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T.H. Pullar Memorial Address

Brian Main

Mr President, Guests, Members of the Institute,

It is now nineteen years since Dr "Thos" Pullar, in whose memory this address is given, died. Many of you present today would not have known him but to others and particularly those from Palmerston North where he worked from 1937-1963 this occasion will, I am sure, bring back memories of a man of high principles who made a great contribution to clinical pathology and who was intensely interested in the training and welfare of medical laboratory technologists in this country. My own involvement with him was brief being limited to a searching scrutiny during my C.O.P. examination in 1953 in Wellington. However I became aware of his concerns and involvement in medical technologist education in subsequent years as I began my political involvement with the NZIMLT.

I should like at this stage to thank your Council for inviting me to deliver this memorial address. In earlier years it was the practice to invite pathologists of note and I remember being a member of Council when it was decided to depart from this practice and instead ask senior medical laboratory technologists to deliver a keynote address at this time. I deem it an honour and privilege that I should have been chosen in this context. I trust that when I have concluded Council will not regret their invitation.

The theme of this 41st Annual Scientific Meeting of the NZIMLT is "Towards the Year 2000" and I should like to speak to you today on where the profession of medical laboratory technology is going as we move towards that time. I am bound to tell you that I do not like what I see and that unless we the members take active and somewhat drastic steps in the next few years to improve our situation we may well see the demise of the profession as we know it by that time in this country. I am in the twilight of my career as a medical laboratory technologist and it would be easy for me to put aside any thoughts of change and leave things as they are, but I believe that it is time that we all took a good hard look at ourselves and our profession and decide where we want to go and what to do about it. There are three areas which in my view need urgent attention and remedial action.

These are —

Extra Laboratory Testing
Education
The Role of Laboratory Assistants

Extra Laboratory Testing

I note that Extra Laboratory Testing is on the agenda for this Scientific Meeting. What I would say is that it would be naive of us to try and prevent testing of blood or other fluids outside the laboratory. What we should ensure by every possible means is to see that instruments used for this purpose are purchased through or by the laboratory, and their subsequent use and performance is continually monitored by technologists, and that the personnel who use them or carry out the tests are trained to an acceptable performance level again by technologists. It is the recommendation of the MLTB that such provisions be placed in the Regulations but even if there is acceptance by Government of these clauses we must all actively promulgate this concept.

Education of Medical Laboratory Technologists

Having been a member of the MLTB for the past nine years and a member of Council for several years before that I have spent countless hours with others in discussions on improving the education of and the examination system for medical laboratory technologists. It has become obvious to me in recent years that we are either not vociferous enough or our organisation is too small to command the attention of the Department hierarchy and Government. It is my view that the Massey degree course is now a "dead duck" and that we were badly advised by the senior Health Department administration in suggesting that we consult with and obtain the approval of hospital boards before approaching Government with this concept. The Hospital Boards Association is a conglomeration of representatives of many boards and it is obvious that they know little of our work and training requirements and are really only interested in cost savings. Any concept which involves additional time away from the work place is bound to founder with this organisation. The Health Department pays lip service to the policy of removing the present examination system from the MLTB to Education Department control be it Technical Institute, A.A.V.A. or University but is not committed to this policy in any time frame. There is a directive that boards should be self supporting from fees, etc., and there have been suggestions of examination fees rising to $150-$200 per paper. There is firmly held opinion in high places that medical laboratory technologists are overtrained and that the solution to all our examination problems would be to register medical laboratory technologists at the NZCS level. I am sure that I do not have to spell out the consequences of this occurring. It would of course mean that the MLTB would be reduced to similar function and costings of other registration boards.

I have come to the firm conclusion in recent months that if we want medical laboratory technologists to have a degree then it has to be by the reverse method being adopted in Christchurch and now accepted in our laboratory in Dunedin, i.e., trainees are engaged with a B.Sc. and trained in Medical Laboratory Technology to obtain registration with the Board. If the Institute was to adopt this course and proceed with it on a nationwide basis I am sure that to mount the present Certificate and Specialist Certificate training and examinations within the Technical Institutes would prove to be a much easier concept to sell to Government than the Massey concept. Many of you will say that there will be too many specialists produced by this concept and that smaller laboratories will not be able to run properly at weekends and after-hours. My answer is that you would be dealing with a much more mature person who has been through a three year learning process and that it should be possible to teach such a person to carry out a restricted range of tests in a short space of time so that they can perform out of hours duties. Most "small" laboratories specialise to some extent now in any case.

Whatever is decided over the next months or years the message I have for you today is that we have to decide soon once and for all what we want from our training and examination programme and go out and get it. Go to the top, the Minister, lobby Members of Parliament, do whatever we have to, to change the system for to leave the status quo is to invite change from outside the profession to our ultimate disadvantage.

The Role of Laboratory Assistants

I would like to stress at the outset that what I am about to say is not a personal attack or denigration of laboratory assistants without whom many laboratories could not function today.

What I want to ask you is how we got ourselves into the position that many laboratories cannot function without laboratory assistants? The answer is simple — workload and costs. During the workload explosion and the introduction of the NZCS course it was found essential to have continuity of staff and pairs of hands. As laboratory managers the quickest and cheapest way to achieve this was by appointing laboratory assistants. In general the calibre of these assistants was such that we taught them many of the skills of the medical technologist. We have the situation today that very large portions of the workload both during and outside normal hours is carried out by laboratory assistants in most disciplines. Would it surprise you to know that 90% of the after-hours cross-matching in New Zealand is done by laboratory assistants? When we consider these facts is it any wonder that the view is held in certain quarters that medical laboratory technologists are overtrained? The Institute has to some extent encouraged this trend by the introduction of the Q.T.A. qualification which while ensuring a high degree of competence has led to the practice in many laboratories of phasing out training of medical laboratory technologists altogether. According to the Institute's own statistics there are 735 Medical Laboratory Technologists, 381 Trainees and 948 Laboratory Assistants employed in New Zealand laboratories. A survey of training carried out by Jan Parker a NZIMLT Council member shows that some 20 laboratories have no trainees. About half of these are private laboratories but others are hospital laboratories with high workloads such as Ashburton, Oamaru,

Whakatane, Thames, etc. When you consider that I, and many other senior members of the profession began our training in such laboratories then something has gone wrong with the system.

