Vol 46. No. 4, November 1992

ISBN 1171-0195

NEW ZEALAND JOURNAL OF

MEDICAL LABORATORY SCIENCE

OFFICIAL PUBLICATION OF THE
NEW ZEALAND INSTITUTE OF MEDICAL
LABORATORY SCIENCE INCORPORATED

WELLCOZYME

A third generation HCV EIA

Wellcozyme anti-HCV is the first enzyme immunoassay for the detection of antibodies to Hepatitis C Virus (HCV) which uses antigens cloned directly from human serum proven to transmit HCV.

This 3rd generation assay employs the latest technology in the form of a recombinant fusion protein consisting of structural (core) and non-structural (NS3 and NS5) antigens.

With no requirement for pre-dilution and a total incubation time of just two hours, this new microtitre based assay is ideal for the busy blood bank seeking fast turnaround times.

Wellcozyme anti-HCV is the latest to join the highly successful Wellcozyme range which includes assays for Hepatitis A, B and D, HIV, CMV, Syphilis, Chlamydia and Herpes.

Murex Diagnostics – continuing the commitment to viral diagnosis.

murex

A clear commitment to viral diagnosis

P.O. BOX 22-305 AUCKLAND 6
TELEPHONE 276-1877

HEP07a

NEW ZEALAND JOURNAL OF
MEDICAL LABORATORY SCIENCE

VOL. 46 No. 4 NOVEMBER 1992 ISSN 1171-0195

TABLE OF CONTENTS

Original Articles

Technical Communication

Subscriptions to the Journal for non-members requiring delivery in New Zealand is $NZ33.00 for 1 year surface mail paid. Single issues are $NZ12.00 surface mail paid.

Subscriptions to the Journal for non-members requiring delivery overseas is $NZ39.60 for 1 year surface mail paid. All subscriptions except for single issues are due in February.

DIRECTIONS FOR CONTRIBUTORS

From Vol. 36 No. 1 all papers published will be in the form known as "Vancouver Style" or Uniform Requirements for Manuscripts submitted to Biomedical Journals. Full details may be found in the New Zealand Journal of Medical Laboratory Science, Vol. 45, No. 4, page 108 to 111 or from the Editor.

Intending contributors should submit their material to the Editor, M. Gillies, Microbiology Laboratory, Auckland Hospital, Auckland, New Zealand. Acceptance is at the discretion of the Editor, and no undertaking is given that any article will be published in a particular issue. The copy deadline for each issue is the first of the month prior to the month of publication.

ADVERTISER INQUIRIES

Inquiries regarding advertising rates and copy or blocks for advertising should be addressed to the Advertising Manager, Trish Reilly, M.N.Z.I.M.L.S., 48 Towai St, St Heliers, Auckland 5, Phone 575 5057

DATES OF PUBLICATION

The months of publication for 1992 are March, May, August and November.

NZJ Med Lab Science 1992; 46(4): 122-123

Haematology values in cord blood samples from normal babies.

Raewyn Bluck, MNZIMLS; Dr. Hilary Blacklock, MBChB., FRACP., FRCPA.

Haematology Laboratory, Middlemore Hospital, Private Bag, Otahuhu.

Correspondence to: Dr. H. Blacklock.

Introduction

Over a period of nine months, 552 cord blood samples were collected and assayed for basic haematology parameters to establish a reference range using current technology.

The samples collected from consecutive births were divided into four groups for assay:

Group A	32 to 36 weeks gestation.
Group B	37 to 38 weeks gestation.
Group C	39, 40 and 41 weeks gestation.
Group D	42 weeks and greater gestation.

No specimens were received from babies of less than 32 weeks gestation.

Comparisons of key haematological parameters were made to check for gestational differences. The data from all gestation groups was pooled and key parameters were analysed for racial differences.

Method

Samples were processed on the Coulter S+6 at Middlemore Hospital. The machine was controlled daily with the Auckland standard, the CBC8 normal and a local quality control sample used throughout the day to check for drift. Reference ranges for the haematology parameters were calculated using the formula mean ±2 standard deviation.

Samples excluded from the data were those from births clinically assessed as abnormal. This included those with an Apgar score of less than 7, meconium ingestion, babies with infection and/or babies ill enough to be immediately admitted to the Special Care Baby Unit (SCBU). In group A, babies admitted to SCBU at birth were included where no definable illness which would affect the haematology parameters was detected and where their Apgar scores were 7 and above. This allowed inclusion of the large percentage of premature babies who are automatically admitted at birth for observation and/or treatment. Samples with MCV's less than 100fl were investigated for haemoglobin Barts. Where haemoglobin Barts was identified, the baby was presumed to have alpha thalassaemia, and the sample was excluded.

The results were grouped in the four gestation groups. The mean weights of the groups were as follows:

A 32 to 36 weeks gestation	(n = 81)	mean weight 2674 grams
B 37, 38 weeks gestation	(n =156)	mean weight 3104 grams
C 39, 40, 41 weeks	(n =207)	mean weight 3423 grams
D 42 weeks and greater	(n =108)	mean weight 3715 grams.

The smaller number in Group A relates to the fact that fewer babies are born at this gestation.

Nine parameters were compared in order to ascertain gestational differences. These included haemoglobin (Hb), mean cell volume (MCV), platelets (Plts), mean platelet volume (MPV), total white cell count (WBC), band neutrophils, segmented neutrophils, lymphocytes and nucleated red blood cells (NRBC).

Comparison of means at the 0.05 level of significance were performed to compare each group with the reference group C (full term gestation) for the following six parameters, Hb, MCV, Plts, WBC, segmented neutrophils and lymphocytes.

Finally, in order to have sufficient numbers in each racial group, the data from each gestation group was pooled. Comparisons were made between such racial groups as were deemed to have representative numbers, for the parameters Hb, MCV, Plts, MPV, total WBC, neutrophil count, eosinophil count and NRBC.

Results

Results for all parameters (mean ±2 SD) are listed for all groups in Tables 1 and 2.

Coulter parameters

Although a statistically significant increase was recorded between group A and group C, the haemoglobin remained relatively constant throughout gestation with means ranging from 159g/L in group A, to 164g/L in group D. Any difference between the second, third and fourth groups was not significant statistically.

With both groups A and B, the MCV showed a statistically significant difference from the reference group. The MCV decreased from a mean of 110 at 32 weeks to 108 fl as the gestation progressed. This is in accordance with other published reference ranges [1, 2, 3].

Mean platelet counts varied little throughout the gestation with means of 327, 338, 331, 334 x 10^9/L and no significant differences were shown between the four groups. This is contrary to the finding of Patrick et al and Van den Hof [4, 5], who found significantly greater platelet counts in term versus preterm neonates, but echoes the findings of Forrestier [2] who found no platelet increase during the last weeks of pregnancy.

Differentials

The mean WBC increased as the gestation progressed (Group A mean 11.4 x 10^9/L, Group B mean 12.7 x 10^9/L, Group C mean 13.4 x 10^9/L and Group D 14.5 x10^9/L thus confirming the findings of other investigators [1, 2].

The neutrophil band counts showed little variation with a mean of either 0.2 x 10^9/L, 0.3 x 10^9/L or 0.4 x 10^9/L in the four groups. Neutrophil counts increased as the foetus matured as would be expected from the increasing total white blood count. Both WBC and segmented neutrophils show statistically significant variations from the control group in all cases.

Mean lymphocyte counts showed no significant alteration with foetal maturity, (group A 3.9 x 10^9/L, Group B 4.0 x 10^9/L, Group C 4.2 x 10^9/L and Group D 4.4 x 10^9/L).

An unexpected result was the relative constancy of the NRBC count through the four gestation periods (Group A mean 0.6 x 10^9/L, Group B mean 0.6 x 10^9/L, Group C mean 0.6 x 10^9/L and Group D mean 0.8 x 10^9/L). For practical purposes the means can be considered as unchanged. This finding confirms that of Takagi [1] who found no increase in NRBC's in spite of an increasing white count.

When comparisons were made using the Newman-Keuls multiple comparison test, no racial differences were found at the 0.05 level of significance for the racial groups: Samoan (n = 62), Maori (n = 97), Tongan (n = 24), European (n = 98), Polynesian (n = 132) and Other (n = 31). This is in contrast to the findings of Siebers [7], Bluck [8], Carter [9] and Caradoc-Davies [10] all of whom found racial differences in haematological parameters between races in the adult population. This finding raises the interesting question as to whether such reported differences are life-style generated rather than racially controlled.

Conclusion

This study defines the reference ranges for cord bloods from babies of differing gestations. Although statistical differences exist between some of the parameters tested such as the total WBC and the MCV, it is questionable whether these differences are important. Unless these variations are shown to be of clinical significance, we suggest that the values

Table 1:
Range of haematology values from cord blood samples Coulter parameters (mean ± 2SD).

	32-36 weeks	37-38 weeks	39-40-41 weeks	42 weeks plus
Number	84	157	208	108
RBC 10^{12}/L	3.5-5.1	3.6-5.1	3.56-5.3	3.8-5.3
Hb g/L	131-189	133-190	133-192	138-189
PCV	.39-.56	.40-.56	.39-.57	.41-.57
MCV fl	102-119	100-118	100-116	100-114
RDW %	14.0-19.7	14-19	14.4-18.8	14.7-19.2
MCH pg	34.2-40.5	34-40	33-40	33-39
Plts 10^9/L	212-443	224-453	200-464	207-463
MPV fl	6.3-8.5	6.3-8.4	6.1-8.5	6.0-8.6
WBC 10^9/L	5.5-17.4	6.0-19.0	7.8-19.2	8.2-20.7

Table 2:
Range of white cell values from cord blood samples.

	32-36 weeks	37-38 weeks	39-40-41 weeks	42 weeks plus
Number	84	157	208	108
WBC 10^9/L*	5.5-17.4	6.0-19.0	7.8-19.2	8.2-20.7
Myelo x 10^9/L	0-0.1	0-0.1	0-0.1	0-0.1
Meta x 10^9/L	0-0.1	0-0.6	0-0.3	0-0.2
Bands x 10^9/L	0-1.1	0-1.2	0-1.0	0-1.3
Neutrophils x 10^9/L	2.50-11.0	3.0-11.5	3.7-11.4	3.3-12.5
Lymphocytes x 10^9/L	1.2-6.7	1.6-6.4	1.6-6.7	1.5-7.0
Monocytes x 10^9/L	0.1-2.0	0.2-2.2	0-2.0	0.1-2.2
Eopsinophils x 10^9/L	0-0.8	0-0.9	0-1.0	0-1.0
Basophils x 10^9/L	0-0.1	0-0.2	0-0.2	0-0.1
NRBC x 10^9/L	0-1.7	0-2.0	0-2.2	0-2.6

** Coulter parameters (mean ± 2SD). The other differential parameters are based on 100 cell counts (mean ± 2 SD.)*

obtained for the 39, 40, 41 week gestation be used as the reference range for all post 32 week cord blood samples. Our reference range is similar to that recommended by Oski and Nathan [3], except that our leucocyte counts are lower.

References

1. Takagi K, Tamaka H, Nishijima S, Masaoka N, Miyake Y, Sikata H, Satch K. Fetal blood values by percutaneous umbilical blood sampling. *Fetal-Thera* 1989; **4** (2-3): 152-60.
2. Forestier F, Daffos F, Catherine N, Renard M, Andreux J. Developmental haematopoiesis in normal human fetal blood. *Blood* 1991; **77**: 2360-2363.
3. Haematology of Infancy and Childhood. Nathan and Oski, (Sanders) P. 1678-1680.
4. Patrick C, Lazarchik J. Stubbs T, Pittard WB. Mean platelet volume and platelet distribution width in the neonate. *Ann J. Paediat Haematol Oncol* 1987; **9**(2): 130-2.
5. Van den Hof, Nicolaides K. Platelet count in normal, small and anaemic foetuses. *Am J Obstet Gynaecol* 1990; **162**(3): 735-9.
6. Siebers RWL. Effect of Race on Laboratory Parameters. *NZMJ Med Lab Science* 1991; **45**(4): 112-113.
7. Bluck R, Dixon M, Ramage C, Blacklock H. A Reference range for haematological changes in pregnancy. *NZ J Med Lab Technol* 1990; **44**: 103-6.
8. Carter J. Siebers R, Wakam P, Maling T. Racial differences in platelet parameters. *NZ J Med Lab Technol* 1989; **43**: 114-5.
9. Caradoc-Davies T, Daniels J. A survey of ESR and eosinophil count in a racially mixed population in New Zealand. *NZ Medical Journal* 1984; **97**: 232-34.

NZJ Med Lab Science 1992; 46(4): 124-127

The ABCs of Research Grant Writing: The Advice of Two Grant Reviewers

Richard D. Sontheimer and Paul R. Bergstresser

Department of Dermatology, University of Texas Southwestern Medical Center, Dallas, Texas, U.S.A.

While comparing notes after recent grant review sessions (RDS — Dermatology Foundation Medical and Scientific Committee; PRB — National Institutes of Health (NIH) General Medicine 1A Study Section), we were struck by the frequency with which certain strategic errors are made during the preparation of fellowship or research grant applications by novice applicants. This was especially true for proposals submitted to the Dermatology Foundation.

In 1990, the Dermatology Foundation Medical and Scientific Committee reviewed 112 fellowship and research grant applications, of which 46 (42%) were funded (four new Career Development Awards, 20 Fellowships, and 23 Research Grants). Thus, competition is quite keen, even for this dedicated source of research support for new investigators in dermatology. In contrast with NIH Study Sections, which return formal scientific critiques to applicants, there is at present no mechanism by which the Dermatology Foundation can provide specific written feedback to individuals who submit applications. Thus, if not successful, new dermatology investigators may find themselves in the frustrating position of not knowing what errors they have made in preparing their proposals.

When submitted to the NIH, grants for research in dermatology must compete with grants from all other medical specialties and biomedical disciplines. Thus, if the overall quality of applications submitted by young investigators interested in skin and skin diseases were better, their chances for successfully competing for funds from the NIH and other granting agencies would improve. As a result, everyone involved in scientific aspects of our specialty would be more successful. We therefore decided to formalize our own personal observations concerning mistakes commonly made by novice applicants and communicate these observations as an aid for those who follow.

This document is not an extensive treatise on grant writing. Rather, we hope only to familiarize new investigators with the language and style of effective grants and to highlight some of the more successful strategies employed in their organization. More systematic and comprehensive treatments of this subject have been presented by others over the past decade in various subspecialty journals (1-12) and monographs (13-15), although little on this subject has appeared in the dermatology literature.

We suggest that the following items, listed alphabetically, might best be used as a checklist when preparing a grant or fellowship application, thus avoiding some of the more common impediments to success that might not be intuitively obvious.

Finally, the masculine gender is employed in this document for the sake of readability. Many of the most gifted investigators in dermatology today would obviously use the feminine gender. This document is intended for the benefit of everyone who might find the challenge of academic medicine to be a stimulating and rewarding career.

"Ambitious" Three commonly heard phrases during deliberations over first-time grant applications are "overly ambitious," "very ambitious," and "too ambitious." An attempt to do too much within a short time span often leads to inconclusive results. See the *Unfocused* section below.

Appearance The overall appearance and readability of your proposal is important, especially when the reviewer is rushed (as is often the case) and when your application happens to be the last one in a series to be reviewed.

Print Size: Avoid using a type size smaller than 12 characters per inch to defeat maximum page limitations (you should not risk antagonizing reviewers by reminding them of the debilitating effect that the passage of time has had on their near vision). You may even choose to use a larger, more readable type size if it is at all possible.

Margins: Fully justified right margins might be aesthetically pleasing, but the variable, arbitrary spacing that results is often confusing or distracting in scientific proposals.

Emphasis Use boldface or italic type and underlining to emphasize important points or to clarify the outline structure that most grant applications require. However, be consistent throughout with the format you choose.

Appendix Do not abuse this privilege. Appropriate items for an appendix include space-requiring illustrations that can not be included in the body of the application and recently submitted (unpublished) abstracts and manuscripts that bear directly upon your proposal. Submitting one or two of your recently published papers to support your arguments can also be useful. Any figures or tables that are pertinent to a favourable review of your proposal must be included in the body of the application and not in the appendix. Remember, reviewers are not required to consider materials presented in an appendix (although they usually do). Your application must be able to stand on its own, even without the appendix.

Brevity If you are one of those fortunate individuals with the gift of clear and focused thought and can convincingly present your ideas in less than the allotted page limitation, feel free to do so. These applications often bear a touch of elegance.

Budget Within the space allowed, justify, justify, and justify! That is, explain clearly the need for the funds requested. Many reviewers, especially at the NIH level, live by the axiom that "if it isn't justified, it will not really be needed." This is especially true for multi-use items such as computer hardware and software. The novice applicant should also keep requests for travel support to a minimum.

Citations Although it requires some additional space, reviewers ordinarily appreciate seeing titles for all literature citations. Also, be careful not to cite too many abstracts to support your arguments, because as many as 50-75% of abstracts presented at national meetings never become published papers (15,17). Basing your proposal too heavily on abstracts or unpublished information can reflect an unhealthy degree of naivete.

Collaboration Collaboration can signify synergy and this may become your competitive edge. Do not be afraid to engage others who have different degrees of expertise in developing your proposal. On the other hand, there should be clear reasons and evidence for the intent to collaborate. Be sure to send a copy of your collaborator's updated curriculum vitae as well as a letter of intent that describes his relationship to your project.

Computers If you are not yet using this marvellous productivity tool, remember, an increasing number of your competitors are. Desktop PC outlining programs are a splendid way to plan, organise, and manage a complicated project such as preparing a scientific grant application. The personal control that a word processing program with a spell checker and thesaurus gives you in applying the final finishing touches to your proposal will return its cost over time in the price of antacids and anxiolytics. On-line Medline searching, weekly reference updating, database and statistical analysis, and graphic illustration of ideas and data represent some of the other important desktop PC applications for the new investigator.

Controls All experimental observations require parallel observations in control populations or samples. This is the essence of scientific investigation. Ordinarily, both "positive" and "negative" controls are required to interpret the significance of an experimental result. Make yourself think consciously about the proper controls for each experiment you propose in every specific aim that you present. Moreover, when the results of your control studies challenge your preconceptions, listen very carefully to what they are telling you. Every seasoned investigator recognises the true value of serendipity; your key is to shake the tree firmly enough for something to fall and examine very carefully all that hits the ground.

Curriculum Vitae Make yours neat and up to date. Also, include in your application those of your preceptor and other collaborators when appropriate. Make every effort to have your work published in the highest quality journals that have the broadest readership (e.g., *Journal of Biological Chemistry, Journal of Clinical Investigation, Journal of Experimental Medicine, Journal of Immunology*). In study sections, quality always beats quantity.

Deadline In every way possible, make sure that all aspects of your application (i.e., approval letters from your Human Experimentation Review Committee, letters of support and current curriculum vitae from your preceptor/sponsor, letters of support from your collaborators and your chairman) are submitted with your proposal before the deadline. It is possible that late-arriving documents will not be appended properly to your proposal. Overdue documents also create additional work (and the risk of ill will) for an overtaxed granting agency's administrative staff.

"Descriptive" As in "it's too descriptive!" another relatively unflattering term often used during grant review sessions to depict an unquantitative or uncontrolled approach to investigation.

