn Anne, Wills Sharron Marie.

Q.T.A in Medical Cytology
Elliott Julienne Leigh, Millar Marjonna Johanna, Patten Patricia Francis, Reet Lynda Sheridan, Reilly Denise Maree.

Q.T.A in Medical Microbiology
Barr Lynette Karen, Bethune Kathryn Lee, Booth Shelley Frances, Campbell Karen Marie, Carter Raewyn Jean, Cashmore Therese Marie, Davis Ann Louise, Day Adrienne Anne, Dileva Joann Frances, Eivers Deborah Sharon, Goldstone Linda Jane, Grant Catherine Anne, Hall Carolyn Mary, Lovatt Gregory Bruce, McIntosh Heather Suzanne, McKinnon Fiona Jean, Mros Sonya Karen, Murphy Christine Anne, Oudshoorn Yvonne Marie, Smith Tracey, Tawharu Dianna Jayne, Ten Bensel Ruth Frances Marie, Travers Glenys Daphne, Wood Denise Heather.

Q.T.A in Mortuary Hygiene and Technique
Gladwin Kenneth Ralph.

Q.T.A in Radioisotope and Radioassay Technique
Rose Renae.

Q.T.A in Immunology (Immunohaematology)
Carey Jacquiline Anne, Craven Lynne, Dempsey Ann Patrice, Docherty Colleen Joy, Frame Tanya Lee, Gardiner Julia Katherine, Henderson Susy May, Hogan Bridget Mary, Hutchinson Irma, Tenner Vivienne Anne, Lapwood Adele Frances, Laurent Barbara Joan, Liddle Yvonne Gaye, Rowlands Dierdre Jan, Wrightson Lisa-Jayne.

Q.T.A in Immunology (Microbiology)
Bianca Maura, Doherty Catherine Marie, Guerin Marie Elaine, Murray Lynda Margaret, Pearson Beverley Alison, Rowe Gayleen Deborah, Visscher Carolien Beta, Williams Glenys Margaret.

N.Z.I.M.L.T. Technical Assistants Examination Committee
1982 Technical Assistants Exam. Result Summary

Examination	No. Enrol	No. Sat	No. with each grade A	B	C	D	E	% Pass	Av. Mark
Q.T.A in Clinical Biochemistry	18	18	11	3	4	0	0	100.0	72.0
Q.T.A by General Certificate	8	8	0	2	3	2	1	62.5	56.8
Q.T.A in Haematology	18	18	2	5	9	2	0	88.9	63.1
Q.T.A in Histological Technique	11	11	0	3	8	0	0	100.0	60.5
Q.T.A in Medical Cytology	5	5	2	2	1	0	0	100.0	68.6
Q.T.A in Medical Microbiology	32	32	3	9	12	1	7	75.0	57.2
Q.T.A in Mortuary Hygiene and Technique	1	1	1	0	0	0	0	100.0	76.0
Q.T.A in Radioisotope and Radioassay Technique	1	1	0	0	1	0	0	100.0	52.0
Q.T.A in Immunology (Immunohaematology)	17	17	1	6	8	2	0	88.2	60.9
Q.T.A in Immunology (Microbiology)	8	8	0	1	7	0	0	100.0	57.8
Q.T.A by Special Certificate—Mycology	1	0	0	0	0	0	0	0.0	0.0
TOTAL	120	119	20	31	53	7	8	87.4	61.8

AUDIO-VISUAL AIDS

The heavy demand for these programmes continues and it seems that we will have to make copies of the more popular sets so that we can fulfil people's requests without undue delay.

Some statistics:

1269 people have viewed the programmes.

305 sets have been sent out (average 24 programmes/week).

299 sets are booked for the remainder of the year (average 25/week).

27 sets requested but fully booked for the rest of the year.

The majority of sets are well received although some are not of a great deal of relevance in New Zealand.

M.L.T.B. News

Meetings: The second meeting of the Board for 1982 was held on Thursday 22 July. The next meeting is to be held on 8-9 December 1982.

Composition: At the meeting the Board was officially appointed for a 3 year term, with Mr D. T. Philip re-elected as Chairman and Mr C. S. Shepherd as Deputy Chairman.

Other members are: Health Department—Dr A. Sinclair; Education Department—Mr H. Hutchings; Society of Pathologists—Dr M. Gill, Dr A. White; NZIMLT—Mr A. Harper, Mr B. Main, Mr B. Edwards.

Registration: Some letters have been received from individuals as well as the NZIMLT, expressing concern at the increase in fee for the 1982-83 year. It was pointed out that the Board had agreed in February to an increase to $15, not $20 and had no notice of the extra increase. The matter was still being pursued legally, but it appeared that the Government has the power to increase the fee if it so wishes!

There are about 15 people who have not paid this year's fee. The names have been given to the Department office solicitor to begin prosecution proceedings. Now that the amendments to the regulations include a definition of Medical technology, there are legal powers to prosecute if it can be proved that people were practising as defined after the date due for registration.

The Board considered a letter from the NZIMLT and Board members comments relative to the change of the title to Limited registration and it was agreed to make the change at the next opportunity.

Examinations: (a) Approval was given to the new management syllabus as proposed by the NZIMLT and this will apply from 1983.

(b) There has been a slight change in examination dates for this year's examinations, trying to bring the theory and practical examination dates closer together.

(c) Investigation is being made to see whether Radio-isotope technicians are eligible to sit the Boards Nuclear Medicine examination at Part II and III level.

(d) New syllabi for Virology, Nuclear Medicine, Immunology and Histology will be in use in 1983.

Education: Prior to the Board meeting, members met with Dr Greenway of Massey University to discuss further the concepts of the proposed degree course. This matter was pursued further in the Board meeting and it was unanimously agreed that a letter be sent to the Director-General of Heath requesting a new policy be implemented allowing the course to proceed.

A letter has been sent to interested parties explaining the course concept and inviting comments. See below.

Mr Harper and Mr Campbell are to meet with Massey representatives as soon as possible to discuss further the concept and consider syllabi, committees etc.

Vocational Guidance Brochure: Mr Shepherd was assigned to re-write this and to submit the new addition for approval and publication by November 1983. This is paid for by the NZIMLT.