During a recent visit to four major haematology laboratories in Sydney I was surprised to find that all the staff were qualified scientists and that no laboratory assistants were employed. There must be a moral here surely. I think we would all agree that the best and most efficient staff is a qualified staff and while the cost may be slightly higher, they can cope with a greater workload and their contribution to patient care is of a high standard.

It is my considered opinion that unless we all take remedial action the profession as we have known it is likely to disappear by the year 2000. What I would advocate is to replace laboratory assistants with technologists or graduate technologist trainees as natural attrition takes place. A registered technologist has the capacity of two laboratory assistants in my view and such a course of action will ultimately result in a smaller but more efficient staff, able to produce the most effective patient care. I would even go so far as to suggest that Council should consider whether continuing to offer the Q.T.A. qualification is in the best interests of the Medical Laboratory Technologist profession as a whole. For far too long we have put cost savings ahead of professional aspirations and the provision of the best possible laboratory service.

In conclusion I would reiterate that what I am advocating in no way affects the employment or aspirations of laboratory assistants working in New Zealand laboratories now but that the long term future of Medical Laboratory Technology and patient care in New Zealand would benefit greatly by the upgrading of professional numbers such as I have outlined.

Legionellosis in New Zealand. Four-and-a-half Years Experience in the Serodiagnosis of this Disease.

A.Y. Chereshsky, R.V. Metcalfe and K.A. Bettelheim
National Health Institute, Wellington.

Abstract
Four and a half years' experience in the serodiagnosis of legionellosis in New Zealand is presented. Most of the investigations were on sera submitted from hospitals and employed the Indirect Fluorescent Antibody Test. In that period 126 cases were confirmed, and 12 of these were fatal. The importance of diagnosing this type of pneumonia is discussed.

Key Words
Legionellosis, Serodiagnosis, Indirect fluorescent antibody test, *Legionella*

Introduction
Despite the fact that the *Legionella* bacterium was discovered only in 1977, *Legionella* infections are neither new nor geographically limited. The earliest known case occurred in 1947[1], and cases have been demonstrated worldwide.

Since the isolation of *L. pneumophila*, similar organisms have been isolated both from patients and environmental sources such as air conditioning cooling towers and evaporative condensers, shower heads, wet soil, creeks and lakes, hospital equipment, and plumbing systems in large buildings. So far 19 species and many serogroups within them have been recognised[2].

L. pneumophila infection has occurred in large common-source epidemics[3,4], in smaller clusters[5], and sporadically in isolated cases[6]. A greater frequency has been observed in males, and there is an increasing incidence with age. Risk factors include immunosuppression, renal transplantation, cancer, smoking, chronic bronchitis, travel to endemic areas, and exposure to construction and excavation sites[7].

Aerosol transmission of contaminated water is the usual mechanism of dissemination. The organism may be associated with blue-green algae or amoebae[8] in water. *L. pneumophila* can survive in waters in the temperature range of 6°C — 67°C.

The disease caused by *L. pneumophila* is currently recognised in two distinct clinical presentations. "Legionnaires' Disease" is a clinically severe multi-system illness, typically including pneumonia, associated with significant case mortality rates, whereas "Pontiac Fever" is a non-pneumonic self-limiting febrile illness. Pontiac fever has no respiratory symptoms and presents no radiologic evidence of pneumonia. There have been no deaths reported[7].

In 1979 the National Health Institute began developing a laboratory diagnostic service for Legionnaires' Disease, and by 1980 both the Indirect and Direct Fluorescent Antibody techniques were routinely performed at the Institute on submitted specimens. The first case of Legionnaires' disease in New Zealand was recognised in 1979[9]. Although many more additional cases since then have been diagnosed throughout the country, there has been no systematic study of the incidence of Legionnaires' disease in New Zealand.

This report summarises four-and-a-half years' experience (January 1979 — June 1984) in the serodiagnosis of legionellosis.

Materials and Methods
The Sera

Most serum samples were submitted to the National Health Institute by hospitals. Clinical data supplied on the patients' forms indicated atypical pneumonia or pneumonia with abdominal pain. vomiting and diarrhoea, or pleural effusion and consolidation. In many cases clinical data submitted used the terms respiratory distress, 'flu'-like illness, or febrile illness with diarrhoea.

Other Clinical Specimens

The presense of *Legionella* organisms was investigated in submitted paraffinised lung sections, formalised or fresh lung tissue, pleural fluids and sputa.

The Indirect Fluorescent Antibody Test (IFAT)[10,11]

Until August 1982 all submitted sera were tested with a polyvalent antigen preparation (Pool A) consisting of *L. pneumophila* serogroups 1 to 4. Since then a second polyvalent antigen (Pool B) has been used as well. This consists of *L. pneumophila* serogroups 5 and 6 and *L. micdadei (Tatlockia micdadei)*. All sera giving a positive reaction in one or other pool were subsequently tested by the individual antigens within the pool. The components of Pool A are a heat-killed preparation supplied by the Centre for Disease Control (CDC), Atlanta, Georgia, USA, while the components of Pool B are a heat-killed preparation of strains ATCC 33216, ATCC 33215, CDC:BC 1752 grown on CYE-α medium.