"Dry Lab" A term used to describe a proposal in which the applicant does not appear to have a working knowledge of the experimental techniques he has proposed to use. Whereas everyone must start somewhere, those with practical experience in the laboratory will ordinarily have an advantage. To the greatest degree possible, try to develop an in-depth understanding of the advantages and limitations of each methodology you propose to use.

Educate Do not assume that your reviewer has a perfect understanding of the background information related to your proposal. The review process is not perfect and it is possible that someone not working in your particular field will review your application. On the other hand, you can assume that your reviewer is intelligent and educable. In fact, reviewers like to learn new information when reading grant applications. Therefore, present your background information in a clear and lucid manner that can be followed easily by an interested and intelligent non-expert. Consider using graphic illustrations to describe complicated theoretic paradigms and extended experimental protocols (include these in the appendix if necessary).

Errors Misspelled words, typographical errors, and poor grammar reflect a careless attitude, something that scientists always find distasteful. Give yourself sufficient lead time to avoid such regrettable and costly errors.

Experimental Design This critically important part of your proposal can not be dealt with fairly in this brief format, although several points may be made. Your experimental sequence should be presented in the most logical way possible. Consider presenting alternative approaches for experiments that are critical to the success of subsequent studies. Beginning investigators should also try to avoid proposing separate parallel lines of investigation (e.g., human studies concurrent with animal studies) to avoid the risk of being labelled *"Unfocused."*

Experimental Methods and Procedures This section is relatively less important than the *Experimental Design* section, and thus ordinarily justifies less space. For a ten-page proposal it is usually impossible to describe exhaustively all experiments that will be performed. Thus, less important procedural aspects, such as volumes of buffers, durations, and temperatures of incubations should be omitted. On the other hand, some indication of the status of an individual technique in your hands can be quite helpful (i.e., is the technique already up and going in your laboratory or will you have to establish and standardize it before you can begin your studies).

"Fatal Flaw" This is a mistake so serious as to render your entire proposal unfundable. Examples: 1) reliance upon techniques with inherent limitations that can not possibly allow you to proceed on to the next phase of your studies, 2) hinging your entire proposal on an observation made by others, which, unknown to you, has been withdrawn or found to be unreproducible, 3) being unaware that a large part of your proposal has already been reported in a source that you have failed to cite (especially if that report was authored by your reviewer).

Feasbility Theoretically, there may be reason to believe that consummating a passionate romantic relationship on the planet Venus might be inherently more exciting than on Earth. Unfortunately, this intriguing hypothesis will be difficult to test before the end of the second millenium. Are the experiments you propose really do-able? Do not let the optimism of youth obscure hard realities of science. Do your *Homework* to gain a full understanding of the limitations of the experimental procedures you propose to use. Can that isolation technique really yield enough product to make your proposed experiments possible?

First Page If in the first pages of your application a reviewer has not become intrigued, you are in trouble. A first-page format that is likely to capture his attention will include: 1) a logical and relevant rationale based upon your own preliminary data, 2) a clearly stated hypothesis that flows logically from your rationale, 3) a set of specific aims in which you state briefly how you will test your hypothesis experimentally, and 4) a brief explanation of the clinical and biologic significance of the results of your work. Whereas this might appear to be a lot to include on one page, with some time and thought it can be achieved. The first page ordinarily will receive more of the seasoned investigator's attention than any other page in the proposal.

Funding Category Make certain the theme of your proposal fits the funding category to which you are applying. Even though cutaneous T-cell lymphoma is technically a cutaneous malignancy, studies of this disorder are not likely to be as attractive to the American Society of Dermatologic Surgery as are studies of surgically treated cutaneous malignancies. Moreover, don't apply for a funding mechanism for which you are not fully competitive. Unless you already have several recent publications in high-quality peer-reviewed journals in the general area of your proposal, you should consider applying for a Fellowship rather than a Career Development Award.

"Ham and Eggs" Consider the illogic of the syllogism "If I had some ham, I would have some ham and eggs, if I had some eggs" and why it might be used by a reviewer to criticize a grant.

Homework Know the literature in your area, including presentations at meetings from the current year (published abstracts in *Clinical Research* and *Federation Proceedings* will give you access to this information). Failure to do so could lead to a *Fatal Flaw*. Learn how to access computerized reference databases such as Medline yourself to ensure that your literature searches are as focused and relevant as possible. This capability becomes an invaluable tool as your research career develops.

Hubris The greatest sin in ancient Greece! Try not to trumpet your preliminary observations or past accomplishments too loudly. Scientists are naturally suspicious of salesmen.

Hypothesis Every grant application should from the outset be organized around a clearly stated hypothesis that flows naturally from a logical rationale and leads to a feasible set of specific aims. There really was a reason behind all those junior high school science projects after all.

Instructions Follow them to a "T." Your inability to comply with the directions on a grant application can be taken as a reflection of a less than rigorous approach to your work in general. Remember, insight is 5% inspiration and 95% *perspiration*.

Interpretation of Data Some investigators like to end each proposed experiment with a brief discussion entitled "Interpretation of Data." In this section, a deliberate projection of the various anticipated outcomes for an experiment is provided and analyzed. Limitations of the experimental techniques (see *Pitfalls* section below) are highlighted and alternative approaches are provided for experiments that are critical to the primary line of investigation. Funding agencies do not like to gamble carelessly with resources. Hedging your bet, especially for critical experiments, projects a mature understanding of the realities of scientific investigation.

Length Never exceed the maximum page allowance. Some reviewers view this as unfair competition and they may penalize your application for this transgression.

Letters Encourage those who write letters of support to be as specific as possible concerning the value that you bring to the project and the role(s) that they will play to ensure your success.

"Naive" Another frequently heard term during grant-review deliberations, it conveys a lack of appreciation on the applicant's part for what it takes to excel in science. This is most frequently seen when young investigators do not have sufficient experience to recognise the limitations of experimental techniques. Theoretically, for Dermatology Foundation Career Development Award and Fellowship applications, it is the preceptor's responsibility to guide applicants around this abyss. For Research Grant applications, you are on your own. If you need more help, call, telefax, or write to outside experts for advice; most of them are really nice people who are much more approachable than you might think and who genuinely enjoy helping young people get started in academic medicine.

Organizational Structure When granting agencies request information such as this, they are asking for a description of the relationship that exists between you, your proposed studies, and your sponsoring department. Such information is used to determine how well your project conforms to the granting agency's mission. For example, the Dermatology Foundation would most likely be interested in supporting the career development of individuals who appear most destined to become full-time faculty members in a department of dermatology.

Page Identification Always use a page numbering system. Headers or footers containing your last name are also useful, especially when your application comes apart during the administrative or scientific review process.

Phenomenology As in "This is nothing but phenomenology!" meaning only the description of a phenomenon. The work of a scientist is to explain phenomena; anything less is little more than an avocation. If the sky turned green tomorrow, some would find it interesting to study this as a curious but isolated occurrence. Their grant applications would likely include studies directed toward detailing the various hues of green that could be observed between dawn and dusk. However, those who could find a way to decipher the true cause of a green sky and thereby determine its potential impact upon global warming, crop production, or world population growth would certainly be in a better position to secure financial support for their studies.

Pitfalls A thoughtfully devised experimental strategy that identifies the most logical line of investigation at times will lead to a dead end. The built-in limitations of all experimental procedures are frequently responsible. Provide alternative experimental approaches for the critical studies in your proposal, in case you run into such roadblocks. There are always at least two ways to leave every intersection and sometimes the road less travelled might be the one that will lead most directly to your destination. Don't leave home without a roadmap and an alternative itinerary.

Preceptor Give your preceptor adequate time to review your application. Exchange it several times to ensure that your proposal benefits to the greatest degree possible from his experience. Funding decisions concerning applications from equally qualified young investigators can be influenced by the reviewer's perception of the overall likelihood of success of the proposals, something that is impacted considerably by the roles played by the preceptors. If you wish to learn more about the psychodynamics behind mentoring relationships, Daniel J. Levinson's *The Seasons of a Man's Life* (18) is a good place to start.

Preliminary Data Very important — the strength of this section is critical to the success of your application! If you don't have some, do your very best to get some. Funding upon promise alone is an increasingly rare event. Ensure that your preliminary observations are presented in lucid fashion. Employ tables and/or graphic illustrations when possible; include standard deviations or standard errors with data points; and present the appropriate statistical analysis of your data. The manner in which you present and interpret your preliminary observations will be used to gauge your potential as an independent investigator.

Quantification Devise as far as possible the most quantitative approach to all aspects of your work.

Rationale The logical basis for doing something. Consider the following rationale (argument): "If success in a competitive effort is a function of preparation (premise), then twice as much preparation should yield a competitive edge (conclusion)."

Relevance In the past one could pursue knowledge for its own sake. Funding constraints, however, now require an investigator to identify clearly some form of clinical or biologic significance for their proposed studies. You are not compromising your scientific integrity by pointing out the value to society that an investment in your work might yield.

Scholarship If you are not a true scholar — one who enjoys learning for its own sake — you should think about another field. Grant writing today can be a very difficult way to make a living if that's your only goal. However, the fact that you have read this far in this document suggests that you probably have what it takes in this regard, so good luck.

Specific Aims Another critical element in your application. Your Specific Aims section should clearly outline your experimental studies and constitute a clear and specific statement of your research goals. Within this framework, you should describe a logically presented series of feasible experiments that systematically test your hypothesis.

Statistics If you don't fully understand statistics (and that is not a crime), find someone who does to review the design of your application. A few minutes with your local statistician is an excellent investment, particularly while designing your experiments. This is especially important when you propose a clinical line of investigation in which the significance of your effort may hinge entirely upon proper statistical design of the studies and analysis of their results. Recognise the difference between parametric and nonparametric comparisons and the various statistical approaches used in these analyses.

Strategy Some of the most interesting basic laboratory research proposals are molded from clinical observations investigated at a very basic level. The advantage of this approach is that such studies often yield insight into both medical phenomena and basic biology. Today, this reductionist strategy involves grappling with a relevant clinical issue at a molecular and/or genetic level. Therefore, it is currently to your advantage to become as fluent as possible in the powerful language of molecular genetics. Even clinically oriented proposals can profit from this approach. Reduce your clinical question to its most basic elements. Then become conversant with the language of the clinical epidemiologist and use his powerful, bias-busting tools to formulate the most prospective, randomized, blinded, controlled, cross-over approach possible for illuminating your clinical problem.

Summarize Find a way to emphasize your most important points by repeating them three times in your proposal (preferably at the beginning, middle, and end).

Time Give yourself enough time to make the strongest possible case for someone to invest in your work. It is quite surprising how silly errors tend to creep surreptitiously into a proposal that has been left unread for a week or two. A fresh perspective that a bit of rest and relaxation can provide for your final draft may become your critical edge. Also, give your preceptor enough time to review your proposal carefully. His experience is invaluable to your success, so do not short-change yourself in this regard. If you are going to invest the effort required to write a competitive grant application, give yourself the very best chance to succeed.

Timetable Presentation of a reasonable agenda for your studies is a good idea. This can be done succinctly at the end of the proposal or sequentially as you develop the Experimental Design section.

"Unfocused" Another of those unflattering terms that is regularly heard during grant-review sessions. The new grant writer often underestimates the time required to pursue a single line of investigation to its logical end. Therefore, he is tempted to add additional parallel lines of inquiry to justify the financial support requested for a given time interval. A proposal that focuses upon the elucidation of a single relevant question through the process of hypothesis formulation and testing is almost always the most efficient strategy.

Update Advise the granting agency in writing (overnight express mail or telefax if necessary) about recent changes in your plans or your preceptor's plans that occur between the time your proposal is submitted and the time it is reviewed (usually several months later). Do not let your fate become the victim of a rumour.

Verify Verify all sources used to support your arguments. It is dangerous to hinge your case solely upon the observations of others that have been reported only in abstract form (see *Citations* above). A faulty premise can lead to a *Fatal Flaw.*

Work Work with successful scientists, in any department. Meet them; talk to them; collaborate with them. Scientific strategies are universal, and education through work in any successful laboratory will have enormous benefits.

Successful grant writing is a learned process. The foregoing opinions are intended to facilitate that learning process for the new dermatology investigator. Experienced investigators will recognize the limitations of this list and will know of many ways to break these rules and still write a successful grant. We hope, however, that this information can serve to shorten that painful space of time between the submission of one's first Dermatology Foundation application and the receipt of one's first NIH award.

References

1. Mackenzie RS. Grant writing and review for dental faculty. J Dent Educ **50:** 180-186, 1986.
2. Adelstein SJ. Preparing a grand proposal. Invest Radiol **22:** 250-252, 1987.
3. Bagley CS. The process of preparing a grant: Part 1. Oncol Nurs Forum **14:** 113-114, 1987.
4. Pagonis JF. Successful proposal writing. Am J Occup Ther **41:** 147-151, 1987.
5. Miller RA, Patil R, Mitchel JA, Freedman C, Stead WW, Blois MS, Anderson RK. Preparing a medical informatics research grant proposal: General Principles. Comput Biomed Res **22:** 92-101, 1989.
6. Kelly MP, West P, Anderson J. On collaboration: Reflections on the preparation of an interdisciplinary research proposal. Health Bull **48:** 36-40, 1990.
7. Haller KB. Preparing the research proposal: Half Science, Half Art. MCN **14:** 230, 1989.
8. Pelli DG, Levi DM. On writing grant proposals: Confessions of two grant reviewers. Am J Optom Physiol Opt **65:** 598, 1988.
9. Eaves GN. Preparation of the research grant application: Opportunities and pitfalls. Grants Magazine **7:**151-157, 1984.
10. Shapek RA. Core elements of proposals requesting federal funding. Grants Magazine, **8:** 118-128, 1985.
11. Kennicott PC. Developing a grant proposal: Some basic principles. Grants Magazine, **6:** 36-41, 1983.
12. Moshell AN. Sources of research support: Overview and discussion. J Invest Dermatol **85:** 391-393, 1985.
13. Krathwohl DR. How to Prepare a Research Proposal. 3d ed. Syracuse University Press, Syracuse, NY, 1988.
14. Reif-Lehrer L. Writing a Successful Grant Application. Science Book International, Boston, MA, 1982.
15. Holtz H. Government Contracts: Proposalmanship and Writing Strategies. Plenum Press, New York, 1979.
16. McCormick MC, Holmes JH: Publication of research presented in the pediatric meetings. Am J Dis Child, **139:** 122-126, 1985.
17. Corry AM. A survey of the publication history of randomly selected IADR/AADR abstracts presented in 1983 and 1984. J Dent Res **69:** 1453-1455, 1990.
18. Levinson DJ. The Seasons of a Man's Life. Ballentine Books, New York, 1978.

NZJ Med Lab Science 1992; 46(4): 128-129

TECHNICAL COMMUNICATION

Jobs scheduling program — a computerised preventative maintenance system.

Trevor Walmsley, Scientific Officer

Biochemistry Department, The Princess Margaret Hospital, Cashmere Road, Christchurch 2.

Abstract
A computerised preventative maintenance program JOBS has been written to help plan essential tasks in the laboratory. The program is simple to use and will run on an IBM PC or 100% compatible computer. The job scheduling program is simply designed to keep essential tasks up to date and to present an historical record of the completed work.

Key Words
Preventative Maintenance, Computer Software

Introduction
The smooth running of a busy pathology laboratory depends on essential background tasks being carried out at the required time. These tasks may include stock taking and ordering of supplies, maintenance and calibration of equipment, reviews of staff rostering, training, documentation, safety equipment and protocols, backing up of computer hard disks and other essential housekeeping. Failure to carry out even one of these numerous essential tasks wastes precious time and can lead to disruption of the laboratory and eventual deterioration of the service provided.

The computerised JOBS scheduling system presented here is designed to help to keep your essential tasks up to date and to present an historical record of the work completed to date.

Equipment
The JOBS Scheduling Program has no special requirements other than an IBM PC (or a computer that is 100% compatible) running under PC-DOS or MS-DOS 2.0 or greater and 256K or more RAM. Although the program can be run from a single 360K floppy drive, it is preferable to install it permanently on a hard disk and automatically execute the program each time the computer is started.

Main Menu Options
The main menu screen offers the following options:-

Add New Job — this enables you to add a new job to the scheduling system. Each job description consists of a job title and the department (or work station) responsible for the work. Four lines of text are available to describe the job. Jobs can be automatically rescheduled from the date due (fixed time table) or from the date completed (floating time table). If the rescheduling frequency is on a fixed time table, the job will be rescheduled for the same day of the week as last time if the frequency is in weeks; or for the same date of the month if the frequency is in months. One off jobs can be scheduled by entering 0 weeks or months in the frequency period.

Edit — this is used to edit a job description. A job can be "deactivated" (put to one side) if for example the equipment concerned is out of order and "activated" later if the equipment is repaired, or deleted if the equipment is disposed of.

List — a selection of different lists of jobs can be displayed on the terminal screen or printed out. An example of a list of jobs is shown in Figure 1. The first job is for stock control and this is scheduled to be carried out 3 monthly at preset dates and on completion is rescheduled from the date due. In contrast to this job 2 is for backing up a computer hard disk and is to be rescheduled from the date completed. Job 3 is an example of a one off job and will be automatically transferred to the

Figure 1: *Jobs listed by work station*

Biochemistry Department, The Princess Margaret Hospital Page 1
Job Scheduling

List of all Jobs at 29/03/1992 from TEMP.DBF

WORK STATION: BIOCHEMISTRY

Job # 1 STOCK CONTROL
1 January — update stocks after Xmas period
1 April — invoices to be here before end of financial year
1 July — new financial year begins
1 October — order stocks for Xmas period

** Pending ** Next due on 01/04/1992 FREQUENCY — 3M at preset dates

Job # 2 HARD DISK BACKUP OF LABORATORY PC
Clean up hard disk
Back up to 80 MB tape
Run Nortons — check for bad blocks and use speed disk
Check safe storage of commercial software

** Overdue ** Next due on 15/03/1992 FREQUENCY — 3M at preset dates

Job # 3 ZINC REFERENCE RANGE
Check zinc reference range.

Deadline 25/06/1992

Figure 2: *Completed jobs list by work station*

Biochemistry Department, The Princess Margaret Hospital Page 1
Job Scheduling

List of Completed jobs at 29/03/1992 from TEMP.DBF

WORK STATION: BIOCHEMISTRY

Job # 1 STOCK CONTROL

	Date Due	Date Done	Next Due	User
** Marked for Purging**	01/07/1991	09/07/1991	01/10/1991	TREVOR
	01/10/1991	08/10/1991	01/01/1992	TREVOR
	01/01/1992	19/01/1992	01/04/1992	TREVOR

Job # 2 HARD DISK BACKUP OF LABORATORY PC

	Date Due	Date Done	Next Due	User
** Marked for Purging **	14/07/1991	30/07/1991	30/10/1991	TREVOR
	30/10/1991	25/11/1991	25/02/1992	TREVOR
	25/02/1992	15/03/1992	15/06/1992	TREVOR

completed one off jobs list upon completion. A list of completed jobs can be printed out and used to verify that the preventative maintenance schedules are being adhered to. An option is also available to purge records of work completed since a set date or to keep a maximum number of records of each completed job. Figure 2 is an example of a completed jobs list where it was elected to keep the last 2 completions and to delete the rest.

Report Jobs — is used to report completed jobs and reschedule these tasks.