Board Committees: The following were elected:
Education—Shepherd, Harper, Hutchings, Gill;
Examinations—Main, Edwards, Shepherd, White.
Concessions—Hutchings, Edwards, Philip. Regulations—Sinclair.

Board Handbook: This is currently being printed and should be available by 30 September 1982.

Disciplinary Powers: Approaches have been made to the Board for approval to amend the Medical and Dental auxiliaries Act with regard to procedure required to investigate complaints against registered practitioners. The main change is to increase the numbers of investigators from 1 to 3. The Board agreed this would be satisfactory.

PROPOSED TRAINING SCHEME FOR MEDICAL LABORATORY TECHNOLOGISTS.

The Medical Laboratory Technologists' Board has received a request from the employee group to pursue the possibility of introducing a training and examination programme at the post N.Z.C.S. level which would provide a more structured and formal approach than is presently available.

The current period of the total course leading to registration as a medical technologist is five years in length. The course consists of two parts. The first three years require the completion of a New Zealand Certificate in Science (Paramedical) (N.Z.C.S.) while the last two years are spent undertaking a programme of study of specific laboratory disciplines. Successful completion of the programme entitles the candidate to apply to the board for registration.

Successful negotiation in the late 1960s with the Technicians Certification Authority established a modification of the N.Z.C.S. by including at years III, IV and V subjects designed specifically for medical laboratory technology. This N.Z. certificate has proved highly successful having a required concurrent clinical component and an appropriate input of professional teaching. It has produced a sound broad spectrum base of medical laboratory science knowledge.

Formal education opportunity in the specific disciplines of the laboratory at the required second level did not exist at the time of the N.Z.C.S. consideration. The board therefore undertook the administration of this part of the training, writing the syllabus and managing the examinations. The introduction of any formal teaching or structured learning programme was outside the capability of this body and was left in most centres to the endeavours of the individual candidate, the enthusiasm of his laboratory seniors and any opportunity for relevant experience that was available. The administration of this part of the course has proved difficult and costly and the standard of opportunity and the result has been variable. The board is conscious and concerned that at a period when high standard formal education is most required in order to meet the diagnostic demands of laboratories today it is not available.

Two possible alternatives were pursued by the Institute of Medical Laboratory Technology (Inc.) and subsequently with their support by this board. The first was the total restructuring of the whole training programme through the Authority for Advanced Vocational Awards and the second by considering part two only (i.e. Post N.Z.C.S) in co-operation with Massey University. The latter was favoured by both the N.Z.I.M.L.T. and the board because the standard considered necessary could be achieved together with a greater opportunity of subject specialisation plus, of course, the professional teaching environment and input.

Massey University has the further advantage of being well experienced in extra-mural study. A programme currently being considered by the board and the university is somewhat unique, as it retains the opportunity for relevant applied clinical practice; goes a long way toward maintaining adequate service staff for hospital laboratories and gives maximum cross credit for previous study.

The proposed format as currently envisaged is built on top of the present N.Z.C.S. (Medical Science) and consists of a two year course requiring passes to obtain 102 credits; 48 from N.Z.C.S. 30 from 200 level courses and 24 from 300 level. The content as envisaged at the moment is:

1st Year—200 level:

February—April	Extramural Microbiology A	: 6 credits
May—July	Intermural Biochemistry A	: 6 credits
	Mammalian Physiology (including Histology)	: 6 credits
	Microbiology B	: 6 credits
(This is made up of:	Microbial Genetics : 2 credits)	
	Human Genetics : 1 credit)	
	Immunology : 3 credits)	
August—October	Extramural Biochemistry B	: 6 credits

2nd Year—300 level

February—April	Intermural Clinical Biochemistry A	: 6 credits
	Medical Microbiology A	: 6 credits
	Haematology/Immunohaematology	: 6 credits
(A student would take two of these three and they would be about present Part II standard).		
May—July	Extramural Tutorial Programme & Projects in Major Subject (1 subject only)	
August—October	Intermural Clinical Biochemistry B	: 6 credits
	Medical Microbiology B	: 6 credits
	Haematology B	: 6 credits
	Immunohaematology B	: 6 credits
	Special Topics	: 6 credits

A student would have two options either a double major in which case the same subjects would be taken in the 1st and 3rd terms or a Major/Minor in which, during the 3rd term, only one of the major subjects would be taken but the student would also require to get the 6 credits from the Special Topics—these may include papers such as computer technology etc.

The scheme includes a proposal that the students would be granted leave on pay for the block courses at Massey in the same way as at present for the N.Z.C.S. Additionally it will be seen that the units are arranged in such a way that there will be only one block course at a time thus avoiding, as much as possible, disruption and inconvenience to laboratory staffing. Registration would be granted at the end of this five year course.

Preliminary discussion on the feasibility of introduing this scheme have taken place between the N.Z.I.M.L.T., Massey University and this Board, and have progressed to the stage where the Board feels happy that it can approach the Director-General of Health to request tbat he introduce a policy proposal to Government to allow the new programme to be implemented.

However, before this step is taken the Board would like to solicit the views of various affected parties and to this end you are *invited to make comments* on the proposals. Such comments should be received by the Board's scretary *by the end of September*. Members of the Board are available to answer any questions and to that end the composition of the Board is listed below.

Thank you for your help.

D. J. Philip,
Chairman

	Phone Nos.	
Dr A. J. Sinclair	727-627	Department of Health Head Office, P.O. Box 5013, Wellington.
Dr M. B. Gill	797-440 795-225	Auckland Hospital or Diagnostic Laboratory, P.O. Box 5728, Auckland.
Dr A. E. White	36-139	Taranaki Base Hospital, New Plymouth.
Mr D. J. Philip	2761-999OH	Middlemore Hospital, Private Bag Otahuhu, Auckland.
Mr C. S. Shepherd	80-599	Hamilton Medical Laboratory, P.O. Box 52, Hamilton.
Mr A. F. Harper	53-909	Wanganui Base Hospital, Private Bag, Wanganui.
Mr B. W. Main	740-999	Dunedin Hospital, P.O. Box 946, Dunedin.
Mr B. T. Edwards	792-900	Christchurch Hospital, Private Bag, Christchurch.
Mr H. E. Hutchings	735-499	Department of Education Head Office, Private Bag, Wellington.