The methods for performing the IFAT are the same as those recommended by CDC[10,12]. Control sera for the components of Pool "A" were provided by CDC, while control sera for the individual antigens within Pool "B" were obtained from serologically diagnosed patients. The titres of these latter sera were confirmed by CDC.

For interpretation of the results the criteria put forward by CDC were followed: (1) a four-fold or greater rise in titre to ≥1:128 provides serological evidence of current infection; (2) a single titre or static titres of ≥1:256 provides an indication of *Legionella* infection at an undetermined time.

Examination of other Clinical Specimens by the Direct Fluorescent Antibody Technique (DFAT)[12]

Clinical specimens examined for the presence of *Legionella* organisms were tested by the Direct Fluorescent Antibody Test (DFAT). The fluroescein isothiocyanate (FITC) labelled antisera combined into three pools were obtained from CDC. These pools included antisera against the following antigens: *Legionella pneumophila* serogroups 1 to 6, *Legionella dumoffii, Legionella bozemanii, Legionella gormanii, Legionella micdadei* and *Legionella longbeachae* serogroups 1 and 2. Standard described methods were used[12].

Results

Legionellosis was diagnosed in 126 patients by either IFAT or DFAT or both. In four cases diagnosis was confirmed by the isolation of *Legionella pneumophila* strains from sputum and lung tissue. In 1980, 22 cases were diagnosed and confirmed by the CDC, our *Legionella* reference laboratory in the United States. This compares with only four cases in 1981 and 16 cases in 1982. In 1983, 49 cases were diagnosed. During the first six months of 1984 34 further cases of legionellosis were confirmed. Of the 126 cases, 87 were confirmed as positive because of seroconversion. In one case *L. pneumophila* was isolated as well[13]. Thirty cases were presumed positive because only one serum sample was tested and it had a titre of ≥1:256, or tested paired sera had a titre of ≥1:256. Six cases were diagnosed by DFAT on lung tissue and transtracheal aspirate. Additionally three cases were confirmed by the isolation of *L. pneumophila.*

Sixty-nine percent of the patients with legionellosis were male. While the ages of the patients ranged from pediatric to geriatric, increased incidence with age was noted (figure 1).

Of the 126 positive cases, 12 (approximately 10%) proved fatal. The details of these cases are shown in Table 1.

Three instances in 1982 and a further three in 1983 were confirmed as *Legionella* positive by DFAT on lung tissue. All six died shortly after the onset date and consequently their sera either proved to be negative or were not available for examination. No Legionellae were isolated because most post-mortem specimens submitted to us were formalised lung tissue or paraffinised lung sections.

Seroconversion occurred before death in two of the five fatal cases in 1983. No post-mortem specimens were submitted.

Between January and July 1984, four people died from confirmed legionellosis. In three cases *Legionella pneumophila* was isolated from lung tissue. Isolation took place in Auckland Hospital. These were the first *Legionella* isolates in New Zealand[13]. No specimens from these three patients for IFAT or DFAT were available at NHI. Seroconversion before death occurred in one additional case.

All positive cases appeared to be sporadic. They were evenly distributed over the four seasons of the year, in contrast to reports from other countries where the incidence tends to be higher in late summer and autumn (table 2).

Most sera submitted as well as most positive cases reported were from the Wellington area (58 from 126) (table 2). The high incidence of *Legionella* infection in this area may be a result of a higher index of suspicion there.

Most positive cases reported before August 1982 were due to *Legionella pneumophila* serogroup 1. Since additional antigens of *Legionella pneumophila* serogroups 5 and 6 and *Legionella micdadei* were introduced the number of reported positive cases has greatly increased[14]. More than half of them in 1983 were either due to *Legionella pneumophila* serogroup 6 alone, or had a rising titre to that serogroup as well as to some of the other *Legionella* species/serogroups. A high incidence of *Legionella micdadei* among positive cases was also observed.

Discussion

The true incidence of *Legionella* infection in New Zealand is still difficult to assess. The increasing number of cases diagnosed