Status — displays the current status of the jobs database. It can be listed on the terminal screen or printed out.

Change — (i) The current date can be changed. (ii) The jobs database can be changed and used to test out the various demonstration databases available. (iii) The view of the database can be changed: for example, if the primary key is a particular machine and the alternate key is the department that carries the maintenance, it is possible to print a list of maintenance for each machine, change the view and print out another list for each department.

Database Operations — with these options you can create a new database using the current database as a template, delete the current database, pack the current database — this deletes all "Inactive Jobs", renumber the database, merge two databases and edit the database keys.

Install — this customises the Jobs Scheduling Program for your system and includes the report headings, department and hospital, page length and page margin, as well as the escape codes to initialise and reset the printer and/or force a form feed. A colour or monochrome monitor can be selected and a warning period before jobs are flagged as "pending" can be defined.

Discussion

When first using this system it is advisable to include only a few essential jobs in the system, otherwise you may be continually reminded about trivial jobs that are overdue. Remember the idea is to use the computer as a help to remind you of essential tasks — not to create a monster that rules your life.

The jobs are automatically flagged as "pending" if they are within a preselected number of days of the due date and are automatically flagged as "overdue" if they are not reported by the due date.

It is recommended that Jobs Program is installed on the hard disk and the AUTOEXEC.BAT file modified to execute the Jobs Scheduling Program automatically when the computer is rebooted. The JOBS Program can be prevented from automatically running too often if a day of the week is nominated in the AUTOEXEC.BAT file. For example the program can be installed to run on Tuesdays (or on the next day the computer is rebooted) and to automatically exit if there are no "pending" or "overdue" jobs. If there is "pending" or "overdue" work to be done, this can be listed out on the printer and the work allocated to the appropriate personnel. On completion of the work the completion date is entered in and the job is rescheduled for next time. From time to time a list of completed work can be printed out to verify that the preventative maintenance schedules are being adhered to.

Two example databases are available: PATH — contains example jobs for a Hospital Pathology Laboratory and ENG1 — contains example jobs for a maintenance section of a small production factory.

For further details please contact the author.

INSTITUTE BUSINESS

Office Bearers of the N.Z.I.M.L.S. 1991 - 1992

President
Paul McLeod
Microbiology Dept., Nelson Hospital

Vice President
Dennis Reilly
Diagnostic Laboratory, Auckland

Secretary/ Treasurer
Shirley Gainsford
Valley Diagnostic Laboratory, Lower Hutt

Council
Ted Norman, Anne Paterson, Jim Le Grice, Geoff Rimmer, Chris Kendrick

Executive Officer
Fran van Til
P.O. Box 3270, Christchurch
Phone/Fax (03) 313-4761.

Please address all correspondence to the Executive Officer, including Examination and Membership enquiries.

Editor
Maree Gillies
Microbiology Dept., Auckland Hospital or The Editor, P.O. Box 9095, Newmarket, Auckland.

Membership Fees and Enquiries
Membership fees for the year beginning April 1, 1991 are:

For Fellows — $88.40 GST inclusive

For Members — $88.40 GST inclusive

For Associates — $33.80 GST inclusive

For Non-practising members — $33.00 GST inclusive

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

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

Membership Sub-Committee Report — August 1992

Since the May meeting there have been the following changes:

	23.8.92	12.5.92	26.3.91	26.11.91
Membership	1256	1188	1188	1188
less resignations	27	6	3	6
less G.N.A.	19	-	6	3
less delections	-	-	-	-
less deceased	-	-	2	1
less duplications	-	1	1	1
	1210	1181	1174	1178
plus applications	34	75	14	9
plus reinstatements	-	-	-	-
	1244	1256	1188	1188
Composition				
Life Member (Fellow)	12	12	12	12
Life Member (Member)	5	5	5	5
Fellow	20	20	21	21
Member	678	671	670	670
Associate	443	462	393	392
Non-practicing	60	60	61	60
Honorary	26	26	26	28
Total	1244	1256	1188	1188

Applications for Membership
S. BAIRD, Rotorua Hospital; A. BLAKE, Waikato Hospital; J. BYRNE, Wellington Hospital; R. CLAPPERTON, Valley Diagnostic; J. CLARK, Wellington Hospital; E. CULLEN, Wairau Hospital; E. DEARLOVE, Greenlane; J. DEROLES-MAIN, Palmerston North Medlab; R. FINDLATER, Wellington Hospital; K. FISCHER, Diagnostic Laboratory; A GOODALL, Hamilton Medlab; S. HARLAND-SMITH, Endeavour Scientific; J. HUMBLE, Wellington Hospital; M. HUYMANS, Diagnostic Laboratory; A. KARPIK, Middlemore Hospital; R. KUMAR, NZ CDC; W. MAYNARD, Napier Hospital; L. McKNIGHT, Wellington Hospital; W. MELROSE, Overseas; J. MILLS, Medlab Thames; A. MOORE, Auckland Hospital; D. MURTON, Wellington Hospital; N. NIELSEN, Northland Pathology; J. PROCTOR, Palmerston North Medlab; A. RUCK, Valley Diagnostic; L. SCHONEWILLE, Auckland Hospital; J. SHAW, Rotorua Medlab; S. SHAW, Palmerston North Medlab; I. STEWART, Waikato Hospital; S. TOOMAN, Waikato Hospital; W. van TIEL, Greenlane; C. WATTS; S. WHITTAKER, Bio-Rad Laboratories.

Gone No Address
A. DAS, Middlemore; M. DUTHIE, Royston; P. EASTMAN, Middlemore; S. FLEMING, Middlemore; J. HAVILL, Taranaki; N. JULL, Greenlane; J. KENDALL, Wanganui; R. KNOX, Greenlane; A. LLOYD, Auckland; J. McGREGOR, Greenlane; J. REARDON, Taranaki; A. RIDDELL, Middlemore; K. ROBERTSON, Middlemore; D. ROSENFELT, Middlemore; W. SINCLAIR, Kawakawa; F. YOUNG, Wanganui.

Resignations
R. ALLAN, Dunedin; J. BARNETT, Tauranga; L. BELL, Wanganui; L. BENDALL, Gynaepath; J. BOLD, Medical Diagnostic Lab; J. BROADBENT; R. CLARKE, Tokoroa; K. COLEY, Waikato; B. KENDRICK, Palmerston Nth; M. KENNEALLY, Dunedin; E. KILBY, Dunedin; B. LIARDET, Lower Hutt; D. MacFARLANE, Waikato; L. MANUEL, Auckland; W. MAYNARD, Diagnostic; J. McCRACKEN; C. McDONALD; D. McKANE, Christchurch; F. O'MEARA, Rotorua; C. SHAILER, Palmerston Nth; K. SULLIVAN, Auckland Diagnostic; A. TALBOT, Middlemore; G. TOY, Medlab; J. WEBBER, Whakatane; K. WEBBER, ARBC; S. WHYTE, Hastings; K. YOUNG, Medlab.

LETTERS TO THE EDITOR

LAST BRANCH AXED

" . . . . the local Branch of the New Zealand Institute of Technology has taken further strides towards real maturity and worthwhile achievement. The successful staging of the Prizegiving, the One Day Seminar and its following buffet dinner were all remarkably successful ventures. In fact the One Day Seminar is rapidly achieving considerable status as a valuable scientific and technological event. And in the future? 1968 brings another Seminar — in May this time — and one which promises to be of real worth. It will also be of significant importance from a local and national standpoint as it coincides with the retirement of Mr Whillans. Further ahead, we as a branch are committed to sponsor the 25th Anniversary Annual General Meeting and Conference of the New Zealand Institute of Medical Laboratory Technology (Inc.) in 1969 and planning is well under way. Add to these, the bi-monthly meetings and prizegivings, it will be seen there is plenty to do. . . . . "

(Quote from Auckland Branch Newsletter, December 1967)

Positive, enthusiastic, confident — even inspiring sentiments referring to the Auckland Branch of the now New Zealand Institute of Medical Laboratory Science. That was the spirit 25 years ago. It was a time when the Branch was slowly recovering after becoming almost moribund, and a small, dedicated group was intent on getting it back on its feet once more. History tells us they succeeded, and for a time at least, the Branch grew and prospered.

It was a good indication of the apathy that finally killed the Auckland Branch, when only 12 members turned up to a meeting to lay the organisation (which has not met for 12 months) finally to rest.

The Auckland Branch is the last to go — the others having succumbed earlier on. In practical terms it means that the regional input into our professional body is left to the regional representatives. The indifference of the members in their regions is such that often only one candidate for the job is nominated, and therefore elected unopposed by the few who can be bothered to vote.

At the meeting held on 19 May 1992 in the seminar room of the Clinical Chemistry Department at Auckland Hospital, nobody questioned the foregone decision. No discussion was held as to the consequences of this final step being taken. It was a bit like attending a funeral — "painful, but let's get it over with."

It is interesting that a couple of weeks later somebody was heard to ask about organising a remit for Conference in August. But with the Branch gone, there remains no forum for discussion or "machinery" to ensure that the wishes of members in the region are discussed then translated into suitably worded remits and notices of motion. The regional representative cannot adequately represent the region if not told of the issues and concerns of its members.

The emergence of the Special Interest Groups (SIGs) has been blamed by some for the demise of the Branches. But the malaise had set in before the SIGs were up and running. The suggestion that the SIGs carry out the same role as the Branches is incorrect. SIGs are discipline-related national bodies responsible to the NZIMLS Continuing Education Subcommittee, for promoting and ensuring quality of education in their particular subject.

In a nutshell, the NZIMLS is a professional body which ensures the quality and ethics of the practice of Medical Laboratory Technology in New Zealand, and as workers in this field we have a responsibility to be part of our professional body and have input into its activities both regionally and nationally.

It is sad that many in the profession do not belong to the NZIMLS. The reason often given is "what do I get out of it?" This selfish attitude has become more evident since the Institute handed over it's "industrial" role as a negotiating body to the Medical Laboratory Workers' Union. To quote again from the same article in that 1967 Newsletter

". . . . . Don't ask 'What do I get' but 'How can I help?' "

One good thing came out of the meeting on 19 May. The Branch was not dissolved, but put into "suspended animation" with the hope that sometime in the future it will rise up again like the legendary Phoenix.

Gillian McLeay
(Member of the 1967 Auckland Branch Executive)

Presidential Address

Paul McLeod, President NZIMLS

The last twelve months have seen an achievement that the profession has been seeking for many years. We now have a university degree at not one, but two universities. Both the University of Otago and Massey University have accepted students into year two of their degree programmes and we can now look forward to the first graduates entering into our laboratories in 1995.

In finally achieving this goal, it is appropriate to look back over the years at the efforts of numerous presidents, councils and individuals. When I first came on to the Council in 1981, the quest for the proposed Massey University degree was about to fail. The degree proposal was a victim of unfortunate political timing and cumbersome structures for decision-making. There were numerous important players in the field all of whom would need to agree on the proposed degree. In hindsight, it was unlikely that a favourable decision could ever be made. Alan Harper was the president at that time. Reading through his reports one can sense the frustration and exhaustion he felt as the hurdles became higher and higher to the point of almost impossibility. In the opening paragraphs of his last Presidential report in 1984 he said,

> "When I assumed office three years ago there was a major goal I had hoped we would achieve; that was a degree course in medical laboratory technology. This is something I have felt very strongly about for many years. In my view it is essential if we are to progress as a profession.
>
> You will now know from the last MLTB newsletter that because of the gloomy prognosis following the Hospital Board Association's rejection of the course, the facilities in the new block at Massey have been directed to other purposes, and the staff expected to be involved in teaching parts of the degree are being utilised in new courses.
>
> We had a golden opportunity to achieve something which had been talked about and for which a need has been recognised since at least the mid 1960's. That opportunity has been lost."

For almost as long as the Insitute has been in existence, there has been the desire for a degree qualification for our profession. However, the Massey University proposal was the closest we had ever come. It is little wonder that Alan Harper felt so disappointed. However, I believe his efforts were not wasted because the enthusiasm he demonstrated remained an influential factor under the surface for a decade at Massey University. When the climate was right they produced another degree proposal with surprising enthusiasm and have referred to the Institute's past contacts with them on several occasions.

During the mid 1980's, communication was established with the University of Otago and over a period of several years, a structure for the degree was developed. The Vice Chancellor's Committee refused to consider the proposals from either Massey or Otago until a Training Needs Analysis had been conducted. The time and effort required in making

submissions and preparing for this analysis was substantial. I would like to record the remarkable contribution of Jan Parker during this period. Her unswerving determination when consulting with the University of Otago was no doubt a major factor in the final successful conclusion of achieving the degree. In late 1991, both Massey and Otago were given the green light to proceed with their degrees, a Bachelor in Medical Laboratory Science.

Since that time, much work has been going on developing the degrees. The Institute is represented on all the appropriate committees at both universities. The Specialist Interest Groups are being consulted and all this input will ensure that the degrees will be relevant to our profession. A lot of this work has been enthusiastically carried out with the Otago degree by Anne Paterson and she has given many hours of her time ensuring that the structure of the Otago degree is as close as possible to what we want. Anne has recently moved from Dunedin to work at Rotorua and consequently is not standing for council this year. I wish to record our thanks to Anne and to wish her well in her new employment.

One of the major benefits of having our university degree is yet to become apparent. I am referring to the post-graduate educational opportunities that will automatically follow the under-graduate degree. The post-graduate programmes will be available to all technologists, most of them in an extramural capacity. Post-graduate diplomas, Masterates and ultimately a PhD will be available. The profession will at last be able to tap in on all the resources that a university can offer. We know the demand is there because of the support for our Specialist examinations. Also, many technologists have taken on post-graduate diplomas and post-graduate masterates in affiliated degrees. We are a professional body that thirsts for knowledge and the establishment of our degree will accommodate this demand in the most appropriate way. The challenge that lies ahead, is to support the universities in every way possible, as it is only they who can offer the post-graduate opportunities.

I believe that professionally we are about to come of age. At last we have a qualification that has no boundaries. Now we can go forward with confidence and respectability into the world of medical laboratory science.

Because we are on the eve of the development of post-graduate programmes, the Institute will be reviewing its role in the field of ongoing education and examinations. We will continue to offer the Specialist Level examinations as long as there is a demand, but it will be interesting to see what effect the post-graduate programmes will have on these examinations. Of more immediate interest is the role and function of the Specialist Interest Groups and the ongoing education programmes they are offering. As these pick up more and more momentum the question has to be asked, what is the future of our annual scientific meeting? There are numerous issues involved here and the Council will be discussing these with the appropriate groups over the next year.

The role and function of Laboratory Assistants has long been a discussion point amongst our members. Since the early 1970's when the Institute first started offering the examinations, we have seen a steady rise in the standard of the various syllabi. Today, it is recognised by many that the standard is now way beyond what the original intention was for a laboratory assistant. Because of this high level of quality our laboratory assistants quite rightly have become disillusioned with their lack of recognition and career structure. The discussion paper to be debated shortly, is recommending that we go back towards the original intended functions of laboratory assistants so that they are not asked to perform beyond their position in the laboratory. The recommendation is that they function by following set procedures and protocol. Any validation and verification functions are to remain the responsibility of registered medical technologists. With recent changes to the ACC Act relating to medical error and medical mishap, this issue is becoming increasingly important to us as a registerable profession. We have recently witnessed the political backlash in hospital pharmacies where unregistered personnel were involved in preparation of medications. This is an issue of registration of health professionals. It is an issue where the public and patients can take comfort in the knowledge that the laboratory test results have been verified and validated by a person who is recognised by a statutory board as meeting its requirements in standards and competency. I would argue long and hard that our registration board has a vital role to play. It is an independent body who can indicate to all prospective employers who is, or is not competent to verify and validate analytical results. If this function was left to individual employers then huge inconsistencies would occur throughout the country, which must result in a dropping of standards and quality. Once this occurs, it is my belief that patient safety is compromised. The technologists board is not there to protect the technologist, it is there to protect the patient.

During the next year the Council will be developing strategies and discussion papers on several issues. One of these is the investigation into a competency assurance programme for registration. There is criticism that registration once achieved, is a licence for life. It is argued that an individual's competency should be challenged in an ongoing programme of proving ability. This is a complex issue being faced by many professional groups and we are no exception.

As already mentioned, we will be reviewing our ongoing educational programmes. In addition, we are starting to develop material for schools and universities giving information about our profession. In amongst all this will be the development of the university programmes and related issues to education.

I would like to take this opportunity to thank all of the Council members for their support during the last year. Again, I thank Anne Paterson for her contributions and wish her well for the future. I also thank our Executive Officer, Fran van Til for her hard work and loyalty during the year. There has been a significant increase in her responsibilities with all financial and membership records being added to her portfolio. I do not think many people realise the complexity of our organisation, with numerous examinations to be conducted, membership files to be maintained, financial accounts to be recorded and the business of the Council to be conducted.

There are many individuals, too many to name, who willingly give many hours of their time to the profession and Institute. To you all, a very sincere thank you. This Institute would not function or survive without you.

I look forward to the coming year and the challenges that lie ahead.

Thank you.

Minutes of the 48th Annual General Meeting of the New Zealand Institute of Medical Laboratory Science (Inc) Held at Wellington on Thursday 27 August 1992 at 3.30pm.

Chairman

The President (Mr P McLeod) presided over the attendance of approximately 80 members.

Apologies

It was resolved that apologies be accepted from the following:

G Paltridge, Christchurch
A Knight, Dunedin
G Thorne, Auckland
A Cooke, Auckland
J Cull, Auckland

A Buchanan/A Paterson

Proxies

A list of 18 proxy holders representing 53 proxies was read by the Secretary.

Minutes

It was resolved that the Minutes of the 47th Annual General Meeting held on 27 August 1991 be taken as read and confirmed.

J Le Grice/E Norman

Annual Report

It was resolved that the Annual Report be received.

A Paterson/K Scroggins

Speakers to the report were as follows:

A Paterson	Education Committee
M Gillies	Publications Committee
D Reilly	expressed thanks to SIGs for their outstanding input into the profession.

Financial Report

It was resolved that the Financial Report be received.

S Gainsford/M Lynch

S Gainsford spoke to the report.

Congress surplus is now $17,207 due to an unpaid account received from Pavilion for $4,574.10. This will be acknowledged in the 1992/93 accounts.

The Auditor has not separated the Journal and advertising:

Income/Advertising	29,277
Subscriptions	906
	30,183
Expenditure:	
Production	33,631
Postage	4,101
Other	3,281
	41,013

It was resolved that the Financial Report be adopted.

S Gainsford/E Crutch

Election of Officers

The following members of Council were elected unopposed:

President	P McLeod
Vice President	D Reilly
Secretary/Treasurer	S Gainsford
Region 1 Representative	G Rimmer
Region 2 Representative	E Norman
Region 3 Representative	C Kendrick
Region 4 Representative	J Le Grice
Region 5 Representative	L Milligan was nominated to Council unopposed.

No election was necessary.