COMMONWEALTH RELATIONS TRUST BURSARY

1. The following letter of 28 July has been received from the Director of the Commonwealth Relations Trust:

Secretary's Office
PSA House
11 Aurora Terrace
P.O.Box 5108
WELLINGTON

"I am pleased to be able to write and tell you that there will be a CRT bursary available for 1983 to enable a trade union bursar from New Zealand to visit the United Kingdom for three months in 1983. It is our hope that information about the award will be widely advertised in order to attract a good field of candidates. I enclose guidelines for selection and shall look forward to receiving papers of candidates by the end of November this year for final selection by Trustees in December."

The Director has provided the following description of the bursary:

"A bursary will provide:

(a) One adult return fare, by the most direct and economical means, to the U.K.;
(b) Allowances for local travel and other out-of-pocket expenses; and
(c) Daily maintenance allowance on a generous scale for *up to* 3 months.

The sponsoring body is asked to provide assurances that candidates whom it recommends will not suffer financial loss as a result of taking up the award but will continue to receive a salary.

Candidates must have a reasonable level of education to make the best use of their stay in this country, and be of sufficient calibre to be able to act on their own initiative. They must provide a short statement, say 200 words, giving reasons for applying for the bursary and stating what they hope to obtain from the experience and what they feel they can contribute from the experience and what they feel they can contribute to the aims of the Trust. A *curriculum vitae* should be included.

The Trustees wish to receive good documentation for more than one candidate so that they may make their own final choice on the basis of the abilities and assurance referred to above.

It is necessary for applications to reach Nuffield Lodge by the end of November for consideration by Trustees when they meet early in December. The Trustees have asked recommending organisations at all costs to meet this deadline in 1982. They may not be able to consider late submissions individually at a later date as they sometimes have agreed to do in the past.

Those selected for bursaries will be invited to arrive in the U.K. early in the following May if by then they have been able to complete their preparatory work satisfactorily. It is most important that they should prepare their programme, obtaining introductions and advice about whom to visit, well in advance of their arrival.

The Trustees are looking for candidates who *already* have experience in their field of employment but have *not* yet reached the climax of their careers. Age limits of 28 to 40 are recommended and will normally be insisted upon by the Trustees. Awards are for both men and women.

Candidates should not have been previously to the U.K. except for a short holiday visit."

BRANCH NEWS

Dunedin Branch

COMMITTEE: The Committee members for 1982-83 are:

Mr Harold Neal—Chairman; Mrs Janice Parker—Secretary; Mr Ken Beechey—Treasurer; Miss Penelope McComb, Mr Peter Edwards, Mrs Ngaire Monk. The Secretary's address is Chemical Pathology, Department of Laboratory Services, Dunedin Public Hospital, Dunedin.

EDUCATION: A Special Meeting of N.Z.I.M.L.T. Dunedin Branch was held on 2nd August 1982 to discuss the proposed training scheme for Medical Laboratory Technologists by degree course at Massey University.

A motion was put forward by Mr J. Finlayson, seconded by Mr Doug Ogle. The motion was:

"The NZIMLT Dunedin Branch wishes to express to the Council of the Medical Technologists' Board their support of the post-NZCS (Medical Science) degree training course in principle."

This motion was carried unanimously.

PRESIDENTIAL ADDRESS

By Mr A. F. Harper, President N.Z.I.M.L.T.

Good morning ladies and gentlemen. Custom decrees that the A.G.M. be preceded by the presidential address.

This year we have the unusual situation that this formality and the A.G.M. come at the end of conference. I am delighted that so many delegates have been able to overcome their congress fatigue not to mention the effects of last night's gala dinner to be here this morning. Then of course we have to compete with the anticipation of this afternoon's test match.

Ladies and gentlemen, in recognition of these factors I intend to be brief.

I would like however before proceeding with the main topic of my address to pay tribute, on your behalf to those responsible for the organisation of the South Pacific Congress. This as we know was an ambitious undertaking which, due to the excellent organisation of Barrie Edwards and his Christchurch based congress committee and Raewyn Bluck and her Auckland scientific committee, has been an outstanding success. The standing of the whole institute has benefitted from their efforts and I ask you to join with me in showing our appreciation for an excellent achievement.

At the moment we have one contentious issue facing the Institute—education. Divergence of opinion seems to be inevitable when education reforms are planned be it in Australia, the UK or New Zealand. However regardless of our individual views concerning the direction education should take I know we all have one thing in common, a desire for the best possible education programme to equip our profession to fulfil its role in the health care team for the 1980s and beyond.

If we look at our current education we see that we have a formal programme, for the first three years leading to the N.Z.C.S. (Medical Science) followed by two years in-service training in specific disciplines resulting in the Diploma in Medical Laboratory Technology.

The N.Z.C.S. evolved from the old informal basic training course in the late 1960s, partly from a desire to remove tuition from the rather haphazard laboratory setting and partly to make it possible to include a basic science component into the course. The value of concurrent work experience and formal education has always been recognised by the N.Z.I.M.L.T. and the M.L.T.B. and the course was structured with attendance at the Technical Institutes either on a day release basis or by attending sandwich courses. It was recognised that there would be a need in the future to transfer the final two years of education to a formal education setting. In some ways the current C.O.P. system has served us well producing many competent practical technologists.

However it has deficiencies. Tuition is variable depending on the ability and willingness of senior staff to become involved in a teaching programme. There is an unacceptable lack of uniformity in the amount and quality of tuition given to trainees. Examiner's reports for the Part II and Part III examinations for a number of years have indicated deficiencies in some areas, particularly a lack in the depth of knowledge, and the scientific background and basis for the tests we perform. Medical Laboratory Technology is a progressive science depending on high technology. As technology advances so does the need for increased academic attainment.

In addition the preferential employment of hospital scientific officers and graduates in some areas indicates a dissatisfaction with the depth of scientific knowledge which technologists can obtain, and apply to these areas.