Figure 1

The distribution of Legionella cases by sex and age group

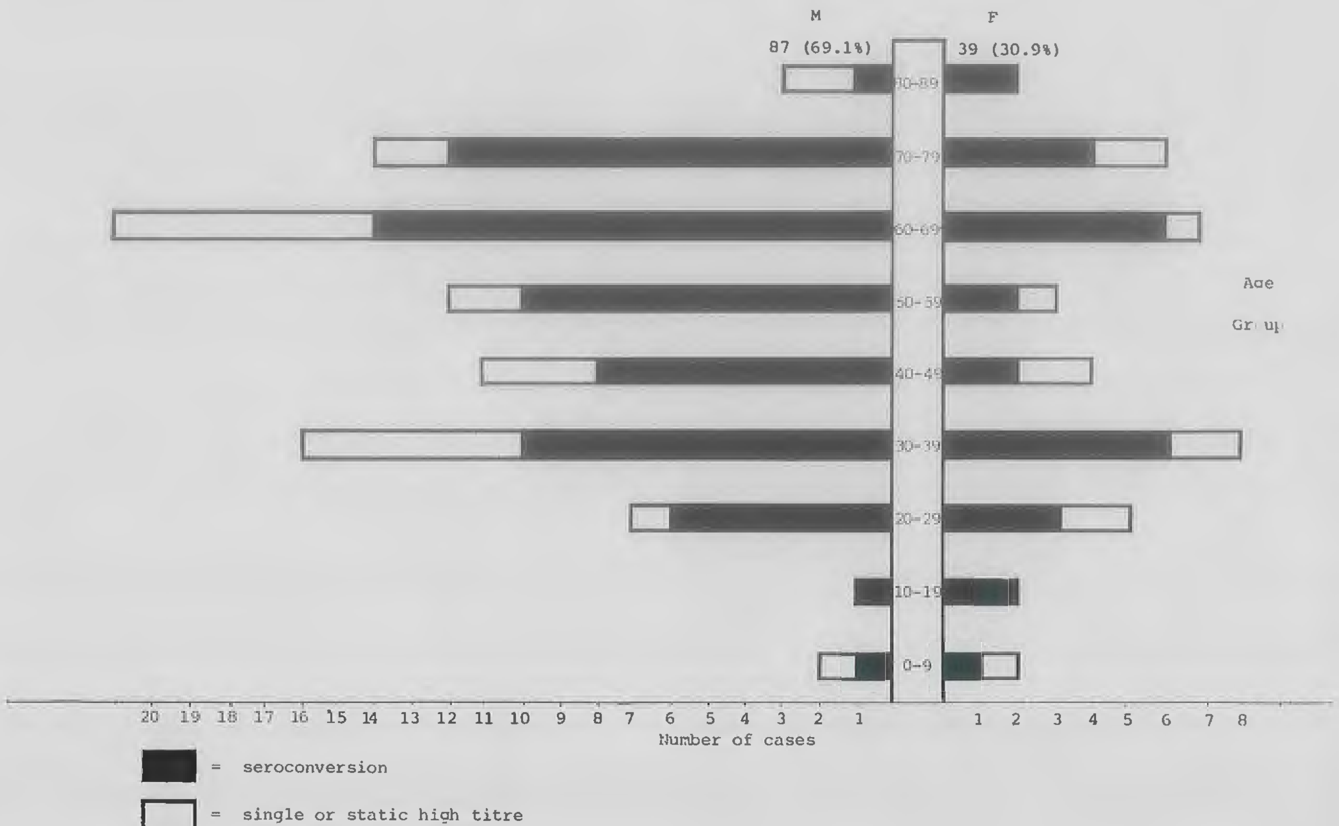

Table 1:
Microbiological studies on fatal cases of legionellosis

Year	Microbiological Studies				Total number of fatal cases
	DFAT (post-mortem specimen)	IFAT		Culture	
		Sero-conversion	high single titre		
1982	3	—	—	—	3
1983	3	2	—	—	5
1984 (Jan-June)	NT	1	—	3	4
TOTAL	6	3	0	3	12

NT = Not tested
— = Negative

each year since *Legionella* testing started may be the result of a growing awareness of the disease and the expansion of the battery of antigens used in IFAT. In addition the use of further antigens may increase the number of positive cases[14].

The best approach to diagnosis that is currently available combines suspicion on clinical grounds with the use of rapid diagnostic methods. These methods include DFA examination and culture followed by serial IFA testing of an acute-phase serum specimen obtained at the onset of illness and convalescent-phase serum samples obtained during the following weeks from the onset. Isolation of the causative agent gives a more rapid result than serological tests[14,15]. Media for culturing Legionellae are now available commercially and every attempt should be made to isolate the organisms. All isolates suspected of being Legionellae can be referred to NHI for confirmation.

According to the National Health Statistics Centre's "Mortality and Demographic Data", about half of 3700 cases of pneumonia in 1981 in New Zealand were caused by an unspecified agent. In 1980, 913 New Zealanders died from pneumonia of unknown cause. There may be many cases of microbiologically undiagnosed pneumonia in New Zealand that are *Legionella* infection. As pneumonia is the fourth most important cause of death in New Zealand more attention should be paid to determining the aetiology of cases that are not responding to conventional treatment. Non-pneumonic febrile illnesses with vomiting, diarrhoea and/or renal failure could also be suspect. Studies, both in USA and Western Europe, suggest that if figures were extrapolated to New Zealand there would be up to 3000 cases of *Legionella* infection per year. These would range from severe pneumonia to mild 'flu'-like symptoms.

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Table 2

Confirmed cases of legionellosis in New Zealand (January 1979 — June 1984)

HEALTH DISTRICT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Whangarei				1							1	2	4
Takapuna													-
Auckland		2		2		1	1	1	2	1			10
South Auckland													-
Hamilton			1									1	2
Rotorua		1			1	1		1	1	1			6
Gisborne			1		1								2
Napier	1		1			1	1	1		1	1	2	10
New Plymouth				1									1
Wanganui													-
Palmerston North		1		1			1		1			1	5
Hutt	1	1			2				1	1	1	3	10
Wellington	3	12	6	6	8	4	5	3	2	5		4	58
Nelson				1				1					2
Christchurch		1		1			1	1			1		5
Timaru													-
Dunedin	1		1			1	1			3	1	1	9
Invercargill		1									1		2
TOTAL (each month)	6	19	10	13	12	8	10	8	7	12	6	14	126

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SCAP — A Survey of Coagulation Assay Performance

Karen F. Smith, ANZIMLT

Graded Technologist, Haemostasis and Coagulation Unit, Auckland Blood Transfusion Centre, Park Avenue, Auckland, New Zealand.

Abstract

The Auckland Blood Transfusion Centre Coagulation Unit now offers a regular quality control survey of coagulation assay performance (SCAP) to New Zealand laboratories. This paper reviews the results of the survey up to mid-1984.

Introduction

In Australia and New Zealand the Royal College of Pathologists of Australasia offers the Haematology Quality Assurance Programme which includes a limited assessment of coagulation tests. In 1981, the Auckland Haemostasis Group (AHG) decided that an additional Regional quality control programme in coagulation was required that covered the spectrum of clinical haemostasis tests.