Awards

The award winners were announced and the awards presented by the President:

CERTIFICATE EXAMINATION AWARDS

Haematology	Heather Sproston Diagnostic Laboratory
Histology	Linda Graham Auckland Hospital
Microbiology	Wendy Goble Hamilton Medical Laboratory
Imunohaematology	Lisa Wardill Southland Hospital

SPECIALIST CERTIFICATE AWARDS

Clinical Biochemistry	Anne Goodall Medlab South
Haematology	Teresa Smith Waikato Hospital
Immunology	Dianne Siegenthaler Palmerston North Hospital
Microbiology	Kay Stockman Waikato Hospital

JOURNAL AWARDS

NZIMLA Journal Prize	Robert Siebers Wellington Hospital
Roche Diagnostic Clinical Chemistry Award	Daphne Fairfoot Greenlane Hospital
Pacific Diagnostics Award	Raewyn Bluck Middlemore Hospital
Fellowship	Glenne Findon Auckland Hospital
	Margaret Smith Auckland Hospital

Honoraria

It was resolved that no honoraria be paid.

J Le Grice/E Norman

Auditor

It was resolved that Deloitte, Ross, Tohmatsu be reappointed as the Institute's auditors.

Future Annual Scientific Meeting

The President called for offers to organise the 1994 Annual Scientific Meeting. No offers were received.

There being no further business, the Chairman closed the meeting at 4.10pm.

Minutes of the Special General Meeting of the New Zealand Institute of Medical Laboratory Science (Inc) Held at Wellington on Thursday 27 August 1992 at 4.15pm.

Chairman

Mr P McLeod.

Minutes

It was resolved that the Minutes of the Special General Meeting held on 27 August 1991 be taken as read.

A Paterson/A Buchanan

Business Arising

Direction to the Council to seek a legal interpretation on the legality of the Secretary/Treasurers position was raised by H Robertshaw.

P McLeod advised the meeting that legal advice had been received from Kensington Swan on 25 October 1991 as follows:

"There is no provision in the rules which expressly prevents one person from standing for both secretary and treasurer, or which prevents one person from being elected to both positions.

"In addition, there are no provisions in the Incorporated Societies Act 1908 prohibiting a person from standing for both secretary and treasurer positions and from holding those positions.

"Therefore, provided the voting was carried out in accordance with Rules 13(e) and (f), the election of Shirley Gainsford to the position of treasurer and secretary is valid under the old rules."

Remits

1. It was moved by S Gainsford, seconded by G Rimmer that the definition of Laboratory Assistants as defined in the Report on the Role of Medical Laboratory Assistants in Clinical Laboratories as circulated to all members be adopted as Insitute policy.

   Definition of a Medical Laboratory Assistant:

   "A Medical Laboratory Assistant is a person employed to perform routine tasks by following established protocols under the supervision of a Medical Laboratory Technologist.

   S Gainsford spoke to the Laboratory Assistants report.

   Several members spoke for and against the motion.

   The motion was put to the meeting. Three votes against were recorded.

   Carried

2. It was moved by D Reilly, seconded by A Paterson that Policy Decision No 1 (1971) be reaffirmed.

   Policy Decision No 1 (1971): That all committees and meetings convened under the auspices of the New Zealand Institute of Medical Laboratory Science (Inc) be subject to a standard reference of parliamentary procedure and that this be "A Guide for Meetings and Organisations" by Renton.

   Carried

3. It was moved by D Reilly, seconded by J Le Grice that Policy Decision No 2 (1989) be reaffirmed.

   Policy Decision No 2: That all persons wishing to undertake any examination offered by the Institute shall at the time of application and the taking of the examination be financial members of the Institute.

   Carried

It was moved by A Southern, seconded by S Johnson that Council investigate the possibility of offering reduced Institute membership fees and Conference registration fees to all undergraduate students of Medical Laboratory Science and return an appropriate remit to the 1993 AGM with a view to enactment by the 1994 academic year.

It was moved by A Southern, seconded by S Johnson that Council investigate the possibility of offering a prize for the best paper presented by an undergraduate student of Medical Laboratory Science and return an appropriate remit to the 1993 AGM with a view to enactment by the 1994 academic year.

The motion was amended to read "that Council investigate the possibility of offering a prize for the best paper presented at Institute scientific functions by an undergraduate student of Medical Laboratory Science and return an appropriate remit to the 1993 AGM with a view to enactment by the 1994 academic year."

Several members spoke for and against the motions.

Carried

There were no further remits from the floor.

General Business

It was moved by M Dickinson, seconded by G Rimmer that the word "Registered" be included in the Laboratory Assistant definition. The definition will now read:

"A Medical Laboratory Assistant is a person employed to perform routine tasks by following established protocols under the supervision of a Registered Medical Laboratory Technologist."

Carried

B Edwards informed the meeting that the Area Health Boards will need to be updated to Regional Health Authorities in the NZIMLS Rules.

P McLeod mentioned that the Code of Ethics had been printed and laminated. These will be distributed to all laboratories by Regional Representatives and it was requested that these be displayed in prominent positions in the laboratory.

There being no further business, the Chairman closed the meeting at 5.05pm.

20TH World Congress of Medical Technology
Dublin, Ireland 26–31 July 1992
Presented by The International Association of Medical Laboratory Technologists

Report on the 20th World Congress of Medical Laboratory Technology Ireland 26-31 July 1992.

Dennis Reilly.

"Cead Mile Failte". "A Thousand Welcomes".

Mary Robinson, Her Excellency the President of Ireland, welcomed 1400 delegates to the opening of the 20th World Congress of Medical Technology. Dr Robinson appears as a symbol of a new Ireland which seems to be prospering with their independent position in the new unified Europe. She is a top flight international lawyer, a woman of intellect and sophistication and it was a treat to meet her at the reception at the National Concert Hall.

The Congress organisers had chosen the theme of "Quo Vadis" to reflect the more recent and ongoing developments in medical laboratory science. The scientific programme was enhanced by many notable guest speakers such as Dr B Evatt, U.S. Centre of Disease Control, Professor Roger Ekins of Immunoassay fame and Dr L. Silverman, USA on the use of molecular biology techniques.

Trinity College

The programme was laid out in eight broad sections and lectures were held from Monday-Friday in what was a very busy timetable. Inevitably some interesting lectures were missed because of clashes, still it was a very interesting and stimulating week. Molecular biology stole the centre stage with its techniques of polymerase chain reaction (PCR). This is going to be more popular in the future but it does have several fish hooks such as contamination and the fact that laboratories will need to be licensed to use this technique in much the same way as PC users buy MSDOS software programmes.

The sessions started on Monday with a plenary lecture by Dr D. Evatt on "The Impact of HIV on Work Practices". HIV risks to lab workers remain very low. By December 1990 only 24 US health workers had acquired HIV from occupational exposure. The primary risk for Health Care Workers is high especially for surgical teams and nursing personnel. Good clinical skills and close adherence to safety guidelines remain the best means of prevention. The IAMLT General Assembly of Delegates was held on Wednesday afternoon. The President, Paula Britt Lindholn, reported that during the past two years since the last congress, there had been a number of Eastern European countries that had made contact with the IAMLT. She had attended a meeting in Mannheim with the First National Congress in Unified Germany. The IAMLT had also worked with the WHO to draft a manual for it's Disaster Laboratory Manual which will be distributed to member societies in developing countries.

Conference Lunch

The IAMLT now has a travel and training fund which made it possible for a large number of technologists from around the world to attend the Congress. This fund had 148 applications and the IAMLT was able to sponsor 80 people from countries such as Estonia, Lesofo, Nepal and Thailand. The position of editor of the Med Tech International has retained its kiwi flavour. No suitable person was found to take over the duties of editor so Mr Des Phillip has agreed to remain in that position for a further two years. The journal is typeset in New Zealand and 10,000 odd copies are printed in Hong Kong. It is planned to offset some of the cost of the journal with some advertising.

There are a number of membership applications from countries from around the world. Australia has now been readmitted after a few years absence. South Africa, India and Luxembourg are among eight countries which are now added to the membership list, making a total of 50 countries from

around the world. The IAMLT reported that it had made a worthwhile contribution to the World Health Organisation, particularly in the section of blood banking in the health laboratory technology and blood safety divisions.

The Regional Development Committee held it's first regional meeting last year in Norway. The President felt that these regional meetings would be an important way of getting countries together. Now that Australia is back in the international association we should work together with Australia and improve our involvement in the South Pacific Area.

In summary the meeting of the general assembly of delegates went reasonably smoothly and there were no outstanding issues. The readmission of South Africa into the IAMLT went without any problems and the Scandanavians wished them well with their move towards a democratic society. I feel that the New Zealand Institute should take up the challenge of the President with these regional meetings and work with Australia with whom we have formed close links over the past few years and try to become more closely involved with our South Pacific neighbours.

The social programme took a lot of commitment but I am pleased to report that with the support of a few fellow New Zealanders I lasted the week. Each evening there was either a reception at one of Dublin's beautiful historic buildings or a barbecue in the gardens of an old homestead. The format was always the same, lots of Guinness, Irish music and laughter.

Trinity College

Talking to fellow technologists from around the world confirmed my belief that we are up with the best of them as regards training, knowledge and equipment. Certainly the organisation of our annual scientific meeting was as good as the Congress. We certainly can't compete with the standards of invited speakers that they had in Dublin but for the basic organisation of the meeting I think we do very well.

The Congress was held at Trinity College University which is situated right in the heart of Dublin. Trinity is celebrating it's 400th Year birthday and was hosting several other conferences during that week. Trinity was founded by Charter of Queen Elizabeth 1st in 1592. It contains one of the world's great research libraries holding the largest collection of manuscripts and printed books in Ireland. The most famous of these is the Book of Kells which dates back to the 7th and 9th centuries. It contains a latin text of the four gospels and includes zoomorphic ornament decorated initials. Dublin is not much bigger than Auckland and Trinity College is in the heart of this lovely city and a short walk from Grafton St mall. At lunch time the mall has string quartets playing along with musical buskers strumming guitars. One fellow there recited the poetry of famous Irish writers such as William Yates, Oscar Wilde and Samuel Beckett. A punt tossed into his hat and off he would go with a powerful rendition. Small pubs seem to outnumber cafes and were filled to capacity at lunch time. Ireland is having a tourist boom based on its image as centre of culture and is an uncluttered country on the edge of bustling, overpopulated Europe. Certainly, after four week's travelling in Europe, Irelands friendliness put us at ease as soon as we arrived in the city.

My overall impression at the end of the week was that medical laboratory science in New Zealand is certainly up with the best in the world. There is perhaps a lot more money in the medical science field in Europe compared with New Zealand, although when you speak to some of the people from England the pressures are obviously going on there as the Government tries to contain costs. The 1994 Congress is to be held in Hong Kong.

I would like to close by thanking Wellcome Diagnostic for the opportunity to attend this meeting. I think the Wellcome Award is very worthwhile and is a great opportunity for people to talk to other technologists from other parts of the world gaining in experience and knowledge.

D. Reilly

Abbott Diagnostics Division
New Zealand

1993

INFECTIOUS DISEASE SEROLOGY ANNUAL GRANT

DO YOU WISH TO ADVANCE YOUR KNOWLEDGE AND UNDERSTANDING IN BLOOD DONATION INFECTIOUS DISEASE SEROLOGY ?

Through the generosity of ABBOTT Diagnostics Division the trustees of the New Zealand Medical Laboratory Science Trust are pleased to offer the opportunity for members of the New Zealand Institute of Medical Laboratory Science to apply for assistance to advance "their knowledge and understanding of Infectious Disease Serology in the Blood Services of New Zealand".

ABBOTT Diagnostics have again made the sum of $5,000.00 available to the Science Trust to award to members of the Institute to further their understanding in Blood Donation Infectious Disease Serology in accordance with the objectives of the Trust (See back page for details). Applications are invited from financial members of the Institute, not necessaily employed with the New Zealand Blood Services.

Applications will be judged on the expected benefits from an Award and where appropriate, the advancement of knowledge and understanding in Blood Donation Infectious Disease Serology.

Applications must be made on the official form and received by

The Executive Officer,
New Zealand Medical Laboratory Science Trust,
C/- Pathology Department,
Palmerston North Hospital,
PALMERSTON NORTH

CLOSING DATE APRIL 2 1993

MEDICAL LABORATORY SCIENCE TRUST

APPLICATION FORM FOR

1993 ABBOTT DIAGNOSTICS AWARD

Date:_____

Name:_____

Address (Business):_____

Present Position:_____

Value of Grant sought:_____

Details of proposed use of Grant:_____

_____

_____

(Continue on another page if required)

I wish to apply for this ABBOTT Diagnostics Award for the following reasons:_____

_____

_____

_____

_____

_____

_____

_____

(Continue on another page if required)

Details of additional assistance being sought or already obtained:_____

_____

_____

_____

Current NZIMLS membership category:_____

Are you currently a financial member of the NZIMLS? YES ☐ NO ☐

I agree to abide by the terms of the Grant and the decision of Trustees of the New Zealand Medical Laboratory Science Trust.

Signed:_____ Date:_____

If successful the above application has my support and permission to complete the project defined in this application.

Signed:_____ Date:_____
(Charge or Principal Technologist, or Laboratory Director/Manager).

I have sighted and support this application and confirm that the applicant is practising in my Transfusion Region.

Signed:_____ Date:_____
(Regional Blood Transfusion Charge Technologist).

Applications close with the -

Executive Officer,
Medical Laboratory Science Trust,
C/- Pathology Department,
Palmerston North Hospital,
Private Bag,
PALMERSTON NORTH

AT 5PM, FRIDAY, 2ND APRIL, 1993.

In 1987 the New Zealand Institute of Medical Laboratory Science (Inc) responding to a change in the direction of our society from "State Funding" to "self support" and "user pays" and as there was no organisation with the specific responsibility for supporting and fostering the aims and ambitions of the New Zealand profession of Medical Laboratory Science, established the Medical Laboratory Science Trust, with the following principal objectives -

(a) To promote and assist research by members of the NZIMLS.

(b) To promote and assist the education of members of the NZIMLS by the provision of grants of money and the organisation of lectures, demonstrations and tutorials.

(c) To promote and assist in the provision of equipment, travel and accommodation for members of the NZIMLS to further their research and education.

(d) To promote and assist in the provision of course fees, enrolment fees, study bursaries and book purchases for members of the NZIMLS to further their education and research.

(e) To promote and assist in the publication of any research by members of the NZIMLS.

(f) To co-operate with other bodies or organisations, both within New Zealand and overseas, having objects in whole or in part similar to the objects of the Science Trust.

(g) To promote, obtain and achieve any of the objects of the Science Trust by or through the facilities available at any Hospital, University, or recognised medical, veterinary, scientific or research institute or other organisation and make grants of money, apparatus, equipment or otherwise, as the Trust Board may think fit.

The Trustees appointed by the Institute are Mr John S.Beattie of Wellington, Mr Colvin H. Campbell of Palmerston North, Mr Barrie T. Edwards of Christchurch, Mr Desmond J. Philip, and Mr Walter J. Wilson both of Auckland.

NOVEMBER 1992

NZIMLS CONTINUING EDUCATION

SPECIAL INTEREST GROUPS

Liftout

TRANSFUSION SCIENCE

SPECIAL INTEREST GROUP

Convenor: David Wilson

Contact Address: Manawatu Regional Blood Centre, Palmerston North Hospital, Private Bag, Palmerston North.

The most recent meeting of the Transfusion Science Special Interest Group was held in conjunction with the NZIMLS Annual Scientific Meeting in Wellington, on 27 August.

Part of the original brief of the SIGs is to offer advice and support for the annual NZIMLS scientific meeting and TSSIG will be much more involved in the Transfusion Science forum of next year's meeting in Christchurch. We hope this means that **YOU** will all be much more involved. Perhaps you should start thinking now about planning to attend, and planning to participate.

CONGRATULATIONS

Congratulations to Lisa Wardill of Southland Hospital Blood Bank, Invercargill for achieving the highest marks in the 1991 Transfusion Science Certificate Level examination. Well done, Lisa!

ARE YOU IN THE KNOW?

The 'Standard Operating Procedures for Transfusion Medicine Services in New Zealand' has now been published. Has your blood bank got a copy? Extra copies are available from the Otago Regional Blood Centre, Dunedin Hospital, Private Bag, Dunedin at a cost of $10 each.

AUDIO UPDATES

These are being snapped up by several interested people. For ordering information, see the advertisement elsewhere in this newsletter.

REPORT ON AUTOANTIBODIES WORKSHOP

by Tony Morgan, Immunohaematology Dept, Napier Hospital, Napier.

A workshop on Autoantibodies was presented by the Transfusion Science Special Interest Group on Wednesday 26 August in the Pacific Paramedical Centre (PPTC) in Wellington Hospital in conjunction with the Annual Meeting of the NZIMLS.

We were told that this would be a 'wet workshop' with the opportunity to gain some hands-on experience dealing with specimens from patients with warm autoimmune haemolytic anaemia and cold haemagglutinin disease. Wellington did not let us down. It WAS a 'wet workshop'!! and just for a touch of something different — a 50 yard dash across the roof tops in the rain to get to the toilets!

Seriously though, PPTC offered us excellent facilities in which to hold this very successful day. Eleven people from one end of the country (Whangarei) to the other (Invercargill) made the effort to increase and/or refresh their knowledge.

A special mention and thanks should be made at this point to the Biological Laboratories division of Salmond Smith Biolab Ltd who very kindly sponsored this workshop and to the presenters Will Perry of this company, Sheryl Khull (Wellington) and David Wilson (Palmerston North).

The programme for the day ran along these lines:

The day started with registration and morning tea allowing time to relax, chat and wonder — 'what am I doing here?'

This was followed by — A theoretical overview on:

— Warm autoimmune haemolytic anaemia (WAIHA) by Will Perry (Chief Serologist, Biological Laboratories Division, Salmond Smith Biolab).

— Cold haemagglutinin disease (CHD) by David Wilson (Charge technologist, Manawatu Regional Blood Centre, Palmerston North).

Next a laboratory session where we put into practice what we had just reviewed — carrying out blood grouping, antibody screens, monospecific DAT and cold agglutinin titrations on various specimens. The practical sessions were organised by Sheryl Khull (Red Cell Serology Laboratory, Wellington Hospital). Those who were lucky enough to finish in time were able to enjoy a light lunch where the general consensus was 'This reminds me of practical examinations' or 'I'm glad I never had to sit them!'

Back from lunch and into another session in the classroom learning about the transfusion of such patients and how to go about it.

Next — yes, examination time, back into the laboratory and into doing:

— antibody identifications

— autoabsorptions

— crossmatching.

Following this, afternoon tea was combined with a review of the day's results, where people went wrong, and how to overcome these areas.

All in all, this was an excellent, well planned workshop, with an opportunity for everyone to gain some very useful knowledge. During the course of a year most laboratories would not encounter many of the scenarios we were faced with, and those who attended the workshop were lucky to have the opportunity to gain first hand experience with autoantibodies.

Participants at the TSSIG autoantibodies workshop

ARTICLES OF INTEREST

SURVEY OF RED CELL CHARACTERISTICS DURING STORAGE

Suzanne Williams, Les Milligan, Dr James Faed.
Blood Bank, Dunedin Hospital, Dunedin.

This study was undertaken in an attempt to compare selected results obtained from storing blood in various anticoagulants readily available in the Pacific region.

Our studies used subdivided single units of blood. This provided paired studies on multiple anticoagulant-preservative solutions so that small differences could be identified without resorting to large studies. Special steps were taken to distribute the blood into various satellite packs on collection. The satellite packs contained various anticoagulant solutions under review.