Our education programme has fallen behind that which is considered acceptable in some overseas countries. This has resulted in a lack, or loss of reciprocity with important countries such as Australia and the U.K. We are not concerned with training technologists for export. However it does make it increasingly difficult for New Zealand Technologists to obtain overseas experience which on return is of value to the health service of this country. We must accept that, convenient and comfortable as our current system may be to both the laboratory and the trainee, if we are in the future to fulfil our role and maintain our current position in the health team reform is both essential and urgent.

We have a number of avenues open to us. It must be accepted however that any course tailored to our needs would require sufficient student numbers to make the course viable. Because of the comparatively small number of students the multiplicity of routes leading to qualification which exist in some countries would not be possible in New Zealand.

There are those who advocate scrapping our current programme in favour of a completely new format. The N.Z.C.S. however has served us well in the past and supplementing this with the final two years of education in a formal setting has a number of advantages.

The N.Z.C.S. includes the essential ingredient of concurrent work experience and formal education. It includes tuition in basic sciences and a general training in medical laboratory practice. The chemistry and medical biology syllabi have recently been revised in part to make them more appropriate to our students. The medical laboratory practice syllabi have recently been updated.

The N.Z.C.S. produces a technologist who is an important member of the workforce in the majority of laboratories. It has been suggested that this general practitioner is only required in the very small laboratories. This however is not the case. The generally trained technologist produced by the N.Z.C.S. is also essential for the after hours service in small and medium sized laboratories. If this person were not available we would have the expensive situation where all after hour work would have to be carried out on a discipline basis. In addition the generally trained technologist gives greater flexibility in rostering staff during normal hours which is considered important even in some of the large laboratories. The retention of the N.Z.C.S. has advantages to the trainee. The choice of discipline for specialisation can be an informed decision. A multi discipline training leads to a better educated technologist with a more complete understanding of many disease processes.

Its retention would allow technologists currently in training or those already qualified to enter the new programme receiving full credit for their first three years of training. A completely restructured course would probably not allow this. In addition transition from the old to a new programme would be effected with a minimum of disruption to the laboratory.

If we acknowledge the need for change in the final two years of training and I feel this is beyond doubt then this may be achieved by one of two routes, either through the technical institutes or the universities. Formal education regardless of the route will require attendance at courses with the resulting disruption to the laboratory and the private life of the trainee. This unfortunately is the price we have to pay.

I believe that given a choice between gaining a diploma through the technical institutes or a degree through the university most people would feel that a degree is more appropriate to our profession.

The decision taken by Council to seriously explore the possibility of a degree course is in line with what has already happened in a number of overseas countries. It is interesting to note that the standing representative committee for Medical Laboratory Techniology in the E.E.C. recently unanimously passed a resolution which I read in part:

"That this committee encourages its members or organisations to seek the development of university or university equivalent degrees in Medical Laboratory Sciences."

It has been suggested by some people in this country that a degree course should precede entry into the laboratory. However the comments made by the university vice chancellors' committee set up to consider graduate employment and referred to by Brian Main in his presidential address in 1976 has particular relevance to our profession. I quote "the idea that graduates in arts and science can initially turn their hand to a variety of tasks for which they have had no specific training is not one to which the statistics lend credence".

As you know we have for some time been negotiating with Massey University with a view to establishing a degree course. Why Massey?

Firstly one of the planned strengths of Massey University is in the biological sciences.

Secondly formal education supported by work experience requires an extra mural content. Extra mural university education is centred on Massey. Although the prime consideration for any course must be the quality of the graduate the format of the proposed course through Massey is also advantagous to the student by making it possible to obtain study leave on pay rather than having to live on a tertiary bursary.

Thirdly the new building programme at Massey and the associated commissioning grant make the financial resources available to fund the new course.

Finally Massey's central geographical position can also be considered an advantage. Although there would undoubtedly be advantages in mounting the course at more than one university, if we require a course tailored to our needs it is unlikely that there would be sufficient students to make the course viable in more than one centre.

It has been suggested that we are the naive pawns in Massey's desire to build an empire in the health sciences. This is not the case. The university and the N.Z.I.M.L.T. have a common interest. The university wishes to establish vocationally orientated degree courses and sees medical laboratory technology as a suitable area. The N.Z.I.M.L.T. recognise that a degree course is essential for the future needs of our profession.

The university is not interested in producing graduates from this course who are not assured of vocational opportunities. They recognise that the graduates produced must qualify for registration by the M.L.T.B.

For this to occur the course finally produced must satisfy both the N.Z.I.M.L.T. and the M.L.T.B. This is the basis of our negotiations with Massey University. It may not be clearly understood by membership however that at this stage no firm commitment has been made that the proposed course at Massey will go ahead.

A course format has been produced which may or may not require modification. There has been no pressure from the university for us to accept a structure which we felt to be inappropriate. They have modified their original concept and accepted our view that the N.Z.C.S., a specially structured 200 level, and a high extra mural content were essential ingredients for an acceptable course. Because of the nature of our N.Z.C.S. they have agreed to allow 48 credits rather than the 36 which is the norm for this qualification. They have in fact gone out of their way to accommodate our requirements. The course finally produced will be a product of the Massey University staff and nominees of the M.L.T.B. working as a team. The N.Z.I.M.L.T. membership can be assured that they will have the opportunity for comment and criticism before a final decision is made by the N.Z.I.M.L.T. and the M.L.T.B.

There may be an understandable reluctance to venture into the unknown. What is being proposed is far from radical. We retain what is known, has national recognition, and has served us well. What is being proposed is an innovative approach linking technical and university education producing an open ended structure which allows for progression to a post graduate level.

If the Massey course does not fulfil our expectations we can revert to our current programme. This would have been impossible with the diploma which necessitated dismantling the N.Z.C.S.

Ladies and gentlemen, we have a golden opportunity to upgrade our education.

If we lose this opportunity through procrastination, disinterest, or sectional interest I believe we are doing our profession a grave disservice.

Also our negotiations have not gone without notice and other health groups have now made approaches to Massey. Resources are limited. At this time I make a plea for unity, and support for those who are working to serve your interests and those of our profession.