The Auckland Blood Transfusion Centre (ABTC) Coagulation Unit has for some years been the New Zealand representative laboratory in the international quality control programme operated under the direction of the International Committee for Standards in Haematology (ICSH) Task Force for quality control in blood coagulation testing. The ICSH limits participation to one laboratory for each country and also recommends that local national quality control programmes should be instituted. In accordance with this principle, and at the request of the AHG, a pilot quality control programme was set up in 1982 and was named the Survey of Coagulation Assay Performance (SCAP).

The first regional survey was despatched in September 1982. The programme was subsequently extended in response to requests from other New Zealand laboratories. With the number of participating laboratories having now increased to 42, this represents 60% of New Zealand laboratories undertaking haemostasis testing. In addition one Australian laboratory has participated in recent surveys.

We now review our experience with the SCAP programme.

Methods and Materials

Lyophilized plasma samples used in the surveys were obtained from either normal donors; patients with congenital coagulation deficiencies; patients on anticoagulant therapy or plasma specifically treated to alter levels of coagulation factors e.g. cryoprecipitate supernatant. The plasmas were lyophilized in 1.0mL volumes in 2.0mL glass injection vials. After suitable packaging they were forwarded by air mail to participating laboratories.

In each survey four lyophilized normal or abnormal plasmas were forwarded. Each sample was required to be tested by the coagulation tests routinely reported by that laboratory. Duplicate samples were occasionally included to enable reproducibility of testing procedures to be reviewed.

The following haemostasis test procedures and reagents were surveyed:

1. *Prothrombin Time* (PT)
   New Zealand Standardised thromboplastin; Ortho; Behring, Dade and General Diagnostics thromboplastins.
2. *Activated Partial Thromboplastin Time* (APTT)
   Dade, Ortho, General Diagnostics, Roche, Hoechst and locally prepared reagents.
3. *Factor I Assay*
   The majority of laboratories used the Von Clauss method [1]. The Heat Precipitation[2] and Ellis and Stransky[3] methods were also used.
4. *Factor VIII Assay*
   Methods used include the following activators — Kaolin, Ellagic Acid and Activated Silica. The substrates used include artificially depleted and commercial haemophilic.
5. *Factor IX Assay*
   Methods used include the following activators — Kaolin, Ellagic Acid and Activated Silica. The substrate was Factor IX deficient plasma, some obtained commercially and others from local patients.
6. *Factor VIII RAg*
   The two methods used were Laurell Rocket Immuno-electrophoresis[4] and Partigen Plate techniques.

The results were analysed using an Apple II microcomputer on a specially prepared programme. The results were reported in the following format:

1) Laboratory result
2) Mean result
3) Standard Deviation (SD)
4) % Coefficient of Variation (% CV)
5) % Deviation from the mean (% Dev)
6) Histogram plot

An overall summary of results was produced. Comments on reproducibility of results on plasmas included in previous surveys were also made.

Results

Five of the seven surveys since 1982 included repeat specimens. The results on the repeat specimens form the basis of our review. Because of the small size of test groups it has been necessary to group some tests which involve different reagents and/or techniques.

PT — Standardised Thromboplastin:

Consistently increasing numbers of participants has meant that baseline levels of performance have been difficult to assess. Although the mean Prothrombin Ratio (PR) has marginally increased, the % CV remains low, suggesting that this test is being performed satisfactorily in most laboratories. This trend can be seen in Table 1.

APTT:

Various different reagents are being used for this test. The data has been difficult to analyse due to the low numbers of participating laboratories using the same reagent. In general the % CV has been consistently below 10% in the normal plasma group. A reduction in the % CV is apparent with the abnormal plasma in all groups; however % CV still remains relatively high. These results can be seen in Tables 2, 3 and 4.

Factor I Assay:

There has been an improving trend as shown in a reduction in

Table 1:
Prothrombin Time — Standardised Thromboplastin

SURVEY DATE	MEAN PR	SD	% CV	TEST No.
Plasma 3				
September 1982	0.94	0.07	7	18
February 1983	0.92	0.11	12	19
June 1983	0.93	0.09	9	25
November 1983	0.99	0.07	7	31
July 1984	0.98	0.10	11	32
Plasma 4				
November 1983	1.20	0.09	7	31
July 1984	1.24	0.10	8	32

Table 2:
Partial Thromboplastin Time — Dade Actin.

SURVEY DATE	MEAN CLOTTING TIME	SD	% CV	TEST No.
Plasma 3				
September 1982	29.3	2.0	6	11
February 1983	28.9	2.4	8	10
June 1983	28.5	1.9	6	12
November 1983	29.1	2.2	7	14
July 1984	28.0	1.2	5	10
Plasma 4				
November 1983	50.6	17.2	34	14
July 1984	55.0	10.0	18	10

Table 3:
Partial Thromboplastin Time – General Diagnostics – Automated

SURVEY DATE	MEAN CLOTTING TIME	SD	% CV	TEST No.
Plasma 3				
September 1982	33.5			2
February 1983	31.3	0.8	2	4
June 1983	31.8	2.5	7	5
November 1983	32.3	2.2	6	5
July 1984	31.6	2.6	8	12
Plasma 4				
November 1983	55.5	8.3	14	5
July 1984	55.6	6.4	12	12

Table 4:
Partial Thromboplastin Time — Ortho — Thrombofax.