Anticoagulants and products tested were:
CP2DA WB
CP2D additive pack — RRC
CPD WB
CPD Conc Red Cells

Samples were taken weekly from the packs, aliquoted and prepared accordingly for the following parameters to be measured:
Blood gases (pH, pCO_2, pO_2)
Electrolytes (sodium and potassium)
Glucose and plasma haemoglobin.

During storage, the levels of Na^+ decreased for all products, with concentrated red cells showing the biggest decrease.

The K^+ showed a marked rise for all products especially concentrated red cells — approx 20 times the normal in vivo value.

As suspected pH dropped progressively in all products.

After the initial level of pCO_2 there was a rise followed by a steady decrease in pCO_2 seen in all products over 4 weeks.

pO_2 rose in all products after 28 days with a marked increase seen in resuspended red cells at 3 weeks.

An increase in plasma Hb was seen in all units with a marked increase in concentrated red cells at 2 weeks.

Glucose was present at acceptable levels throughout the storage life of CP2DA whole blood. The virtual absence of glucose in concentrated red cells and CPD whole blood was noticed at 4 weeks.

Our data suggest the following:
(i) addition of adenine and glucose increases the storage time for red cells;
(ii) concentrated red cells should be discarded after 14 days.

TO DEMONSTRATE THAT GLUCOSE LEVELS IN WHOLE BLOOD AND PACKED CELLS REMAIN WITHIN ACCEPTABLE LIMITS DURING THE STORAGE LIFE OF THE UNIT.

Carolyn Fyfe, Les Milligan, Dr JM Faed
Blood Bank, Dunedin Hospital, Dunedin.

This study was initiated by concern expressed by a physician at the unexpectedly high level of glucose measured in a patient who had been transfused with six units of CPD whole blood.

27 blood donations were obtained from healthy donors attending the Dunedin Blood Transfusion Centre. All bags were stored at 4°C within one hour of collection, and were maintained at that temperature for six weeks, except for brief periods at room temperature when they were sampled. Units were mixed thoroughly once a week. Baseline samples were obtained within one hour of donation (usually within half an hour) before the units were refrigerated.

Measurement of glucose levels were performed by the Beckman Analyser 2. For the purpose of this study, glucose levels refer to the amount of glucose in a residual sample of plasma.

Previous work carried out in this laboratory showed that blood stored in CPD is hyperglycaemic, with a glucose concentration of approximately 20mM/L after 28 days. It was also reported that glucose concentrations in CPD stored blood range from 19.2 mM/L at time of collection to 12.8 mM/L after four weeks. The decreased rate of glucose utilization with the increase of storage time may be an indirect reflection of the decrease in pH which occurs in storage. This was noted in a subsequent study carried out in this laboratory. The decrease in glucose levels detected in whole blood remained within acceptable levels during the five week monitoring period.

There is a significant decrease in glucose levels in packed cells at three weeks storage.

We concluded from the results of this study, that residual glucose levels in whole blood are within acceptable limits for transfusion purposes. The significant decrease in glucose levels at three weeks indicates that concentrated red cells are not recommended for transfusion after 14 days.

PERIPHERAL STEM CELL COLLECTION

from AABB News Briefs, December 1991

Autologous and allogeneic bone marrow transplantation continues to grow as the indications for these potentially life-saving procedures expand. With either transplantation procedure the objective is to restore haemopoetic function after the patient's bone marrow has been effectively destroyed. For there to be haemopoetic recovery, the appropriate bone marrow stem cells must migrate to and colonise the marrow site. Such stem cells exist in the normal marrow and in the normal circulation. In certain circumstances, it has proved feasible to use peripheral blood as a source of stem cells and to achieve the same outcome as a marrow transplant. The basic technology for collection of the stem cells is apheresis.

Autologous peripheral blood stem cell transplantation in the treatment of malignancy is becoming increasingly utilised. Its advantages compared to traditional bone marrow harvest include the relative ease of collection, lessened risk of retaining malignant cells, lower cost and possibly more rapid restoration of marrow function.

To date, progress in allogeneic peripheral blood stem cell transplantation has been slow. Major challenges include the need for prolonged or repetitive apheresis procedures for harvesting, and graft versus host disease (GVHD). If the bone marrow is stimulated to produce more stem cells, too many T cells may be collected as well, which may result in severe GVHD. On the other hand, with too vigorous depletion of T cells, graft failure may result.

Because of the intensity of interest in marrow transplantation, the field of peripheral blood stem cell transplantation will almost certainly grow.

COMPUTERS

Evaluating the benefits before introduction

Lindsey Browning
Southland Hospital.

The main goal of a hospital transfusion service, whether a small provincial hospital or a regional transfusion centre, must be to provide blood and blood products in sufficient quantities for safe transfusion to the patients who require them.

It is necessary to maintain precise and factual information to ensure an efficient and effective service. The introduction of a computer system into a hospital transfusion service can contribute towards this goal. Before introduction it is important to evaluate the potential benefits of the system. One way this can be achieved is by performing a critical evaluation of all the procedures and functions that are currently being performed, this will provide an information base that will help identify:

— any problems/deficiencies in the present procedures
— the service functions performed
— the features of procedures and functions that need to be retained.
— the benefits.

Problems/Deficiencies
In identifying the problems/deficiencies, question the way procedures are performed — do they need to continue to be performed? Are there better ways of carrying out these functions? Eliminate functions which do not need to be performed.

Some topics to start with include:
Specimen collection, registration, worksheet analysis, result recording, verification/validation, statistical reporting, donor records, donor testing, accreditation records, crossmatching/transfusion records, blood and blood product inventory.

Service Functions
The blood bank is a service department. Evaluation of the service provided is best achieved by not just looking at the internal functions, but by obtaining evaluations from selected groups outside the department, ie: clerical/administration (ward clerks), nursing and medical staff.

Topics which could be included for comment include:
— specimen collection procedures
— requisition forms
— reports - quality, content, limitations, frequency
— result availability
— range of services offered
— cost effectiveness of service

Features for Retention
Document all the features of the present system that will need to be retained. Many of the features on this list will also appear as benefits of the computer system which can provide a more efficient way of improving performance of these tasks.

Benefits
The evaluation documentation will have highlighted the functions that the current system lacks or performs inadequately. These functions will now become some of the benefits of installing a computer system. Benefits can be measured in two forms — Tangible and Intangible.

Tangible benefits are usually the reasons for incurring the costs of installing a computer system. The main reason for incurring these costs is to lower the costs of running the present system.

Cost reduction could include: record and document storage, stationary and staffing — however care must be taken in using savings on present personnel costs.

Intangible benefits are very important in justifying the introduction of a computer system, but may be harder to measure in terms of saving costs.

Intangible benefits could include:
— Reduced number of transcription errors
— Reduction in turnaround time of test processing
— Results immediately available for enquiry
— Improved quality assurance
— Improved presentation of results, reports, clarity
— 24 hour external availability of results
— Flagged abnormal results, ie: atypical antibodies, hepatitis positive patients.
— Reduction in clerical intensive functions, ie: patient registration and specimens, preparation of worksheets, retrieving information for result enquiries, report distribution and filing, management reports — Management information more readily available, ie: test status list of work pending, or overdue test list, lists of work waiting authorisation, blood or blood products usage reports, expired unit reports, stock available by location, stock available by product.
— Improved security on sensitive test results, ie: HIV
— Direct result recording by barcode entry, instrument interfacing
— Easy access - to blood, blood product inventory
  - to inventory status
  - Inventory disposal
  - unit tracking
— Easy access to patient transfusion history

The critical evaluation of the current procedures and functions will provide the information base against which the benefits of any potential computer system can be evaluated.

HUMAN PLATELET ANTIGENS

John Dagger
Tissue Typing, Wellington Hospital.

Human Platelet Antigens (HPA)

Antigen system	Glycoprotein location	Other names	Antigens	Other names	Phenotype frequency
HPA-1	GPIIIa	Zw PI^A	HPA-1a HPA-1b	Zw^a PI^{A1} Zw^b PI^{A2}	97.9 25.6
HPA-2	BPIb	Ko Sib	HPA-2a HPA-2b	Ko^b Ko^a Sib^a	99.3 14.6
HPA-3	GPIIb	Bak Lek	HPA-3a HPA-3b	Bak^a Lek^a Bak^b	87.7 64.1
HPA-4	GPIIIa	Pen Yuk	HPA-4a HPA-4b	Pen^a Yuk^b Pen^b Yuk^a	>99.9 <0.2
HPA-5	GPIa	Br Hc Zav	HPA-5a HPA-5b	Br^b Zav^b Br^a Zav^a Hc^a	99.2 20.6

Haematology
SPECIAL INTEREST GROUP

Convenor: Rennie Dix
Contact Address: C/- Anne Cooke, Laboratory Training Centre, Building 18, Auckland Hospital, Park Rd, Auckland. Fax (09) 307 4939

Congratulations to Chris Kendrick who has been appointed as the lecturer for Haematology for the Massey University degree course. We look forward to the development of the Haematology Component of the course.

Steve Wilson the Special Interest Group Representative for Otago/Southland sent the following report on the HSIG seminar held in Dunedin.

H.S.I.G. ONE DAY SEMINAR AT DUNEDIN — 17TH JULY 1992.

The seminar attracted laboratory staff from most of the regions Haematology Laboratories, from as far afield as Invercargill to Christchurch.

It was held in the Octagonal conference room at Dunedin Hospital and open to all interested clinical and laboratory staff.

After an enjoyable morning tea, the morning session commenced with a presentation on the detection of the Lupus anticoagulant and its association with anti Candiolipin antibodies. This was followed by a very good classification of the myelodysplastic syndromes with the use of a large number of blood and bone marrow slides.

The morning session concluded with a presentation on the use of cell marker studies in the diagnosis of Acute Leukaemia.

After lunch there were a number of short presentations and case studies. These included; cases of Aplastic anaemia, Philadelphia negative CML, a case of HBE/B-thalassaemia, an evaluation of an automated ESR processor, an unusual case of Hairy cell leukaemia and the detection of Von Willebrands subtypes using a collagen binding assay.

Following afternoon tea, we had an informal discussion on a number of topical subjects including the interaction of the annual conference and special interest groups.

It was voiced by all who attended the seminar, that the day had been very successful and that the seminar should be held on a regular basis.

BIOCHEMISTRY
SPECIAL INTEREST GROUP

Convenor: Alison Buchanan
Contact Address: Clinical Chemistry Dept, Auckland Hospital, Park Road, Auckland.

Just a few lines to help keep you up to date with this groups activities.

News
During the conference meeting there was an indication from those present that they would like some general information sessions.

With this in mind we have plans to offer some sessions in 1993 that will be aimed at about the level of the specialist exams.

So for all of you who may be sitting exams or wish to "update" your knowledge watch this space for more information. If you have any particular thoughts along these lines your input would be gratefully appreciated.

Seminar
This years seminar that was held in June in association with the AACB worked well, and so it is our plan to again work with the AACB for the 1993 seminar. Mark June 1993 in your diaries and watch this space for more information.

Journal Indexes
The circulation of these indexes is slowly increasing, with participants being happy with the service.

For those of you who may be looking to increase the range of journals held by your lab/library, you may be interested in subscribing to our service for a year.

This will give you access to a range of journals with which to make a choice. If interested then contact the convenor for more information.

Chat
For those of you who have yet to attend any of the ongoing educational seminars/workshops that we have been involved with, you may like to think about doing so in the future. We of the BSIG like to include in our thinking the other definition of BSIG — Biochemistry Socially Interesting Group, and so while concentrating on continuing education we also like to make sure that participants remember that biochemistry can be fun as well as serious. So perhaps you might like to attend and find out for yourselves!

IMMUNOLOGY
SPECIAL INTEREST GROUP

Convenor: Gillian McLeay
Contact address: Laboratory Training Centre, Building 18, Auckland Hospital, Private Bag 92024, Auckland.

PRE-CONFERENCE SEMINAR
WEDNESDAY 26 AUGUST

ANA WORKSHOP

A great deal of careful planning had gone into the workshop prior to the thirty or so participants meeting at Wellington Hospital.

Gerry Campbell, the organiser, had sent out a range of serum samples with varying ANA titres and patterns, together with a selection of commercial brands of Hep2 slides, to the 23 participating laboratories. These had been processed and the results returned prior to the workshop being held.

As expected, the results of the survey of this rather subjective laboratory test showed quite a degree of variability between the laboratories. This was the reason for the workshop being held.

A concerted attempt was made to standardise the performance of the test and gain uniformity in the reporting of results on a national level.

While not unanimous in all aspects, there was reasonable agreement in a number of areas, which could make the attainment of this goal possible, if not immediately, then in the very near future.

This was a very worthwhile exercise, and the outcome can only be advantageous to the profession and the clients we serve. It should remove a number of the problems of interpretation for clinicians.

Gerry is to be commended for recognising the need and organising this very successful workshop.

CHANGES TO NATIONAL COMMITTEE

The committee is happy to announce that the vacancies left by the resignations of Joy Odgers (Northland Regional Representative) and Angela Wheeler (Treasurer) were filled with a minimum of effort by the time-honoured method of "volunteering".

Jill Jones (Northland Pathology Laboratory) will represent the interests of the Far North, and Jude Hodgetts (Wellington Hospital Laboratory Services) will take on the Finance portfolio.

Our thanks to Joy and Angela for their past support and enthusiasm, (we look forward to you continuing to be part of the Network) and welcome to Jill and Jude in their new roles on the committee.

NORTH ISLAND ISIG SEMINAR

As the annual NZIMLS Conference and Scientific Meeting moves to the South Island in August next year, it was decided to hold a combined North Island seminar in March or April. The Northland/Auckland ISIG group has offered to spearhead the organisation.

The venue will be central for North Islanders and reasonably accessible for South Islanders. It is proposed that the feasibility of some assistance being provided for "Mainlanders" to attend will be investigated.

Further details, as they become available, will be published in the *ISIG Network News*.

PLANS FOR CONFERENCE 1993

The logo of the Christchurch Conference could not have been more apt with that most English of cities looking like a northern hemisphere Christmas card at the time of this year's conference.

Network members present pledged to support their southern colleagues, and they will be reminded of this frequently in the pages of the *ISIG Network News* over the next 12 months.

One day registrations and special one day return air fares should prove an incentive.

Diane Phillips reported that organisation is well underway and Mike Southern (Christchurch Hospital) is organising the Immunology programme.

LUNCH "AS YOU LIKE IT"

The venue for all the foregoing discussions was a delightful little restaurant — the "As You Like It Cafe" which is situated opposite Wellington Hospital.

We took over the restaurant for the entire afternoon. The last cup of coffee was still being served at quarter to five.

This was a most enjoyable occasion; the food was great, and once again the Network members enjoyed meeting up with one another. Thank you, Gerry, for organising this also. We look forward to a similar occasion in Christchurch next year.

NZIMLS SCIENTIFIC MEETING, 1992

Members of ISIG must have been very proud to see such a full Immunology programme. Thanks are again due to Gerry Campbell (Wellington ISIG) for all the effort he put into organising the forums, and special thanks to Helen Brady (NZCDC) who was responsible for the HIV Forum. There is no doubt that having a theme makes the preparation of a programme much easier and ensures a high standard of papers.

IMMUNOLOGY FORUM (MORNING SESSION)

It must have been difficult for some of ISIG's members to choose which forums to attend, because of the different disciplines represented in the Network.

However, the Immunology HIV Forum on Friday morning proved to be a real drawcard. Chaired by Helen Brady with guest speaker, Dr Elizabeth Dax from Melbourne, and an interesting mix of papers by presenters from various backgrounds, this session had multidisciplinary appeal.

It was sad that the last speaker, Tom O'Donohue, had been admitted to hospital. His talk, "Living with HIV" would have added the human perspective to this otherwise scientific session.

IMMUNOLOGY FORUM (AFTERNOON SESSION)

The afternoon forum was more of a practical nature with speakers from the other regions as well as from Wellington. Again it was a multidisciplinary session.

Christchurch (next year's Conference venue) was well represented by two papers in this session, and it is hoped that Christchurch ISIG will receive similar support next year.

MICROBIOLOGY FORUM

Network member Judy Cull (Department of VIM, Auckland Hospital) was invited by the Microbiology SIG to present a paper in their forum. Judy's paper was entitled "The Laboratory Diagnosis of Viral Respiratory Tract Infections Using New and Rapid Methods."

POSTERS
Helen Brady, Sheryl Khull, Joanne MacDonald and Deborah Willis were amongst those who contributed to the splendid collection of posters, which was on display throughout the Conference.

WELCOME TO NEW MEMBERS
The Netowrk continues to grow. ISIG welcomes the following people to the group:

Rodger Linton (Timaru Hospital)
Marcel Pronk (Hastings Memorial Hospital)
Graham Reeve (Gisborne Medical Laboratory)
Maureen Whineray (Manawatu Polytech)

COMMENTS IN CONCLUSION
It would appear that the SIGs have come of age and any difficulties and misunderstandings between them and the NZIMLS Council have been resolved.

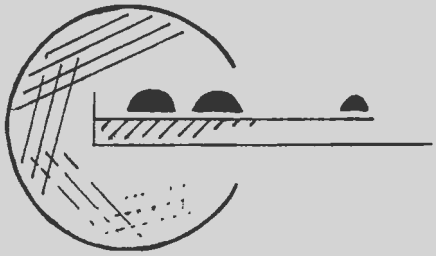
The Convenors' meeting with some Council members, took place on the Thursday morning at 7am, and it was harmonious and supportive for both the parent body and its *"siglings"*. A number of issues were discussed and decisions made, which will benefit all parties and add to the professional status of the NZIMLS.

These meetings between SIG convenors and Council members will be held more frequently on a regular basis, ensuring a ready flow of communication.

The financial problems of the SIGs, as non-profit organisations having to pay GST and tax, have been sorted out in a most efficient manner by our Secretary/Treasurer. Thank you Shirley for a satisfactory outcome.

At the time of writing this as ISIG's second birthday (10 October) draws closer, and with the spirit of cooperation and comradeship riding high after the Wellington gathering, I should like to thank you all for your participation and support over the past year.

I hope we shall all be able to maintain this level of enthusiasm over the next few months until we meet up again in August 1993. See you all at the Christchurch gathering.



MICROBIOLOGY
SPECIAL INTEREST GROUP

Convenor: Shirley Gainsford
Contact Address: Valley Diagnostic Laboratories Ltd, P.O. Box 30-044, Lower Hutt.

COMPETENCY AND REGISTRATION ISSUES

Jan Parker, MNZIMLS BA, Bsc, MBA.

Under the Medical and Dental Auxiliaries Act 1985 the Medical Laboratory Technologists Board (MLTB) is charged with the responsibility of registering Medical Laboratory Technologists. To what purpose, and to whose benefit is a question which has often been asked. It was at the insistence of the Department of Health that registration came about, the New Zealand Institute of Medical Laboratory Technologists (NZIMLT) was decidedly luke-warm about the prospect. The Office Solicitor — one Mr Digby — on drawing up the regulations made two statements.

1. They were for the protection of the patients.
2. They were for the protection of the Profession.

At the time our perceptions were that patients would be protected by having only registered technologists perform their tests ie: those certified competent by the Medical Laboratory Technologists Board (MLTB). Practitioners would be protected by regulations preventing 'quacks' moving in on their patch. In the event Digby's statements were both true and our perceptions were both wrong.