Minutes of the 38th Annual General Meeting of the New Zealand Institute of Medical Laboratory Technology held in Christchurch on 14 August 1982

Chairman
Mr A. Harper

Apologies
It was resolved that apologies be accepted from D. S. Ford, M. Eales, H. Olive, D. Norris, J. Marsland, I. Cole, D. Robertson, G. Cameron, S. Dixon, M. Legge, R. Macdonald, I. King, D. S. Roser, B. Miller and K. B. Ronald.

D. Pees/D. Bolitho

Proxies
The Secretary read the list of 96 proxies that were recorded in accordance with the Rules with 27 members attending the Annual General Meeting.

Minutes
It was resolved that the Minutes of the 37th Annual General Meeting as circulated be taken as read and confirmed.

B. Main/D. Pees

Annual Report
It was resolved that the Annual Report be received.

B. T. Edwards/C. Campbell

Speakers on the Annual Report included K. McLoughlin (Fellowship), P. McLeod (Management), C. Campbell (Negotiations), B. T. Edwards (Technical Assistants), J. Elliot (Audio Visual Aids and Pacific Paramedical Training Centre), A. Harper, D. Bolitho, B. Main, T. Rollinson, G. Dodd, M. Young, H. Bloore and G. Meads (Education).

It was resolved that the Annual Report be adopted.

B. T. Edwards/B. Main

It was unanimously carried "that the Institute proceed with great speed with the development of a degree course as outlined in the Annual Report."

G. Meads/D. Philip

Financial Report
It was resolved that the Financial Report be received.

W. Wilson/O. D. Nixon

Speakers on the Financial Report included D. McCarthy, G. Meads and B. S. Collins

It was resolved that the Financial Report be adopted.
W. Wilson/D. McCarthy

Election of Officers
The Secretary read the results of the election of officers as forwarded to him by Mr L. J. M. Lambert, JP, Returning Officer, and the following were declared elected:

Auckland Regional Representative—D. Reilly
Central North Island Regional Representative—Mrs M. Young.

It was resolved that the voting papers be destroyed.
J. Lucas/H. Matthews

The following members of council were elected unopposed:
President: Mr A. Harper
Vice-President: Mr K. McLoughlin, Mr C. Campbell
Secretary: Mr B. T. Edwards
Treasurer: Mr W. Wilson

Wellington Regional Representative: Mr J. Elliot
Christchurch Regional Representative: Mr P. McLeod
Dunedin Regional Representative; Mr J. Lucas.

Presentation of Awards
The following award winners were announced and the awards presented by the President:
Microbiology Part II: Mrs L. M. Taylor
Haematology Part II: Miss P. A. Jensen
Immunohaematology Part II: Miss L. J. Anderson
Clinical Biochemistry Part II: Mr P. J. Hill
Immunology Part II: Mrs L. B. Ellwood
Virology Part II: Mrs R. E. Jenkins
Microbiology Part III: Miss S. A. Roberts
Haematology Part III: Miss R. Holmes
Clinical Biochemistry Part III: Mrs D. Coburn
Immunology Part III: Mrs R. M. Cottell
QTA Haematology: Miss P. R. McNoe
QTA Immunohaematology: Miss L. Craven
Roche Products Clinical Chemistry Award: Mr T. Smale
McGaw-Dade Haematology Award: Mr R. A. Anderson
NZIMLT Journal Award: Mr D. Romain

The President then advised the meeting that it had been the unanimous decision of Council that life membership of the Institute should be awarded to Mr H. Bloore.
The announcement was greeted wtih acclamation and the certificate of life membership was presented to Mr Bloore. Mr Bloore then replied.
Life membership was also awarded to Mr G. R. Rose and presented at the closing ceremony of the South Pacific Congress in Medical Laboratory Technology.

Honoraria
It was resolved that no honararia be paid.
W. Wilson/C. S. Curtis

Auditor
It was resolved that Council be responsible for appointing an auditor.
W. Wilson/K. McLoughlin

Scientific Meeting 1985
The 1983 meeting was confirmed for Napier and 1984 for Dunedin. Mr C. H. Campbell offered on behalf of Palmerston North to conduct the 1985 Scientific Meeting and this was met with acclamation.

There being no further business the meeting closed at 10.40 am

Minutes of the Special General Meeting of the New Zealand Institute of Medical Laboratory Technology held in Christchurch on 14th August 1982 Commencing at 10.41 am

Chairman
Mr A. Harper

Minutes
It was resolved that the minutes of the Special General Meeting held on 3 September 1982 be taken as read and approved.
B. Main/G. Meads

Remits

1. It was moved B. T. Edwards, seconded C. H. Campbell "that Rule 13 (f) be amended by deleting the last sentence and substituting: 'The system to be employed for the election of Institute Officers shall be the 'first past the post' system conducted in accordance with Renton's 'Guide for Meetings and Organisations', 3rd Edition, paragraphs 1112 (Returning Officer), 1116, 1117 (voting), 1124, 1125, 1126, 1127 (counting)'."

   After the counting of hands and proxies the motion was declared carried.

2. It was resolved "that the following rates of subscriptions operate from and including the year commencing 1 April 1983.

   For Fellows and Associates: $40 reducible to $35 if paid by June 30 that year;
   For Members: $30 reducible to $25 if paid by June 30 that year;
   For Non-Practising Members: $20 reducible to $15 if paid by June 30 that year."
   W. Wilson/B. Main

3. It was resolved "that Policy Decision No 6 be reaffirmed."

   (Policy Decision No 6 (1979): That the council must be informed in advance of national workshops, seminars or similar gatherings which are being conducted under the aegis of NZIMLT Branch organisations.)
   Mrs G. McLeay/H. Matthews

4. It was moved G. Thorne, seconded D. Pees "that the Council make recommendaton to the Medical Laboratory Technologists Board that the words 'except clinical biochemistry, microbiology, haematology and immunohaematology' be deleted from Section 5 paragraph 4 of the Medical Laboratory Technologists Regulations 1982."

   The motion was declared lost on a show of hands.

General Business
It was resolved "that the Council draw the attention of the Medical Laboratory Technologists Board to the widespread contravention of section 32 of the Medical and Dental Auxiliaries Act and request that steps be taken to ensure its enforcement."
S. Smithson/C. Campbell.