SURVEY DATE	MEAN CLOTTING TIME	SD	% CV	TEST No.
Plasma 3				
September 1982	25.0			1
February 1983	28.6			2
June 1983	25.7	2.0	8	4
November 1983	26.2	3.6	13	7
July 1984	27.6	2.5	9	6
Plasma 4				
November 1983	49.0	12.3	25	7
July 1984	44.0	5.1	12	6

both SD and % CV in the normal plasmas over the period, as seen in Table 5. These favourable results have been achieved, despite grouping of all test methods.

Factor VIII Assay:
Table 6 outlines the Factor VIII results on the normal and borderline normal plasma sample repeated in various surveys and again demonstrates a reducing SD and % CV.

Factor IX Assay:
The % CV in Factor IX assays remains unacceptably high as demonstrated in Table 7. The reasons for this are not obvious but may reflect the problems of an assay procedure carried out relatively infrequently.

Table 5:
Factor I Assay.

SURVEY DATE	MEAN RESULT	SD	% CV	TEST No.
Plasma 3				
September 1982	2.8	0.5	17	12
February 1983	2.8	0.5	19	15
June 1983	2.7	0.3	13	19
November 1983	2.7	0.3	13	22
July 1984	2.8	0.2	10	21
Plasma 4				
November 1983	2.3	0.3	15	22
July 1984	2.2	0.3	15	21

Table 6:
Factor VIII Assay.

SURVEY DATE	MEAN RESULT	SD	% CV	TEST No.
Plasma 3				
September 1982	1138	182	16	11
February 1983	1129	368	32	12
June 1983	1238	315	25	16
November 1983	1063	180	16	16
July 1984	1146	177	16	15
Plasma 4				
November 1983	510	152	29	16
July 1984	519	119	23	15

Table 7:
Factor IX Assay.

SURVEY DATE	MEAN RESULT	SD	% CV	TEST No.
Plasma 3				
September 1982	1074	147	13	10
February 1983	909	294	32	11
June 1983	1036	69	6	13
November 1983	1109	490	44	13
July 1984	1142	293	26	12
Plasma 4				
November 1983	716	281	39	13
July 1984	728	253	35	12

Table 8:
Factor VIII RAg.

SURVEY DATE	MEAN RESULT	SD	% CV	TEST No.
Plasma 3				
February 1983	1204	204	16	6
June 1983	1159	231	19	8
November 1983	1180	165	14	7
July 1984	1113	267	24	6
Plasma 4				
November 1983	1100	228	20	7
July 1984	1015	170	17	6

Factor VIII RAg:
Only limited data is available as the number of laboratories performing this test is small but it appears that there has not been any significant improvement in the standards of testing.

Discussion
SCAP was established to provide an external haemostasis quality control assessment programme to service both hospital and private laboratories, whether carrying out routine screening or specialist testing. The aim of SCAP is to provide both an external assessment of performance and to assist in improving the overall standard of laboratory results. However, a survey of this type can only be regarded as part of a total laboratory quality

control programme which involves both internal as well as external checks.

It is intended that the survey will expand to include other coagulation test procedures and that all laboratories carrying out coagulation tests will participate. In this way a national quality control programme could be developed as envisaged by the ICSH[5] and this may be useful to organisations such as TELARC.

The methods of analysis of SCAP results has been formatted on those of the International Survey which is administered by the National (UK) Reference Laboratory for Anticoagulant Reagents and Control.

SCAP offers an assessment of both coagulation screening techniques and specialist tests. PT and APTT are assessed both in terms of clotting time and as a ratio of normal. Beeser et al[6] described PR as the most reliable evaluation parameter for PT proficiency testing surveys. Goguel et al[7] described improved % CV where a clotting ratio was used to assess APTT. In our experience the ratio for PT and APTT minimizes differences in endpoint recording techniques.

During the period of the SCAP surveys, PT, APTT, Factor I Assay and Factor VIII Assay have all demonstrated a reduction in % CV and SD. Factor IX Assays and Factor VIII RAg have shown no improvement over the two year period but, however, the small size of participant groups makes a reliable analysis difficult.

Recent reviews of the literature[8,9] confirm the difficulties with coagulation Factor assays which reflect the many variables present in the assay system and their influence on clotting times in Factor VIII and Factor IX estimates. Over[8] discusses in detail the problems arising from the factor deficient substrates, activation, activation time, phospholipid, dilution medium, calcium medium, calculation and statistical analysis and standards. It is essential that laboratories offering coagulation factor assays are aware of these variables.

The continuation of this programme and its establishment as a national survey is dependent on the co-operation and constructive return of New Zealand laboratories. The eventual result of SCAP could be improved standardisation and quality control of all coagulation investigations carried out in New Zealand.

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Identification of Haemophilus influenzae from Respiratory Specimens

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Abstract

Haemophilus influenzae was regularly misidentified as *Haemophilus parainfluenzae* by routine laboratory tests for growth requirements of x (haemin) and v (nicotinamide adenine dinucleotide) factors. A spot indole test, a test for conversion of delta amino levulinic acid to porphyrins and biochemical profiles were used to obtain the correct identification of haemophilus isolates. It was found that a minimal inoculum suspended in diluent increased the accuracy of x and v tests from 67 to 92 percent. This increase in accuracy resulted in a marked and sustained increase in the identification of *H. influenzae*.