Patients can only have the protection of their tests being done by registered technologists if they take the precaution of knowing there can be quacks. Technologists gained their protection not by stopping quacks — as has been demonstrated on a number of occasions — but by having the ultimate say in their competency and educational programs.

There have been both benefits and costs. If our registration is not working to improve safety standards and promote and maintain the quality and integrity of services provided then the cost is too great. If the end result is simply to create barriers to entry to the profession and stifle innovation then the cost is too great. In granting registration the MLTB is certifying to the public that the technologist has satisfied those requirements judged to indicate competence to practice. And therein lies the real strength of our registration, while we retain the controlling say in our educational programs we are in an extremely strong position.

As well as its function in registration and disciplining the MLTB is charged with:

a) Advising and making recommendations to the Minister in respect of any matter affecting education and registration.
b) Promoting high standards of education and conduct.
c) Conducting or directing the conduct of examinations.

In order to carry out these functions it is essential that the Board develops a set of competency statements to describe what is expected of a technologist at graduation.

We are a relatively new profession, our training evolving rapidly from an apprenticeship system to in house training with external exams and finally to academic qualification external to the workplace. Under the current scenario any new qualification can only be compared to the existing system because we have no gold standard. Graduates — good graduates — from Canada, the United Kingdom and Australia are rejected here as being non-comparable. Our own registered technologists, while highly regarded, are unable to get recognition overseas if they do not have a degree. The initiation of the new degree courses has to be accompanied by a clear definition of the competencies for registration.

Early last year the MLTB set up a subcommittee to complete two tasks:

1. To identify the set of key minimum competencies required to function adequately as a medical laboratory technologist at graduation.
2. To define the skills and knowledge required to fulfil these competencies.

To undertake these tasks the profession was asked to nominate a team of participants familiar with the requirements of new graduates, articulate, committed to the profession and able to express themselves fluently. The group:
Jan Parker, Vice Chairman MLTB; Maree Jackson, Histology, Invercargill; Rachel Jenkins, Virology, Dunedin; Alison Buchanan, Biochemistry, Auckland; Ben Harris, Microbiology, Christchurch; Grant Goodman, New Plymouth; Sheryl Khull, Immunohaematology, Wellington; Ash Fitchett, Dannevirke; Paul McLeod, Microbiology, Nelson.

Also involved from the Educational Institutions were:
Janet Marsland, Wellington Polytechnic; Colin Watts, Otago University.

This group met for three days in Wellington, with Graham Wagner from the Council for Educational Research as facilitator, to produce the initial draft document. Followup workshops were held over the next six months to collate comments and refine the initial draft. This process has now been completed and the draft is ready for distribution for comment by the profession, the educational institutions and interested other parties.

The DACUM process used by the facilitator saw the team first defining the base competencies and then specifying the time which should be devoted to each competency. There are eleven competencies to be achieved, each of which has a number of specific learning objectives.

The competencies are to:

1. Practice as a professional
2. Communicate
3. Apply safe practices
4. Ensure Quality Assurance
5. Use and Maintain Laboratory Equipment
6. Use Laboratory techniques
7. Manage Resources
8. Process Samples
9. Interpret results
10. Engage in Research & Development
11. Perform as a Scientist in two Specialist areas.

It was recognised that not all skills would, or indeed should, be possessed at the same level at graduation and three levels of skill are recognised.

3 Can perform this skill without assistance or supervision and can lead others in performing it.
2 Can perform this skill satisfactorily but requires periodic assistance or supervision.
1 Can perform some parts of this skill satisfactorily but requires assistance or supervision to perform the entire skill.

Ratings are based on on-job performance standards. They are confirmed by an instructor (a skilled and experienced person from the occupation) who views and evaluates performance as he/she would in the role of an employer or supervisor.

The final task was to define objectives and content and write a mission statement for the profession.

Medical Laboratory Scientists will endeavor to:
Work as part of the multi-disciplinary health team to provide quality laboratory services for the ultimate benefit of the patient and the wider community.

Foster an interactive competency-based programme of undergraduate training based on what a new graduate requires to function as a professional in the field.

Encourage on-going development of individuals to ensure their personal and professional growth and equip them to respond positively to changing needs.

Once accepted by the MLTB in its final form the competency document will form the base criteria by which all qualifications will be measured for registration purposes. That however is

only the beginning of the competency exercise, what of the competency of the technologist 10, 20 or 30 years later. At present there is no provision for regular maintaining of performance after registration. If registration can be supported in the first instance it would seem to follow that the practitioners should be required to continue to prove their competence at regular intervals. This is a problem professionals are only just beginning to grapple with both here and overseas.

Some of the suggestions for such reassessment include:

1. A points system for attending conferences or workshops, (sometimes referred to somewhat cynically as Tarmac Technologists, those who score points for being in airports).
2. Re-examination at regular intervals. Among groups such as the medical practitioners who have been polling their members this would appear to be the least popular option!
3. Peer review and report to registration board if a practitioner is considered not to be competent.
4. Spot audits or checks carried out by the registration body or their nominated agent.
5. Compulsory continuing education
   - Weekend seminars
   - Journals and books
   - Presentations at meetings.
6. Laboratory accreditation.

There are also questions as to what continuing competence means — do you expect a competent specialist working in one field to retain all the competencies which they had as a new graduate? At what intervals should such reassessment be carried out, given that the half life for memory loss is accepted to be about 5 years? How do we fund the reassessment, do we build it into the cost of the licencing fee or levy the individual at some nominated time interval? The definition of competency at graduation is only the initial task, the wider issue of continuing competency remains to be addressed.

FIRST APPOINTMENTS FOR MASSEY UNIVERSITY NEW MEDICAL LABORATORY SCIENCE DEGREE

Massey University has announced its first two appointments for the new Medical Laboratory Science degree which has just started.

The four year degree, with its final year conducted in medical laboratories, is the first applied degree to be offered by Massey University's Science Faculty.

Mary Nulsen has been appointed as Acting Director of the degree.

Dr Nulsen completed a BSc (Hons) at the University of Western Australia and a PhD at Flinders University Medical Centre in South Australia. She has lectured in medical Microbiology at Massey University since 1983 and was a member of the initial planning team for the degree.

Dr Nulsen said her initial focus will be to ensure the degree is well established at undergraduate and postgraduate level. She will also maintain regular communication with hospitals and medical laboratories around the country.

While the first year of the degree will be based on open entry to standard papers within the Faculty of Science, a selected admission of about 30 students will be made for following years. Dr Nulsen said they want to ensure graduate numbers don't exceed job numbers.

Chris Kendrick has been appointed as a lecturer for the degree. Mr Kendrick started his career as a trainee medical laboratory technologist in Wanganui and became a registered medical technologist in 1977.

He headed the Department of Immunohaematology at Wanganui Base Hospital until he transferred to Palmerston North — where he currently works as Charge Technologist of the Tissue Typing Laboratory within the Transfusion Medicine Department.

Mr Kendrick is also currently the Wellington/Central region representative for the New Zealand Institute of Medical Laboratory Scientists (NZIMLS).

He is expected to bring a valuable component of practical experience to the degree with his industry background.

The degree is endorsed by the NZIMLS who will also advise on curriculum development. Graduates will be registered with the Medical Laboratory Technologists' Board on completion of their academic and practical studies.

The degree is attracting many enquiries, including from those working in the industry wanting to advance their qualifications. The degree would give them professional status in line with overseas practice.

Mr Chris Kendrick and Dr Mary Nulsen

N.Z. MEDICAL LABORATORY
SCIENCE TRUST

ANNUAL REPORT 1992

ANNUAL REPORT
NEW ZEALAND MEDICAL LABORATORY SCIENCE TRUST 1992

The Trust has continued for the year 1991/2 with very little change in the source of income and the financial state of the "general" part of the Trust. The economic outlook of the country does appear to be encouraging and it may well be that the forthcoming year will allow some approaches to Companies for sponsorship. Indeed, while we have seen little change in the "general" part of the Trust there has been a significant change in a specified area (see later).

1. TRUSTEES

The Trustees remain the same as last year.

J Beattie
C H Campbell
B T Edwards
D J Philip
W J Wilson

Mr Jim Mann, c/- Pathology Department Palmerston North Hospital has continued as Executive Officer.

2. ABBOTT LABORATORIES BLOOD BANK AWARDS

This year Abbott Diagnostic Division of Abbott's Laboratories (NZ) donated a sum of $5000 to the Trust.

The Trust has indicated to firms that they are willing to administer funds on behalf of firms for specific purposes. With this in mind Abbott donated the money with the qualification that it be used to promote "the knowledge and understanding of Infectious Disease Serology in Blood Banks of New Zealand".

Grants were made to five technologists to attend the NICE weekend in Wairakei and to three technologists for overseas study.

The Trust expresses it's very real thanks to Abbott's Laboratories for this generous grant — a practical demonstration of their support for medical laboratory science in New Zealand.

The Trust is aware that other firms may be interested in this "tagged" giving.

3. GRANT APPLICATIONS

The Trust has made a grant to Ms Glenne Findon to present a paper at the annual conference of the Institute. There were no applications for grants in other areas.

The Trust continues to invite applications for grants. Application forms are available from the Executive Officer of the Institute. The closing date for applications each year is May 31. Unless there are very extenuating circumstances grants are not considered at other times of the year.

The Trust has also agreed to support some awards of the Institute for top examination students.

4. FINANCIAL STATEMENT

INCOME AND EXPENDITURE ACCOUNT
FOR THE YEAR ENDED 31 DECEMBER 1991

INCOME		
Donations received	10.00	
Interest Received	769.00	
TOTAL INCOME		779.90
EXPENDITURE		
Legal Fees		247.50
EXCESS INCOME FOR YEAR		$532.40

BALANCE SHEET AS AT 31 DECEMBER 1991

ACCUMULATED FUNDS	
Balance as at 1 January 1991	$12,329.71
Add excess income	532.40
	$12,862.11
Represented by:	
ANZ Bank Group Current Account	$12,862.11

AUDITOR'S REPORT
To the Trustees of the New Zealand Medical Science Trust (Inc.)
I have examined the financial records of the above Trust and have received such explanations and carried out such procedures as I considered necessary.

In my opinion, the above Income & Expenditure Account and Balance Sheet give a true view of the financial position of the Trust's affairs as at 31 December 1991.

(Signed) **David R. Gordon Auditor**

Palmerston North
15 January 1992

On behalf of the Trustees

Desmond J Philip
Chairman.

APPLICATION FOR GRANTS

In 1987 the New Zealand Institute of Medical Laboratory Science (Inc), responding to a change in the direction of our society from "State Funding" to "self support" and "user pays", and as there was no organisation with the specific responsibility for supporting and fostering the aims and ambitions of the New Zealand profession of Medical Laboratory Science, established the Medical Laboratory Science Trust, with the following principal objectives —

N.Z. MEDICAL LABORATORY SCIENCE TRUST

TRUST OFFICE
P.O. BOX 12-260
WELLINGTON
Phone (04) 723-431
Fax (04) 727-181

(a) To promote and assist research by members of the NZIMLS.

(b) To promote and assist the education of members of the NZIMLS by the provision of grants of money and the organisation of lectures, demonstrations and tutorials.

(c) To promote and assist in the provision of equipment, travel and accommodation for members of the NZIMLS to further their research and education.

(d) To promote and assist in the provision of course fees, enrolment fees, study bursaries and book purchases for members of the NZIMLS to further their education and research.

(e) To promote and assist in the publication of any research by members of the NZIMLS.

(f) To co-operate with other bodies or organisations, both within New Zealand and overseas, having objects in whole or in part similar to the objects of the Science Trust.

(g) To promote, obtain and achieve any of the objects of the Science Trust by or through the facilities available at any Hospital, University, or recognised medical, veterinary, scientific or research institute or other organisation and make grants of money, apparatus, equipment or otherwise, as the Trust Board may think fit.

The Trustees appointed by the Institute are Mr John S. Beattie of Wellington, Mr Colvin H. Campbell or Palmerston North, Mr Barrie T. Edwards of Christchurch, Mr Desmond J. Philip, and Mr Walter J. Wilson both of Auckland.

The Science Trust invites applications from financial members of the NZIMLS who wish support —

(1) To enable them to attend the 48th Annual Scientific Meeting of NZIMLS in Christchurch from 24 to 27 August, 1993.

(2) To request travel expense assistance to attend other meetings or undertake study within the above objectives.

(3) To enable them to undertake a research or development project.

All practising Fellows, Associates and Members of the NZIMLS are eligible to apply, applications will be considered on expected benefits from the project, travel etc and where appropriate consideration for the members' participation in promoting Medical Laboratory Technology. An application form for (1), attending the 1993 NZIMLS Annual Scientific Meeting is on the following page.

Application forms for (2) and (3) are available from the following —

Executive Officer,
NZIMLS,
P.O. Box 3270,
CHRISTCHURCH.

Executive Officer,
Medical Laboratory Science Trust,
C/- Pathology Department,
Palmerston North Hospital,
PALMERSTON NORTH.

Please indicate the type of application form required.

Applications must be on the official Application Form and be received by the Executive Officer, NZIMLST, no later than 5 pm on Friday, 28 May, 1993.

D. J. Philip,
Chairman,
MEDICAL LABORATORY SCIENCE TRUST.

MEDICAL LABORATORY SCIENCE TRUST GRANT APPLICATION FORM FOR (1993) NZIMLS ANNUAL SCIENTIFIC MEETING

Date: _____

NAME: _____

ADDRESS: (Business): _____

PRESENT POSITION: _____

PROFESSIONAL EXPERIENCE: (Positions held etc) _____

_____

_____

Do you intend to submit a paper for presentation at the Scientific Meeting?:

YES ☐ NO ☐

Note: A condition of the grant is that papers presented at the Meeting will be submitted to the NZIMLS Journal for publication. If "yes", on what subject?

_____

Attendance at the (Christchurch) Scientific Meeting will assist in my development in Medical Laboratory Science by: (in less than 200 words)

_____

_____

_____

(Continue on another page if required).

Nature and value of support sought: _____

_____

Member of the NZIMLS YES ☐ If "yes", what category? _____

NO ☐

Have you ever held office in any position in either a branch or the Council of the NZIMLS?

YES ☐ NO ☐

If "Yes", give details: _____

_____

_____ (Over)

Have you been or are you involved in assisting the activities of the Institute, eg a member of sub-committee, examiner etc?

YES ☐ NO ☐

If "yes", give details: _____

_____

I agree to abide by the terms of the Grant and the decision of the Medical Laboratory Science Trust Board of Trustees.

Signed: _____ Date: _____

If successful the above applicant has my support and permission to attend the NZIMLS Annual Scientific Meeeting in Christchurch, 24-27 August, 1993.

Signed: _____ Date: _____

(Charge or Principal Technologist or Laboratory Director)

Applications close with the —

Executive Officer,
Medical Laboratory Science Trust,
C/- Pathology Laboratories,
Palmerston North Hospital,
Private Bag,
PALMERSTON NORTH

at 5pm on Friday, 28 May, 1993

Now available from the

TRANSFUSION SCIENCE SPECIAL INTEREST GROUP

A continuing education programme presented on audio tape.

ONLY

$ 6.00 per topic for audio cassette and written transcript
$ 4.00 per topic for audio cassette only
$ 3.50 per topic for written transcript only.
for NZIMLS members. Non-members $2 extra per topic.

Topics currently available:

Solid Phase Testing for Red Cells and Platelets
Monoclonal Reagents — What Should We Expect From Them?
Total Quality Improvement — A Lifetime Goal
Quality Assurance in Hospital Transfusion Medicine
An Update on Hepatitis C

NEW TOPIC:

Human T-Cell Lymphotrophic Viruses
by Dr Brian Hjelle, University of New Mexico.

Order from Sheryl Khull, Secretary, Transfusion Science Special Interest Group, Transfusion Laboratory, Wellington Regional Blood Service, Wellington Hospital.

Tapes and transcipts/tapes only/transcripts only

Number of issues .....

or specify topics .....

Cheque enclosed/official order form attached:

NZIMLS Member Name: .....

Address: .....

.....

.....

T.H. Pullar Memorial Address

Dr Ron MacKenzie,

Department of Laboratory Services, Wellington Hospital.

Mr President, Minister of Health, Institute Members and guests, I consider it a great honour indeed to be invited to deliver the T.H. Pullar Memorial address for 1992.

The address was introduced to honour the memory of Dr Thomas Henry Pullar, a man who had great influence on the development of medical laboratory science in New Zealand and attained great stature as a pathologist.

Perhaps it was written in his stars that he was to make his mark in pathology, for Thos Pullar was born in Auckland in 1907 — the opening decade of the twentieth century, the genesis time of the medical laboratory service in New Zealand; a time when there was a threat of Bubonic Plague in this country and the first public health laboratories were being set up and bacteriologists, later to become pathologists, were appointed to New Zealand hospitals.

Thos Pullar's career in pathology spanned a period of some 29 years. He held the appointment of pathologist at Palmerston North Hospital from 1937 to 1963, when, because of failing health he moved to Tauranga and was engaged in private pathology until the time of his death in 1966.

First and foremost, Thos Pullar was a working pathologist who had a love of the laboratory environment, and he had a great respect and concern for all laboratory workers. In his view, the laboratory was the heart of the hospital and he sought to make it a centre of technical excellence.

Like others who have been privileged to give this address, my first acquaintance with Thos Pullar was as a candidate in the oral section of the C.O.P. Intermediate examination.

A short man I recall, but of commanding presence, deep of voice and among other things he questioned me on the preparation of laboratory glassware. In response to my timorous reply to his questions, he emphasized the need for attention to detail and excellence in every laboratory task carried out.

His parting shot as I left the room was: "Young man, remember, no matter how mundane the task you undertake in the laboratory — if it is well done then it is noble".

The significance of that remark and the spirit in which it was said was largely lost on a young and nervous examination candidate. But at this time and distance from that event, I can now fully appreciate what he meant, for in essence, the spirit and meaning of these words reflect why we honour him on the occasion of our annual conference; for Thos Pullar set for himself and all laboratory workers the goal of excellence in all aspects of medical laboratory practice, and it is towards this notion of exellence that I will direct my words this morning.

To understand the present it is essential that we know something of the past, and to this end let me begin by saying: The foundations of the NZ Medical Laboratory Service have been firmly laid down over the years, and the pattern of development has reflected the growth of health care itself in NZ. The early public health laboratories served the needs of the colonial medical service, and those laboratories developed to fill emerging needs, and they have become the modern public hospital laboratories of today.

Over the years the teaching and research laboratories of the medical and clinical schools have provided the academic base for development, and largely since the 1950's, the entrepreneurial spirit of the private pathologists have taken laboratory medicine into the community itself.

In the parlance of my microbiology colleagues, I would describe the NZ Medical Laboratory Service as being amoeboid in nature, it has been in an expanding phase for many decades and has shown flow in a number of directions. There have been the pseudopodia of public health laboratories, teaching, research and private pathology.

The main body and nucleus remain the hospital laboratory service however, which must expand or contract to meet the changing demands of the health care system. It is interesting to note, that hospital laboratory statistics have been kept in New Zealand since 1912 and these show that there was a gradual but steady increase in the number of laboratory tests carried out between 1918 and 1950. Since 1950 however, the increase in the number of laboratory tests in New Zealand hospitals has been nothing less than spectacular, and looking back over this period, it appears that the laboratory services have developed in response to the need demands of the clinicians and to new advances in technology.