It was moved T. Webb, seconded A. Johnson "that this meeting and Council look towards compulsory membership".
The motion was declared lost on a show of hands.

Mr R. Saminathan from Kuala Lumpur extended his thanks to the meeting for the friendship extended to him and welcomed people to contact him in his own country.

Mr A. Harper then thanked Mr C. S. Shepherd for the years of service he had given the Institute through his service on Council.
The statement was met with acclamation.

There being no further business the meeting closed on 12.30. pm.

CONGRESS REPORT (PART I) OPENING ADDRESS BY THE HON. A. G. MALCOLM, MINISTER OF HEALTH

Mr Chairman, distinguished guests, ladies and gentlemen, in welcoming you all here today I applaud the efforts of those who have initiated and organised this first South Pacific Congress in Medical Laboratory Technology. We are in an era of rapid technological advancement. It seems only sensible that the specialised knowledge and interests of the Australian and New Zealand Institutes of Medical Laboratory Technologists should be combined in a congress such as this. Regional conferences have an increasingly relevant and beneficial role to play in today's world.

First, they facilitate the exchange of ideas and information between people who enjoy the same work and face similar problems. Second, they enable a large number of people to receive the benefits of guest speakers from other countries. This is especially relevant to this congress which boasts a particularly high international input. Third, it is hoped that such a conference will enable delegates to get to know one another a little better. It would be a pity if these gatherings did not help enhance international understanding beyond the purely professional interest which you share.

This congress is also important in another aspect. For it aims to recognise the responsibilities which both Australia and New Zealand have in the Pacific region. At a time when international relations are all too often strained, it is important to build up understanding and a feeling of mutual responsibility with the nations geographically closest to us. I hope that this recognition of wider responsibility will become an established characteristic of the South Pacific Congress. It is perhaps fair to say that people are not always fully aware of, and thus tend to take for granted, the contribution which medical laboratory technologists make to health care. It should be remembered that laboratory services are an important link in the chain of diagnosis and treatment.

In New Zealand public hospital boards have a responsibility for providing laboratory diagnostic services. In addition, private laboratory services are fully subsidised by the Government, with no charge made to the patient. This dual system of laboratory services reflects the philosophy of health care delivery in New Zealand. The freedom to choose public or private services is a principle which has the continuing support of my government. It is important that the public, private, and also voluntary, sectors of our health care system continue to complement one another in providing an efficient and comprehensive health service. On a more informal note, I am particularly pleased that Christchurch, New Zealand, has been chosen as the venue for the first South Pacific Congress.

I am sure these fine facilities will provide an excellent setting for the congress. I am also pleased to see that there is time for relaxation in your busy schedule. New Zealand has much which is unique to offer the visitor and I hope more serious business will not prevent overseas delegates from enjoying the scenery and meeting some of the people of this country.

I now have pleasure in extending a warm welcome to all, to what I am sure is going to be a most worthwhile congress.

REPORTS FROM THE MEETINGS

P.A.C.E.

Barbara Balkonis Barrett BS MT (ASCP) CLS (NCA)

Professional Acknowledgement for Continuing Education (P.A.C.E.) is an administrative system established to stimulate, approve and document continuing education activities.[1] P.A.C.E. was developed by the American Society for Medical Technology (ASMT) to provide a means of documenting educational experiences which are pursued to maintain and enhance the competence of the practitioner beyond career entry. In Medical Technology, continuing education has become nearly as much a necessity as career entry education because of the immense proliferation of new medical knowledge, laboratory techniques and procedures as well as the desire expressed by many laboratorians to improve their skills and knowledge.[2] Also, many certification agencies have a recertification mechanism based on examination or continuing education activities. Therefore, it is important to officially document continuing education activities.

Before the P.A.C.E. Program became operational in January, 1974, a great deal of time and effort was expended on its development and preparation by an ASMT committee composed of medical technologists, educators and administrative systems persons.[3] Many educators felt that only accredited institutions should be entitled to award formal recognition for learning experiences and that professional organizations (such as ASMT) have no legitimate role in the continuing education business.[2] ASMT became the first professional society to do so.

The P.A.C.E. Program planners decided at an early date that approving program sponsors would not validate educational experiences as effectively as approving individual programs. In response to this decision, specific criteria to evaluate continuing education programs were defined and the P.A.R. (Program Approval Request) Form was developed. A completed P.A.R. must be submitted to the ASMT no less than thirty days prior to a program presentation in order to guarantee processing and the subsequent award of continuing education units.[4] The program's sponsor, title, date and location must be indicated on the P.A.R. In addition to this information, a completed P.A.R. must also contain the following:

PURPOSE:	A discussion on the rational for offering the program.
PROGRAM & CONTENT DESCRIPTION:	A summary or course description of the program and a content outline to accurately reflect the range of subject matter to be presented.
FORMAT & METHODOLOGY:	A description of the nature of the learning experience or activity (e.g. seminar, discussion, wet workshop etc.)
OBJECTIVES:	A list of specific objectives describing what the participant will be able to do at the end of the program that he or she could not have been expected to do before.
EVALUATION:	A description of the procedure or technique which will be used to demonstrate that each participant has attained the objectives of the program (e.g. passing score on a post-test)
LABORATORY ACTIVITIES:	(If applicable) A description of the method of instruction which is less intense than the traditional lecture format (e.g. wet laboratory, problem solving, etc.)
TIME SCHEDULE:	Each part of the schedule as well as the content to be covered should be identified.