Introduction

Suspicion of misidentification of *Haemophilus influenzae* in our laboratory was aroused because of a low number of *H. influenzae* isolates and lush growths of *Haemophilus parainfluenzae* from sputum culture. This provoked us to check the identification of haemophilus isolates obtained from respiratory specimens. These checks showed regular misidentification of *H. influenzae* as *H. parainfluenzae.*

This paper describes these investigations and the changes to methods that improved the identification of *H. influenzae* and *H. parainfluenzae.*

Materials and Methods

Initial method of identification:

This was the method of identification at the start of the study. Tests were made from routine cultures of respiratory specimens on Columbia chocolate agar which contained 10 μg per mL bacitracin. To test the requirement for x (haemin) and v (nicotinamide adenine dinucleotide)[1] three colonies were removed from the bacitracin agar plate with a bacteriological loop and spread over the surface of a Columbia agar plate. Identification discs x, v and combined xv (Difco Laboratories, Detroit, Michigan, U.S.A.) were placed on the plate as far apart as possible. Plates were incubated at 35°C in five percent carbon dioxide. Tests for satellitism[1] were made on Columbia agar containing five percent sheep blood. An additional three colonies from the bacitracin agar plate were spread over the surface of the Columbia agar and one colony of *Staphylococcus aureus* (Oxford strain) was inoculated in a straight line over this. Plates were incubated as above. A further three colonies were used for antibiotic disc susceptibility tests.

Checks to verify the identity of H. influenzae and H. parainfluenzae:

Identification of *H. influenzae* and *H. parainfluenzae* was

verified by a spot test for indole production[2] which is positive for *H. influenzae* biovars I, II and V (70 percent of our isolates) and conversion of delta-aminolevulinic acid (ALA) to porphyrins by *H. parainfluenzae*[3,4]. Any discrepancies in results were resolved with biochemical profiles[5,6] obtained by the Minitek system[7,8] (BBL Division, Becton, Dickinson and Co., Cockeysville MD 21030, U.S.A.).

To test for indole production a disc of blotting paper was moistened with one percent paradimethylaminocinnamaldehyde (Sigma Chemical Company, St. Louis, U.S.A.) in ten percent hydrochloric acid. One or two colonies were then rubbed onto the paper. Positive results were indicated when a blue colour appeared in less than one minute. Any other colour was negative.

To test for conversion of ALA to porphyrins a disc of blotting paper was moistened with a solution which contained 0.04 percent ALA (Sigma Chemical Company, St. Louis, U.S.A.) and 0.02 percent $MgSO_4.7H_2O$ in 0.1M Sorensen phosphate buffer pH 6.9. Two or three colonies were rubbed onto the paper. It was then placed in a moist atmosphere to prevent drying and incubated at 35°C for two hours. Red fluorescence under ultraviolet light indicated the presence of porphyrins.

The Minitek system was used to test for acid production from dextrose, sucrose, lactose and xylose, indole production and urease and ornithine decarboxylase activity. To make the tests, organisms from an overnight agar culture were suspended in Neisseria Minitek broth to give a milky suspension. Volumes of 0.05mL were deposited in wells in the Minitek tray which contained reagent discs. One well without a reagent disc received 0.15mL for the indole production test. All tests were overlaid with three drops of sterile mineral oil and trays were placed in plastic bags, sealed and incubated overnight at 35°C.

Kovac's reagent was used to test for indole. Acid production from carbohydrate was indicated by a change from red or orange red to yellow, urease production by a change from yellow to purple and ornithine decarboxylase by a change from yellow to bright pink.

New Method of Identification.

This is the initial method with improvements. As before, identification tests were made from cultures of respiratory specimens on Columbia chocolate bacitracin agar. One large or three small identical colonies were used as inocula for tests. If separate colonies of adequate size were not available cultures were reincubated another 24 hours or subcultured to obtain a pure growth. On removal of colonies care was taken to avoid contact with the chocolate agar to prevent any transfer of x and v factors. Suitable inocula were emulsified in 1 mL of lactated Ringer solution[9] (Travenol Laboratories, Auckland). A sterile swab was then used to inoculate media for the tests previously described. Media for x and v requirements were swabbed first to avoid transfer of extraneous x and v factors. When the tests were read all plates were examined carefully for purity using an eyeglass if necessary. If any plate appeared to be mixed, all plates were assumed to be mixed and tests were then repeated.

The initial method of identification was used by the laboratory until June, 1984 when the new method was instituted. Checks to verify identifications were made during March, June, July and September. After this time the spot indole test was incorporated into routine procedures.

Table 1.

Accuracy of identification of H. influenzae and H. parainfluenzae isolated from respiratory specimens in 1984.

Identification	Number of isolates			
	March	June*	July*	Sept*
Correct *H. influenzae*	11	20	33	43
Correct *H. parainfluenzae*	30	33	25	33
Incorrect	20	6	5	5
Accuracy +	67%	90%	92%	94%

* New method of identification.
\+ Accuracy is expressed as a percentage of the number of correct identifications over the total number of isolates.

Results

Table 1 shows that accuracy of identification of *H. influenzae* and *H. parainfluenzae* was 67 percent for results obtained by the initial method in the March period. Twenty of 61 haemophilus isolates were incorrectly identified; thirteen misidentifications occurred when pure cultures of *H. influenzae* were called *H. parainfluenzae* and seven occurred when *H. influenzae* was mixed with *H. parainfluenzae* and as a result *H. influenzae* isolates were missed. The new method of identification was instituted as soon as possible and subsequent results obtained over periods starting June, July and September show a marked and sustained improvement in accuracy to an average of 92 percent.

Table 2 shows the effect that initial and new methods of identification had on the isolation of *H. influenzae* from respiratory specimens over a period of 18 months. There was a marked and sustained increase in isolation of *H. influenzae* from the time the new method was instituted in June 1984. If seasonal variation is considered the improvement is still noticeable. *H. influenzae* constituted 33 percent of all haemophilus isolates in October 1983 compared with 52 percent in October 1984 and 35 percent in April 1984 compared with 45 percent in April 1985.

Table 2

Isolation of H. influenzae from respiratory specimens that grew Haemophilus sp.