The New Zealand Medical Laboratory Service has passed through an interesting development phase. Until about 1945 Microbiology was the central discipline, then, with the advent of antibiotics the problem of treating infectious diseases diminished, and for a time its importance gradually declined.

In the late 1940's the discipline of Haematology became the focal point of the clinical laboratory, with the development of new and improved methods for identifying and classifying the blood disorders.

This was also the time when the first discussions on laboratory quality control took place, and were concerned with the commonest of all haematological tests, the estimation of haemoglobin.

It was also the period, when the New Zealand Blood Transfusion Service and Immunohaematology laboratories began to develop rapidly in response to the demand for blood and blood products for the new and innovative surgical techniques being applied.

Then in the 1950's we saw the rising star of Clinical Chemistry where many new and exciting discoveries were being made, and new methods and equipment were being introduced rapidly. While the other laboratory disciplines continued to develop and remained of major importance, it is true to say, that the knowledge and skills which began to accumulate in the field of Clinical Chemistry in the 1960's gave rise to the feelings similar to that of the bacteriologists in the closing decades of the 19th century when nothing seemed impossible, — here was the beginning of a new age of medical knowledge when the answers to many problems would be found. This belief was not unfounded, and the acquisition of new knowledge and skills has continued unabated into the 1990's, and many would say that clinical chemistry remains the paramount medical laboratory discipline. We saw this headlong rush of laboratory technology continue through the 1960's, but there is little evidence to show that there was any planning of medical laboratory services until the mid 1970's, for it was only then, that thought was given to the question of providing services on a regional basis and even at that time little or nothing was done in this direction.

By the 1980's the rate of change in technology had become even faster, and the introduction of new techniques which in the recent past would only have been effected by senior technologists were being passed down to junior staff; the transfer of skills in this decade was rapid, and this was due mainly to better equipment, simplified methods and certainly to pressure of work.

But what of the current scene? The current clinical laboratory scène in NZ is one of high cost technology resulting from four decades of vigorous and largely unplanned development; and any enquiry into the forces which have brought about this situation would certainly acknowledge the major role of research, and the abilities of the equipment and product manufacturers who have brought so many of the scientific advances within easy reach of the clinical laboratories.

The quantity, quality and variety of laboratory tests made

available by this combination of talents are quite extraordinary, and in the 1990's the clinicians rely heavily on the laboratory for help in their diagnostic and therapeutic efforts and many more laboratory tests are being carried out on each patient seen.

But let's pause for a moment and look at the cost of producing the clinical laboratory service in NZ over the past 20 years. In 1971 the cost was $9.8M, rising to $24.1M in 1976, $41.5M in 1981 and reaching a figure of just under $100M in 1991 — a massive increase in the last decade.

Accompanying this cost increase there have been sweeping changes, with the introduction of new and complex procedures, with expanded diagnostic and monitoring functions, and there has been an ever increasing degree of specialization in each discipline of medical laboratory science.

These changes have encompassed the public hospital, private pathology and research sectors; and these three strands of development which, while still clearly identifiable, have interwoven to produce the comprehensive clinical laboratory service which covers New Zealand in the 1990's.

In summary, it can be said that a total transformation of the laboratory service has taken place during the working lives of many of the people in this room; and the level of service being provided in 1992 is of a very high standard, as evidenced by results from participation in international quality assurance programmes, and, that most routine tests in both hospital and community laboratories are carried out on a same day service basis, and without question we are meeting the criteria of excellence demanded of us by Thos Pullar.

On the other hand, while congratulating ourselves, we must acknowledge that the medical laboratory service has entered the 1990 decade with a number of acute problems.

These problems are a reflection of the developmental pattern of the past 30 years, for the demand for laboratory tests has shown the scientific nature of medical practice, and also the classical phenomena of increased demand following in the wake of increased supply, and the high cost of laboratory service is now a cause of major concern. Medicine in New Zealand has demanded, and indeed received, a high quality laboratory service and it is true to say that both the user and the provider have viewed with complacency heavily increasing workloads and escalating costs, and to date there has been no real attempt to separate demand from need in the use of medical laboratory services in New Zealand: and we tend to the view that all demands should be met, and this has resulted in a cost structure that can no longer be sustained.

But like it or not, we must now acknowledge that our laboratory services are financially driven, and as it was so delightfully put the other day by one of the Minister's colleagues, "The money changers are now running the temple".

It is also clear, that the amount of money to be spent on laboratory services in the foreseeable future is fixed or may even be reduced, and unless changes in the attitudes of both the users and providers of the service occur, then there will be a rapid fall in the quantity and quality of service that can be provided, and without doubt we will see the Pullar ideal of excellence lost.

The changes I have described in this brief historical perspective which have led to our present day high quality laboratory service were rapid, but never the less, of a continuous and comfortable nature, and the past still remained a guide to the future.

In 1992 this is no longer the case, and we are in a period of rapid, discontinuous and turbulent change which will be neither smooth nor comfortable for any amongst us who favour the status quo.

The old sign posts to the future have gone, the pressures of change now facing us are more urgent, and at this very time there are major decisions to be made in regard to how and where our laboratory services will be provided under the reformed health sector when the Crown Health Enterprises replace the Area Health Boards.

The stresses that the laboratory services now face are not just because of the current recession, or the government of the day, their policies might slightly improve or exacerbate the situation, but the course is now set and it is unlikely to change. We are part of the world wide trend which demands that health care systems undergo rationalization and repeated drives for efficiency; and we in the NZ laboratory service are no exception to this phenomena and we must now begin to think about our services in an entirely new way.

In August 1992 we are caught between two era's the old and the new, and this for many of us is a painful process, but regardless, the re-structuring of the laboratory service will proceed relentlessly and we cannot waste time and energy fighting the inevitable, and as Charles Handy put it — the organisation which welcomes change, can put that change to their advantage.

It is likely then, that in the immediate future our laboratories will be characterised by major changes in organisational structure, in scale of operation, in the nature of the work they do; and in the terms and conditions of the medical laboratory workers who are employed in them, and we must use those changes instead of just reacting to them.

I believe the analogy of the New Zealand medical laboratory services of 1990's to the amoeba to be apt. For just like the amoeba, in the face of reducing nutrient and increasing pressure from the environment in which it is immersed, the service may enter a lag phase or change its shape by contraction or subdivision.

For without doubt the new shape of the NZ Medical Laboratory service in the remainder of the 1990 decade will surely depend on how stressful the political environment, how plentiful the financial nutrient, and most critically, how we medical laboratory scientists, as the nucleus of the organism, control the direction of flow, and what steps we take to ensure its survival and future growth.

I would like now to draw the strands of this address together and share with you my perception of where the laboratory service is heading and the management skills that will be required to direct it in the 1990's.

To begin, there are a number of key questions contained in the amoeba analogy and I believe there is one short answer to all of them — we must now take that same Thos Pullar vision of excellence that we have applied so successfully to our technical skills and apply it with equal diligence to our laboratory management practise.

To do this will need a wider angle of vision than we have previously applied to runnng the Laboratory Service and this will call for different and innovative management skills and the acceptance of new ways if we are to effectively direct the more complex organisations that Laboratory Services will become under the Crown Health Enterprises soon to be set up.

Why do I make these assertions do I hear you ask? Because there are clear cut philosophical differences between Area Health Boards and Crown Health Enterprises which will demand that we run our laboratories in a new and very different way. Let me outline some of these differences for you.

The basic premise of an Area Health Board is to do good while that of the CHE is to do well. Under the Area Health Board regime the laboratories are cost centres — under CHE's they must become profit centres. Under the old order the laboratory manager consistently seeks more financial input, in the new order the thinking must be, what is the minimum I need to get a reasonable return on investment?

Joint ventures are not allowed under the Area Health Boards but will be encouraged if seen as sensible under the CHE regime. Performance measures are process based under the Area Health Boards and under the CHE's will be based on results obtained. And as I have already mentioned there will be competition amongst providers of laboratory services.

These are but a few of the differences in philosophy which will accompany the change from Area Health Boards to CHE's and impact on the management of the laboratory services.

To function in this new environment laboratory managers will not only need a sound knowledge of laboratory operation, but also a thorough knowledge of information systems, financial management, marketing skills and revenue generation, for we are now in the era of Messrs Trotter and Troughton where the bottom line is the imperative and I repeat, the laboratory will no longer be a cost centre but will become a profit centre.

Further, a critical function of this management paragon will be the ability to balance the competing demands from the various disciplines which together make up the laboratory, the clinicians who use the service, the hospital administrators and the trade unions.

In short, this calls for a renaissance or new beginning in laboratory management which requires a commitment not only to the Thos Pullar notion of excellence in test quality but, also to every aspect of laboratory management practice, including productivity, cost competitiveness, creativity, and the development of entrepreneurial skills.

It is intended that laboratories will be operating in a competitive environment and we must become business managers in the fullest sense. However, I am saddened to think that competition may become the norm, for there is a wealth of evidence to show that the spirit of co-operation and mutuality which has existed throughout the New Zealand Laboratory Service over many years has been a major factor in its success and to introduce a competitive model will not be done without risk — and we must ensure that the spirit of co-operation is retained within laboratories and between laboratories.

In addition to these new directions we are now seeing a convergence of technology in medical laboratories which will require new work patterns, for each of the laboratory disciplines grew out of research techniques and were both labour intensive and specific and this has led to many inefficiencies in service provision.

However, we are now heading rapidly in the other direction and to a point where a single automated instrument is able to do many of the tests required for chemical pathology, haematology and immunology; and automated techniques are even being further developed for the hallowed areas of microbiology and anatomic pathology.

Clearly, the new generation of automation is reducing the labour component and degree of specialisation required in a number of areas of the clinical laboratory; and we must now consider the notion of removing the barriers between the different disciplines and divisions which make up a department of laboratory services, and look to a single automated section covering a number of disciplines.

Similarly, the advent of the molecular biology and DNA techniques are crossing divisional boundaries and shared facilities must be considered on cost grounds.

Prospects of this nature, together with near patient testing may dismay the dedicated and purist among us, but as appropriate equipment becomes available, economic pressures will make this inevitable.

But there is a problem. How can we alter our mind set and acquire the new management skills we need to deal with all these new situations in the short time available — and the answer must be, only with great difficulty, unless we as individual medical laboratory scientists make the time and effort to review our work methods and seek out and actively pursue the new skills we will require for the new phase the laboratory service is about to enter.

But, in the longer term however, I believe the Institute should take a lead in this matter and perhaps this could be done through one of the special interest groups which function so successfully, through the laboratory managers group which has recently been formed, or through an organisation such as the Institute of Management. But by whatever means, it is imperative that some action be taken now.

In conclusion let me say, in this address I have reminded you of the past and I have urged you to look to the future. The old and the new.

There are two sorts of fools according to Inge the philosopher. One says "This is the old therefore it is good;" and the other says, "This is the new therefore it is better."

We in the Institute of Medical Laboratory Science must somehow unite the old with the new.

While we cannot afford to discard some of the traditional values which form the cornerstone of our profession and appear to be threatened by the new; we cannot escape the impelling forces of change which presently surround us.

It is our duty to involve ourselves in the process of change and we must make it our task to influence the shape of the new laboratory service.

And as Thos Pullar said many years ago . . . "If the task is well done then it is noble."

SPEECH BY THE HON SIMON UPTON, MINISTER OF HEALTH, TO THE ANNUAL SCIENTIFIC MEETING OF THE NZ INSTITUTE OF MEDICAL LABORATORY SCIENCE, WELLINGTON 1992.

Thank you for inviting me to open your conference today.

I'm particularly pleased to be here as I've not had the opportunity since becoming Minister of Health to talk to this professional group. One which plays a key role in New Zealand's health service.

Since I announced the health reforms a year ago, a myth seems to have taken root with some people in the health system and amongst some of the general public.

The notion that, less than a year from now, the health service is going to be turned on its head and instantly made unrecognisable.

I'd like to take the opportunity today to assure you that this simply isn't the case.

Changes will happen, but most will be gradual — both from the point of view of providers like yourselves, and from the point of view of users. Those expecting a big bang next July will be disappointed.

Implementing change gradually should not be seen as indicating reluctance to make change at all — the Government is convinced that things could not continue as they were.

One thing that will not change is the continued role of the Government as the principal funder of health services.

Nor are we going to sell public hospitals — the oft-repeated claim of an agenda to privatise is one made by those who are big into myth-building rather than factually-based debate.

So we will continue to have a mixed, public and private, health system. That will not change.

But what we must do is treat the public and private sectors much more evenly. This reform is about breaking down barriers — between primary and secondary, public and private.

Since the enactment of the Public Finance Act in 1989, successive governments have strived for greater accountability. The Act is in essence about making sure the Government spends public money as best it can. And that means knowing with some precision what it is we buy — transparency is the buzz word.

That must continue.

I have to say, however, that our irrationally uneven treatment of the public and private sectors makes transparency a mixed blessing.

Most of Vote Health is spent on area health boards. But the contracts I sign with the boards tell me relatively little about exactly what they provide on behalf of the taxpayer.

So much so that when funding cuts have been discussed I have been able to argue against them on the basis that we wouldn't know what we'd be losing. But that has to be a pretty desperate reason for staying in the dark.

For most other providers it is clearer what we get. And that fact has made these items more vulnerable in hard economic times.

Laboratories are in exactly this position. Funding for board-based laboratories is some part of the bulk grant for boards. But I don't know what part. Funding for private laboratories, on the other hand, is known exactly. But only after the event, because it is an open-ended commitment.

The health reforms are intended, in part, to fill in some of the worrying gaps in knowledge and accountability which occur all through the system.

The health reforms have four goals.

The first is an improvement in the community's health status.

The second is to ensure access to an agreed core of services on affordable terms and within a reasonable time. The core services will initially be very much like we have now. But over time the focus will be on reprioritising to get better value for the health dollar in terms of health status.

The third is to get greater accountability for how the health dollar is spent.

And the fourth is limiting the Government's liability so that we know in advance what it is we are going to spend. Our dubious status as one of the most indebted Governments in the world demands that we put an end to open-chequebook policies.

As far as laboratory services are concerned, this means knowing rather more than we do now about what we are purchasing access to. And what resources are committed to various activities, including hospital-based laboratories.

It means putting some controls on the open-ended, demand-driven items of service, including those provided by private laboratories.

The four goals I mentioned are, if you like, the ends of reform. We have designed three major means of achieving them.

The purchasing of health services will be split off from provision. Primary and secondary care funding will be integrated together with funding for disability support services. And population-based health strategies will be funded separately from personal health care.

It is the first of these three — the purchaser-provider split — which will affect you as providers most. How you organise yourselves and how you do business — your day-to-day working lives, in fact.

It is probably also, at first glance, the most unfamiliar and intimidating aspect of the new health system. And many of you want to know, how is it going to work?

I'd like to outline for you today some of the ways it might work for you.

While things won't change overnight, the reforms will ultimately challenge the traditional delivery and funding of laboratory services.

Under the new structure, regional health authorities will not be told which providers to deal with. Instead, they will have to ensure access to what we are calling 'core services', but have discretion within that requirement.

Providers will find themselves in a much more flexible situation. Freer to do what works best — for them and for purchasers.

When planning their purchasing requirements, RHAs will more than likely be looking to establish contracts for groups of services.

One important criterion RHAs are likely to use for grouping services is whether those services are self-referred or practitioner-referred.

Self-referred services are those to which users should be able to access on their own initiative.

Practitioner-referred services are those to which users should have access only if referred by an appropriate practitioner.

Professional and regulatory rules will influence this, as well as RHAs purchasing strategies.

Laboratory services are likely to be seen as practitioner-referred. Most RHAs would probably not want to pay for a test undertaken on the user's own initiative, but would insist on referral by an appropriate practitioner.

It will be up to providers, including laboratories, to decide how to group themselves and what services that group should offer to the RHA.

Providers of laboratory services will be limited only by their willingness to develop working and commercial relationships with others.

They will be free to develop new forms of working relationships. And a variety of purchasing arrangements are likely to evolve to suit a range of situations.

Presently, community laboratories are contracted on a fee-for-service basis.

RHAs may choose to continue this arrangement, as they may well see it as acceptable to them for practitioner-referred services.

But this approach would only work well if they sign separate contracts for laboratory services — if they enter combined contracts covering both self-referred and practitioner-referred services, the fee-for-service approach will be less attractive to them.

If they do continue this form of contract, they will probably want to introduce procedures to review utilisation both to ensure best possible utilisation and to control their financial liability.

A private laboratory might contract directly with the RHA. In return for a bulk payment, it could undertake testing for a specified population or a specified group of GPs.

This means the laboratory would have to manage a fixed sum of money and provide all the services specified in the contract from that sum. The laboratory would have a clear incentive to make efficient use of its facilities, and to review continually the service it provided.

Multi-speciality practices are also a possibility.

In this case, GPs, nurses, pharmacists, dentists, physiotherapists, pathologists, laboratory scientists and managers, and other providers could come together as business partners, offering a co-ordinated service which might prove very attractive to an RHA.

The multi-specialty group would also probably be funded by a block payment to provide care for a particular community. And the partners would share in the management of financial risk.

For decades our health system has had something of an obsession with hospitals. We're now seeing a move back to care in the community, facilitated in part by advances in technology.

Laboratory services are playing a significant part in this move. As you know, it is now possible to offer many diagnostic tests in local laboratories, or even in GP clinics.

Multi-speciality practices will give laboratory scientists, pathologists and managers an opportunity to develop collegial relationships with other providers, and to play a part in the delivery of managed care in the community.

Another possibility is for private laboratories to contract with CHEs to provide them with some or all of their laboratory services.

It is possible, too, that CHEs will themselves compete with community-based laboratories for contracts — under the reformed health system, it will be the services that matter, not who delivers them.

It is important, of course, that this contracting be done on a level playing field. Planned legislative changes, and arrangements for establishing the CHEs as businesslike entities with properly valued assets and a requirement to earn a return on their assets, will ensure this happens.

A question possibly in the minds of some of you is "Will publicly-owned laboratories be sold off?".

The answer is no. The Government has made it clear that no part of the public hospital system is for sale, and publicly-owned laboratories will definitely not be sold off.

All current area health board facilities, including laboratories, will be transferred to CHEs next year unless they have previously been transferred to community trusts.

But the CHEs we will see emerging in a year's time will not be the last word. More a first step in an evolutionary process. Whatever the CHE's initial configuration, it will not be set in stone.

They will be set up as businesslike enterprises, free to expand or contract as they see fit. And it would be short-sighted to assume they will necessarily carry on providing services in exactly the same way as they do presently.

But hospitals cannot run without laboratory services. And nor can GPs. We all know that. And I am not about to do anything to threaten the services medical laboratories provide.

Several years from now the entities for which you work as individuals might look quite different from what we have today. But demand for your expertise and experience is not going to go away.

Currently the Health Reforms Directorate (HRD) is funding 10 pilot projects. These will explore a number of contractual arrangements for funding health services. They are not yet finalised, but one of them may include bulk-funding of laboratory services.

Whatever know-how is gleaned from these projects will be shared with service providers.

Work is also proceeding on ways to ensure that the health reforms improve the quality of health services.