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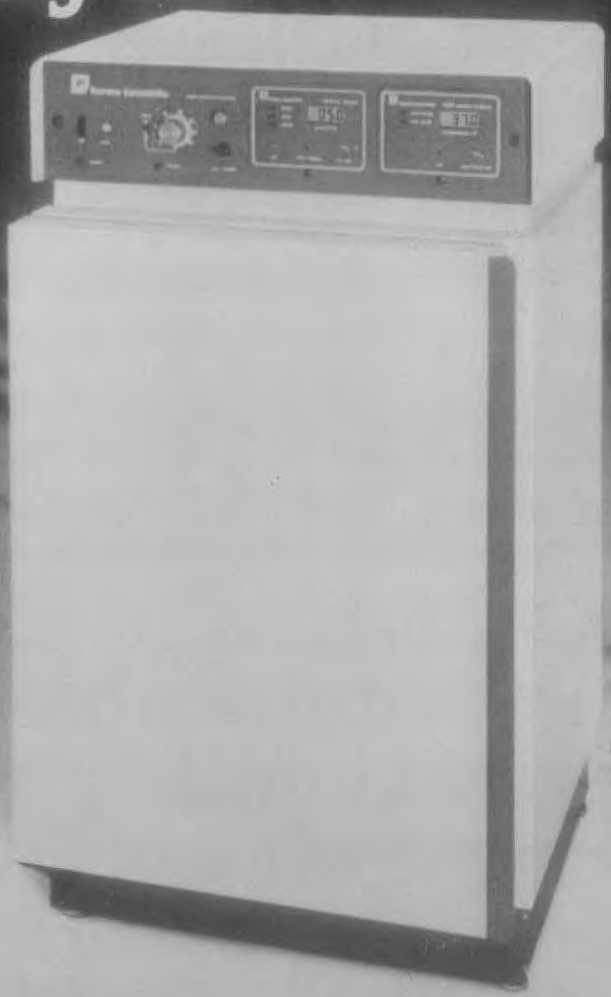

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LEVEL OF INSTRUCTION: An indication of the level of instruction for the proposed program: Basic, Intermediate or Advanced.

PROGRAM FACULTY: A list of the name(s) of faculty member(s) and a description of their educational and work experiences which will provide evidence that the instructor is qualified to instruct in the content area of the program.[4]

The ASMT P.A.C.E. Committee reviews the completed P.A.R. Form and may then award CEUs for the program.

"The Continuing Education Unit (CEU) is defined as ten hours of participation (or equivalent) in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction."[4]

A CEU is not awarded for non-learning activities such as society business meetings, travel time to attend a class, indoctrination or orientation programs, or for courses carrying academic credit.[1]

While it was recognized that the CEU should be the unit of measurement for certain types of activities, it was determined that a second unit of measurement be developed which recognizes the individual efforts in other continuing education endeavours. The Individual Education Unit (IEU) was adopted for this purpose.

"The Individual Education Unit (IEU) is defined as one hour of participation in a continuing education activity."[5]

Time spent reading professional journals and visiting equipment displays are typical types of activities which generate IEUs.[5]

P.A.C.E CEUs and IEUs are recorded in permanent files maintained in the ASMT Executive Office and a transcript is sent yearly to each P.A.C.E. participant. College/university credits may also be recorded in a participant's file when an official transcript is forwarded from the institution where the credit was earned.[5]

All clinical laboratory personnel are eligible to participate in P.A.C.E. All members of ASMT are automatically enrolled in the P.A.C.E. recording system at no charge. Other clinical laboratory personnel are eligible to become P.A.C.E. enrolees by completing an application and paying an annual fee of $30. Applications and information for the P.A.C.E. Program can be obtained by writing to the ASMT Executive office at the following address:

P.A.C.E. Program
ASMT
330 Meadowfern Drive
Houston, Texas
U.S.A. 77067

References

1. *P.A.C.E Policy and Procedure Manual and Handbook.* (Houston, Texas: ASMT, 1978, revised January, 1982) pp. i-39.
2. David Lindberg, Professional Societies and Continuing Education, *Cadence,* 4 no 6, November/December, 1973, pp. 9-12.
3. Gregory C. Roach, P.A.C.E., *Cadence,* 4 no 6, November/December, 1973, pp. 17-21.
4. *Guidelines and Instructions for Programs requesting Continuing Education Units (CEUs) in the P.A.C.E. Program of the American Society for Medical Technology,* (Houston, Texas: ASMT, 1978) pp. 1-10.
5. P.A.C.E. Brochure, (Houston, Texas: ASMT, 1982).

OBITUARY

Bruce Anthony Rae 1945-1982

It is with great sadness that we record the death of Bruce Rae at Burwood Hospital on 29 June after a tragic accident in his home on 13 June 1982.

Bruce's whole life was a struggle against misfortune. He was afflicted with poor eyesight and precarious health. Perhaps because of his personal struggles he demonstrated a particular empathy with chronically ill patients he met. It was a measure of his determination as well as his mental ability that he was able to overcome his infirmities and achieve an excellent academic record at Cashmere High School. With this school record and with an unbounded enthusiasm for biology and microscopy specifically, he gained a place as a trainee in the Pathology Department at Christchurch Hospital. During his training he delivered a paper on the Pelger Huet anomaly which was later published in this Journal. At that time, this was an unusual achievement for a trainee.

Bruce qualified as a Technologist in 1967 being amongst the first batch of trainees to do the 'O' and 'A' level single subject examinations. He rose to the position of 2 I/C in the Haematology Department and as the Technologist in Charge of the Coagulation Unit established a reputation as one of the best in his field in the country.

Bruce would prefer that his life should be remembered with humour as well as sorrow for he had a good sense of fun and was a master of the off-beat joke. The guitar which he played frequently and well in earlier years was the object of much abuse. Many social evenings ended with a frantic but hilarious (and usually successful) search for a lost contact lens.

Those who knew Bruce will retain fond memories of a scientist of integrity, a character and a good friend. Our sincere sympathy is extended to his parents and to Thora, Evan and Sasha.

K. McL.

News from the Hill

Hon A. G. Malcolm, Minister of Health, Address to the North Shore Division, New Zealand Medical Association.

A Short Excerpt

I am interested in saving money but not at the expense of quality. The general practitioner in New Zealand has access to a laboratory testing system which is not equally available in a number of other countries. The expense of this service is however high and currently runs at approximately $25,000,000 per annum. At my request the Health Department has been carrying out investigations in this area and has been having a series of discussions with the pathologists.

It is anticipated that we may develop a universal laboratory request form which is acceptable to all concerned and along with this that the schedule of tests will be rewritten in a manner which will clarify more easily exactly what test results are required by the clinician. While room for judgement as to what tests should be done must be left personally with the pathologist in special situations. I also feel that in general payment should only be for tests specifically requested by the Clinician.

I have said on several occasions before that I am not qualified to understand all the complexities of the diagnostic process in medicine but as an amateur fisherman I know that I am more likely to get good results if I have a fair idea where the fish are. Wild fishing expeditions can be wasteful and unproductive. I also hope to develop a system whereby individual doctors will be informed of the costs of their laboratory requests in comparison with their colleagues operating in similar conditions and areas.

This would be similar to the information which is currently circulated to doctors concerning the costs of their prescribing. None of these changes are expected to affect the availability of testing required for medical practice. It is expected that they will minimise expenditure on wasteful and inappropriate testing. One of my major concerns is the matter of duplication or fragmentation of primary health services. Clearly when we are trying to ensure the best allocation of a finite resource, it is wasteful to duplicate and to complicate our system.

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.

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INSTITUTE CALENDAR 1982-83

February 25	Closihg date for enrolments for Fellowship Examinations.
May 10, 11	Technical Assistants Examinations.
July 5, 6, 7	Fellowship Examinations.
August 18, 19	39th Annual Scientific Meeting, Napier.

ABBREVIATIONS OF NAMES OF FREQUENTLY CITED JOURNALS

Acta Medica Scandinavica	Acta Med Scand
American Family Physician	Am Fam Physician
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American Journal of Physical Medicine	Am J Phys Med
American Journal of Physiology	Am J Physiol
American Journal of Psychiatry	Am J Psychiatry
American Journal of Public Health	Am J Public Health
AJR: American Journal of Roentgenology	AJR
American Journal of Surgery	Am J Surg
American Journal of Tropical Medicine and Hygiene	Am J Trop Med Hyg
American Review of Respiratory Disease	Am Rev Respir Dis
Anaesthesia	Anaesthesia
Anesthesiology	Anesthesiology
Annals of Allergy	Ann Allergy
Annals of Internal Medicine	Ann Intern Med
Annals of Otology, Rhinology and Laryngology	Ann Otol Rhinol Laryngol
Annals of Surgery	Ann Surg
Annals of Thoracic Surgery	Ann Thorac Surg
Archives of Dermatology	Arch Dermatol
Archives of Environmental Health	Arch Environ Health
Archives of General Psychiatry	Arch Gen Psychiatry
Archives of Internal Medicine	Arch Intern Med
Archives of Neurology	Arch Neurol
Archives of Ophthalmology	Arch Ophthalmol
Archives of Otolaryngology	Arch Otolaryngol
Archives of Pathology and Laboratory Medicine	Arch Pathol Lab Med
Archives of Physical Medicine and Rehabilitation	Arch Phys Med Rehabil
Archives of Surgery	Arch Surg
Arthritis and Rheumatism	Arthritis Rheum
Blood; Journal of Hematology	Blood
Brain; Journal of Neurology	Brain
British Heart Journal	Br Heart J
British Journal of Obstetrics and Gynaecology	Br J Obstet Gynaecol
British Journal of Radiology	Br J Radiol
British Journal of Surgery	Br J Surg
British Medical Journal	Br Med J
Canadian Journal of Public Health	Can J Public Health
Canadian Medical Association Journal	Can Med Assoc J
Cancer	Cancer
Chest	Chest
Circulation; Journal of the American Heart Association	Circulation
Circulation Research	Circ Res
Clinical Pediatrics	Clin Pediatr (Phila)
Clinical Pharmacology and Therapeutics	Clin Pharmacol Ther
Clinical Science and Molecular Medicine	Clin Sci Mol Med
Clinical Toxicology	Clin Toxicol
Diabetes	Diabetes
DM; Disease-a-Month	DM
Endocrinology	Endocrinology
Gastroenterology	Gastroenterology
Geriatrics	Geriatrics
Gut	Gut
Human Pathology	Hum Pathol
Investigative Radiology	Invest Radiol
JAMA; Journal of the American Medical Association	JAMA
Journal of Allergy and Clinical Immunology	J Allergy Clin Immunol
Journal of Applied Physiology	J Appl Physiol
Journal of Biological Chemistry	J Biol Chem
Journal of Bone and Joint Surgery; American Volume	J Bone Joint Surg (Am)
Journal of Bone and Joint Surgery; British Volume	J Bone Joint Surg (Br)
Journal of Clinical Endocrinology and Metabolism	J Clin Endocrinol Metab
Journal of Clinical Investigation	J Clin Invest
Journal of Clinical Pathology	J Clin Pathol
Journal of Experimental Medicine	J Exp Med
Journal of Gerontology	J Gerontol
Journal of Immunology	J Immunol
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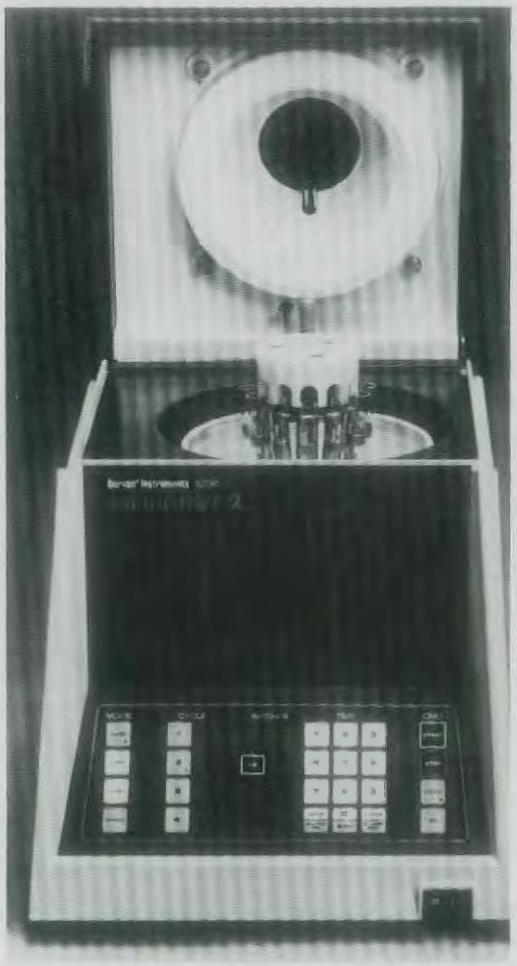

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