Medical laboratories are already well down the track in this regard. About 80 percent of the community labs already voluntarily utilise the TELARC (Testing Laboratory Registration Council) system of quality assessment.

About 60% of all laboratories are covered by TELARC accreditation.

And about 75% of tests are done in TELARC accredited laboratories.

TELARC is a statutory independent body. Its system of quality assessment involves periodically checking procedures for quality, acceptable equipment standards and safety procedures, and accurate reporting.

The nature of the contract between RHA and provider will also enhance the quality of laboratory services.

RHAs will not simply be looking for the cheapest service when they make their purchasing plans. They will be required to do what they can to improve the health status of their communities, and the cheapest service will not necessarily be the most effective.

They may use TELARC accreditation as an indicator of likely service quality.

Providers will have an incentive, beyond their own professionalism, to improve the services they offer. RHAs will have an incentive to reward those that do.

As well, quality of service will be specifically covered in every contract. Even if they should be so inclined, providers will be unable to let standards slip once they have secured a contract.

Most contracts will contain a quality dimension, with provision for monitoring by the RHA.

I hope in the short time available to me I've been able to answer some of your concerns. But I hope I've done more than that too. I hope I've given you some inkling of the opportunities that lie ahead for providers like yourselves.

The biggest challenge faced by us all under the reformed health system will be the challenge to change our mindset. And in this regard, perhaps, providers face the biggest challenge of all.

The move away from subsidising providers to purchasing services might at first sight seem alarming. But once you accept the challenge, I'm sure you will be as excited as I am by the prospect of the opportunities the reforms will open up.

The Pacific Way

HAEMATOLOGY SPECIAL INTEREST GROUP (HSIG) SEMINAR

The recent HSIG seminar on "Exotic Haematology" held in Auckland in June could appropriately have been titled "Pacific Islands Haematology" as the majority of important disorders and parasites discussed are prevalent in the Islands of the Pacific.

Some important practical points which arose during preparation for, or as a result of, the Seminar are worth noting.

Microfilaria

1. Heliosporium — an airborne fungus may contaminate blood smears. It resembles a microfilaria although smaller in size and has a capsule.
2. Hetrazan (Diethylcarbamazine citrate) used in the treatment of microfilaria is not tolerated at all by some people. They encounter headaches, dizziness, nausea and fever. This is usually encountered in heavy infections, partially due to disintegration of the microfilaria.

In general people in the South Pacific area do not suffer from any unpleasant side effects of Hetrazan.

Hookworms

A few hookworms may consume a little blood but they consume it 365 days a year, Sundays and holidays, for as long as 14 years.

Eosinophilic meningitis due to Helminths

Infection of humans with the larvae of Angiostrongylus cantonensis, the rat lung worm is characterised by invasion of the brain leading to signs and symptoms of meningitis associated with an eosinophilic pleocytosis in the cerebro-spinal fluid (C.S.F) and peripheral eosinophilia. In humans the migration of the larvae to the brain causes eosinophilic meningitis. Adult worms do not develop in humans. The most commonly recognised sources of human infection are raw or undercooked snails, prawns or crabs.

Epidemics and sporadic infections occur most commonly in the South Pacific, South East Asia and Taiwan.

Signs of meningitis are frequent but non-specific. CSF leucocytosis, with more than 10% eosinophils always present. CSF glucose values are usually normal but the depressed values have been noted.

The diagnosis is established clinically but occasionally a characteristic larva is found in CSF at the time of lumbar puncture. The diagnosis is suggested by a history of eating raw or partially cooked implicated foods and recent travel to endemic areas.

Malaria

Caution!!

Platelets on some occasions have been mistakenly diagnosed as malarial parasites in patients with fever. In particular where platelets are noted above red cells or when red cells have superimposed platelets sitting on top of them. Recently a patient with a fever of undiagnosed lymphoma origin was given unwarranted hope by an Intern for this reason.

UPDATE ON TEXTBOOKS RECOMMENDED FOR USE IN TROPICAL COUNTRIES

Warren Johns, a New Zealand Medical Laboratory Scientist, who has been working overseas for World Health Organisation, Save the Children Fund, CILR Overseas Programme and the Red Cross, in some of the world's problem regions, provided the following list of textbooks which may be useful to people working in tropical countries or those contemplating doing so. Warren has visited and worked in a number of vastly different countries — Bolivia, Thailand, Cambodia, Saudi Arabia, Peru, Ecuador, Somalia, Kenya and Jordan to mention just a few.

Warren who attended the recent HSIG seminar made the very pertinent comment "on such occasions I reflect on all the High Technology Talk we use in the Developed Countries — yet out there in third and fourth world countries a laboratory is a very simple affair based on a few well done tests using low cost reliable equipment".

TEXTBOOK LIST

**1. "Medical Laboratory for Tropical Countries", Vol 1, 2nd Edition, by Monica Cheesbrough, Tropical Health Technology Ltd., 14 Bevills Close, Doddington, Cambridgeshire, PE15 OTT, England.

**2. "Lecture Notes on Tropical Medicine", 2nd edition by Dion R. Bell, Blackwell Scientific Publications, ISBN 0-632-01383-4.

**3. "Bench Aid Series", Nos. 1 to 7 and Wall Charts 1 & 2, from Tropical Health Technology, 14 Bevills Close, Doddington, Cambridgeshire, PE15 OTT, England.

*4. "Diagnostic Techniques in Medical Parasitology", by S.L. Fleck and A.H. Moody published by John Wright (Imprint of Butterworth Scientific) ISBN 0-7236-0776-1 1988 edition.

*5. "Basic Laboratory Methods in Medical Parasitology", WHO 1991, ISBN 92-4-154410-4 (Available from the Unit of Distribution and Sales, WHO, CH-1211 Geneva, Switzerland). Price Swiss Fr 21.

**6. "Control of Communicable Disease in Man" by A.S. Benenson, ISBN 0-87553-170-9. From C.D.C., Official Report of the American Public Health Association, 1015 Fifteenth St., NW, Washington DC, 20005, U.S.A. (From Americal Public Health Association).

7. "Manual of Basic Techniques for a Health Laboratory", WHO ISBN 92-4-15145. This book in process of revision. New edition due 1992.

8. "Guidelines for Drinking Water Quality, Vol. 3. Drinking Water Quality Control in Small Community Supplies", WHO, Geneva, ISBN 92-4-154170-9.

9. "Laboratory Guide for Rural Health Centres in Papua New Guinea", c/o Lab Instructor, Provincial Hospital, Alotau, Milne Bay Province, Papua New Guinea.

10. "Major Equipment for Peripheral Laboratories", Health Technology Directions, Vol 11, No. 1 ISBN 0730-8620, 1991, from Path, 4 Nickerson Street, Seattle, WA. 98109-1699, U.S.A.

11. "Medical Laboratories: Methods and Materials", I.D.A. International Dispensary Association) P.O. Box 3098, 1003 AB Amsterdam, The Netherlands.

** *High Recommended.*
* *Recommended*

DRUG RESISTANT MALARIA

Malaria threatens the 360,000 Cambodian refugees returning home from camps in Thailand. More than 70% of the refugees have said they want to settle in the North West provinces

where according to Cambodia's Regional Anti-malarial Team, one in four Khums (Communes) is malaria-ridden.

The Team has also found malaria parasites taken from patients in the area to be totally resistant to the common anti-malarial drugs Chloroquine and Fansidar, and highly resistant to the newer drug, Mefloquine. Some patients fail to respond even to Quinine and Tetracycline, generally considered extremely effective.

Dr John-Paul Menu, WHO representative in Phnom Penh, says 90% of the cases are infected with the potentially fatal falciparum variety of the disease. "Microscopes, trained staff and transport are sorely lacking, and many people die from lack of proper treatment," he says.

The United Nations Peacekeeping units who have been assigned to protect refugees crossing the border have been advised to provide troops with insect repellants and bed nets impregnated with insecticides.

Refugees are also being provided with bed nets and a lot of information about how to protect themselves against mosquitoes.

IMMPREGNATED MOSQUITO NETS

Warren Johns believes that very little publicity is given to this very simple procedure of impregnation of mosquito nets. Studies have shown that an impregnated net with gashes and ripped areas is almost as good as a new non-impregnated net.

For our Pacific Island colleagues and for our New Zealand colleagues contemplating working in countries where malaria is endemic, impregnating mosquito nets may prevent you and others from becoming infected with malaria.

Method

Use Permethrin at a 10% concentration.

Pour 18-20mls into a bucket, basin or plastic bag with 1 litre of water. Mix well. Using gloves dip net into the solution, remove and without squeezing, spread out to dry on a plastic sheet. Treat once every six months.

Precautions

The solution may be an irritant to skin or eyes, if so wash with plenty of water. Store solution away from children. Solution may be toxic to fish.

NEW PRODUCTS AND SERVICES

THE "BEST" IN PLATELET AGGREGATION.

Packs 4 (Platelet Aggregation Chromogenic Kinetic System) is the newest addition to the Helena Hemostasis family of instruments and reagents.

The analyzer is 4-channel and can handle all your laboratory needs, platelet aggregation, ristocetin co-factor and chromogenic testing needs.

— Features auto pipetter, full size colour monitor and powerful data handling capabilities.

— For Platelet aggregation studies, the slope and maximum percent aggregation calculations are performed automatically.

A complete range of reagents are also available. For information, price, reagent rental, contact:-

Biolab Scientific, Phone Auckland 418-3039, Fax 09 419-0729.

THE COMPLETE SPILL CONTAINMENT PACK FROM WHATMAN

The Whatman Spill Containment Pack contains all that is needed to safely contain and absorb spreading liquids when laboratory spillages and leaks occur. The pack contains two booms of 50cm length to contain and absorb; two mini booms of 25cm length and 250g dust free sorbent for mopping up; gloves for hand protection; scoop and bags for disposal.

Independent assessments of this product have shown that the sorbent booms absorb up to 2.8 litres per metre length and the sorbent fibre up to 3 litres per 250g. The high absorbency of the booms coupled with their compact design maximise convenience and minimise contact with the operator's gloves or clothing.

All the sorbent materials absorb both aqueous and solvent spillages and are manufactured of 100% non-toxic, inert polypropylene for broad compatibility. The Spill Containment Pack is not suitable for all solvent spillages, please contact NDA Labware for further information.

NDA Labware, P.O. Box 11095, Ellerslie. Phone 525-1030, Fax 525-1033.

BERAL TRANSFER PIPETTES

Beral Transfer Pipettes are manufactured to exacting specifications which guarantee consistent bulb pressure and tip circumference. Chemically inert and non-toxic, they are ideal for transporting liquids in all types of laboratory tests. They can be heat sealed for use as a transport or storage tube, and frozen by temperatures as low as liquid nitrogen. Available in a number of configurations, Beral pipettes are of one-piece design and constructed from low density polyethylene (LDPE) which virtually eliminates the possibility of cross-contamination from sample to sample.

Sole NZ Distributor, Biolab Scientific, Private Bag, Northcote, Auckland, Ph. 09 418 3039, Fax 09 418 0729.

NEW PORETICS CYTO*CLEAR™ GLASS SLIDES FOR DIAGNOSTIC CYTOLOGY

For years polycarbonate membrane filters have been preferred for precise cellular diagnosis because of their many advantages. The only problem has been clearing the distracting filter pores from the view field.

But now that problem is history. Thanks to a special light-diffusing design, Poretics Cyto*Clear glass slides eliminate those distracting pore outlines in polycarbonate filters. The result: clear observation of the specimen.

There's no need to fuss with clearing solutions. Nor to dissolve the filter with chloroform. Nor to transfer the cells to a slide. And all of the valuable benefits of the polycarbonate filter are preserved. Such as no cell loss, cellular distortion, and no cell lysing. Cells are captured on a smooth, flat surface and all red blood cells, proteins and cellular debris are removed. High flow rates are also preserved.

A simple procedure

In fact, it's simpler and faster than present protocols. There are just three steps. Filter the specimen. Fix and stain the cells. Mount the membrane and sample between glass.

Wouldn't you like to know more about this great disappearing act? Detailed product information is available from the N.Z. agents for Poretics Corporation.

Intermed Scientific Ltd, Ph. (09) 443 1284 Fax (09) 443 8419.

AUTOMATED LAB MICROSCOPY

Diasys Corporation has introduced a laboratory instrument which field upgrades any standard upright microscope to an automated system for the microscopic analysis of urine and other low-viscosity fluids. The RetroScope 2000 standardizes sample preparation and increases the accuracy and reproducibility of analysis. The RetroScope 2000 eliminates the need for pipettes, slides and cover slips, and reduces exposure to potentially infectious materials. In most laboratory applications, the RetroScope 2000 has a pay back of investment in less than one year.

The RetroScope 2000 requires no special training. To operate, the unit's automatic aspirator is inserted into a standard specimen tube and the "Sample" button is pressed. Within three seconds a sample is automatically transferred to the stage of the microscope, ready for viewing. Observations are made through a stage-mounted slide assembly included with the RetroScope 2000. When observations are completed, the "Flush" button is pressed and the entire

system is automatically purged, depositing the sample and flush solution into the specimen tube, which is then discarded.

The RetroScope 2000 is a self-contained unit which occupies less than one square foot of counter space. The unit comes equipped with a portable 24-tube rack, automatic aspirator, flush tank and a stage-mounted slide assembly. Digital circuitry and HCMOS logic help assure consistent operation with minimal power consumption.

For further information including field evaluations contact Trimtech New Zealand Limited: Phone (09) 262 3380, Fax (09) 262 3291.

FROM CARL ZEISS JENA TO ASKANIA

From Carl Zeiss Jena to Askania — the continuation of a 200 year-old tradition of microscopes from Rathenow.

The tradition began in Rathenow, Germany in 1791 by Johann Dunker and carried on by Emil Busch AG, from which the Rathenow Optical Works emerged after World War II. Microscopes from Rathenow were among the most innovative in their field and well respected. So much so that the Works became part of the world famous Carl Zeiss Jena organisation and were (and still are) original equipment manufacturers of a number of models using the Carl Zeiss Jena brand.

Askania Werke Rathenow, as the company is now known, continue to produce optical microscopes of the highest quality, marketing them independently under the ASKANIA brand name.

ASKANIA microscopes are represented in New Zealand by Trimtech New Zealand Limited. "This is seen as a continuation of our association with high quality microscope manufacturers from Germany" notes Trimtech's microscopy manager Richard Beddek. In fact, a number of microscopes and a vast range of accessories that were sold under the Carl Zeiss Jena brand will now be available as original equipment from ASKANIA. This includes a range of high quality laboratory microscopes, suitable for such disciplines as microbiology, haematology, cytology, histopathology, etc. Facilities for documentation and teaching (photographic and video) are also available. Our customers can be assured that we will continue to provide them with the highest quality, both in terms of advice and products in the field of microscopy and imaging.

Trimtech New Zealand Limited, Phone (09) 262 3380, Fax (09) 262 3291.

List of Advertisers in this Issue

THE STANDARD
THE SOURCE

SIGMA® DIAGNOSTICS

CHEMISTRY'S FOR ANY ANALYZER

☆ *Superior Stability of Reconstituted Reagents*

☆ **Economical Cost Per Test**

☆ **Ask for Protocol Parameters for Your Analyzer**

☆ **Sample Packs Available**

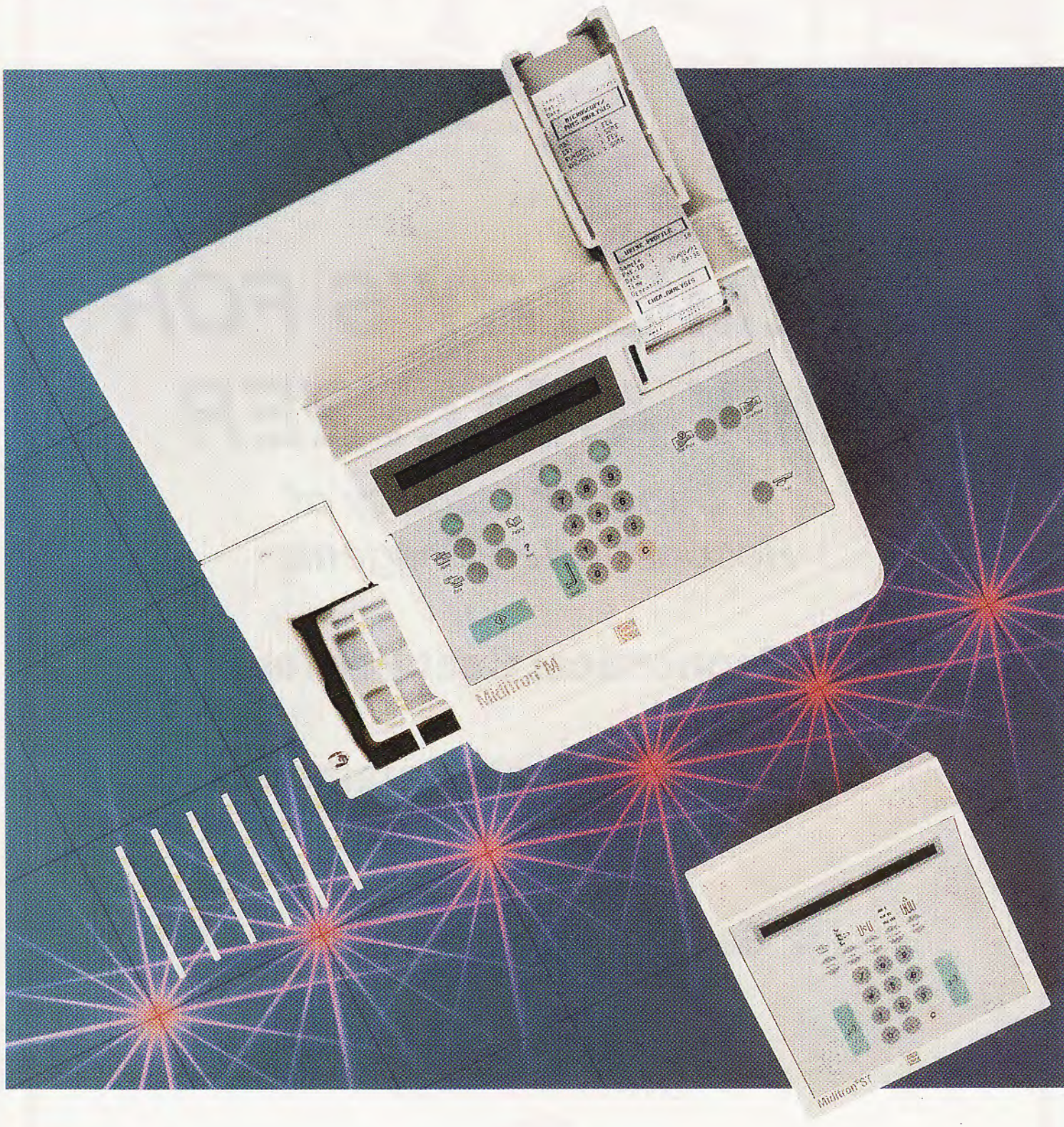
SIGMA DIAGNOSTICS

Biolab Scientific

a division of Salmond Smith Biolab Ltd
39 Woodside Ave, Northcote, Auckland
Phone (9) 418-3039 Fax. (9) 418-0729

601 MuppetArt 10/92

Miditron®



boehringer mannheim

Miditron®
— The future of Automated Urinalysis