Year	Month	No. specimens	% of specimens that grew *H. influenzae*
1983	Oct	73	33
1984	March	70	20
	April	75	35
	June*	79	44
	July*	77	48
	Oct*	83	52
1985	April*	86	45
	July*	72	49

* New method of identification.

Discussion

Errors in identification almost ceased when a minimal inoculum suspended in diluent was substituted for the large undiluted inoculum formerly used. A minimal inoculum chosen with care eliminated mixtures of *H. parainfluenzae* and *H. infuenzae* being identified as *H. parainfluenzae* and dilution of the inoculum prevented the carriage of x and v factors from primary isolation plates which caused *H. influenzae* to be mistaken for *H. parainfluenzae*.

We found that a marked increase in the accuracy of identification of *H. influenzae* and *H. parainfluenzae* resulted in a marked and sustained increase in the number of isolates of *H. influenzae* obtained from specimens that grew *Haemophilus* sp.

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A Computer Bureau Service for Clinical Biochemistry

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Abstract
Although computer bureau services are commonly used in the commercial sector, their ability to provide an effective data processing facility for a hospital laboratory had not been adequately investigated. We have evaluated a relational data base and "Pick" operating system in meeting the needs of Clinical Biochemistry cumulative reporting. The project team, comprising both laboratory personnel and computer consultants, developed a blood chemistry reporting system within three months. The system has proved itself over eight months routine use and now can be expanded to all areas of the Pathology service.

Introduction
The Green Lane Hospital Clinical Biochemistry Department has successfully operated a manual cumulative report system for the last fifteen years, handling between 50 and 250 cumulative blood chemistry reports daily. An attempt to computerise as a pilot site for the Nationwide Clinical Laboratory Computer System Project was abandoned in 1980, mainly because we could not meet the service level achieved with the manual system. However, recent developments in computer hardware and software techniques encourage us to re-investigate the practicability of a laboratory computer system.

This paper describes our experience of using a computer bureau service.

Manual System
The manual system was perceived to have the following disadvantages:-

- There was a major clerical effort required to maintain an efficient system. Reports were often duplicated needlessly and filed incorrectly.
- Result inquiry was often difficult as cumulative report cards in use changed locations during the working day.
- The potential for errors in transcribing hand written results was considered to be significant.
- Handwritten results produced problems of legibility.
- Introduction of changes to test order, reference ranges and other features required long lead times to reprint the report cards.

The advantages of the manual system that we sought to retain were:-

- The concept of cumulative records.
- The Quality Assurance attributes of cumulative records.
- Report printing on demand.
- A patient discharge mechanism limiting the number of records on file.

Project
After preliminary negotiations, approval was obtained to perform a three month developmental project using a computer bureau service. The company concerned, Integrated Computer Systems Ltd., utilizes a Microdata Sequel Series Computer. Microdata computers are designed specifically for data base management problems and use the "Pick" operating system which enables a dramatic saving in disc and memory space.

Constraints
Emulation of the manual system. The manual system had numerous creditable features which could serve as bench marks, and both systems would operate in parallel for a period of time.

Flexibility to enter multiple specimen types concurrently and an ability to correct information previously entered.

Seven day, twenty four hours per day availability.

Evaluation after three months with two possible outcomes : either abandon or accept the project.

Equipment
For the development phase, two telephone lines were rented from the N.Z. Post Office and fitted with 1200 baud modems. Two ADM31 visual display units (V.D.U.) were rented and an Epson FX80 printer was installed in series with one V.D.U.

Development
Laboratory personnel and the system analyst/programmer worked together on the development of this system to minimise errors and omissions. After six weeks, specimen registration, worklist preparation and result entry were completed to laboratory satisfaction. However, a review of development resulted in a decision to re-design the system using a sophisticated system generator to reduce subsequent development time. This work was undertaken by a consultant systems analyst. By week twelve, all the required features except the patient discharge facility were complete. After both external and internal audits, the project was judged successful in overcoming most of the perceived disadvantages of the manual system, although transcription errors remained because of manual data entry.

Current System Description
Equipment

- 4 Tatung 6600 amber screens and detachable keyboards.
- 1 Post Office S2 Grade Line
- 2 GDC-1240 statistical multiplexors and associated Racal modems
- 1 C. ITOH 3500 series printer (350 characters per second)
- 2 Epson FX80 printers (160 characters per second)

The choice of equipment installed after completion of the feasibility project depended somewhat on available telecommunication hardware and cost effectiveness. The Tatung terminals are well proven in the commercial sector and are relatively inexpensive. The loan of a 4-channel multiplexor system from the Data Processing Division of the Health Department removed the need for more than one telephone line and enables a significant reduction in Post Office line rental charges. The C.ITOH printer was purchased to speed production of the cumulative reports. This change enabled us to meet report distribution deadlines with ease.

Software
The system is menu driven. The menu (Table 1) is divided into two parts, one for normal day to day processing, the other containing error correction and recovery routines. Under usual operating conditions, the "Normal processing" menu, i.e. items

Table 1
PATHOLOGY — MASTER MENU

1. List Batches in System	20. Normal Processing Menu
2. Transfer or Discharge Menu	
3. End of Day	
4. Reprint Worksheet	
5. Print Selected Patients Results	21 Registration Pat.-Spec.
6. AUTO Authorise Patient Results	22 Registration Spec.
	23. Work Status
	24. Create Worksheet
	25. Result Entry
11. Enter Tests/Groups	26. Batch Verification
12. Enter Processes	27. Sign-Out
13. Adjust Result Order on GL71	28. Ward Reports
14. Comments File Maintenance	29. Patient Enquiry

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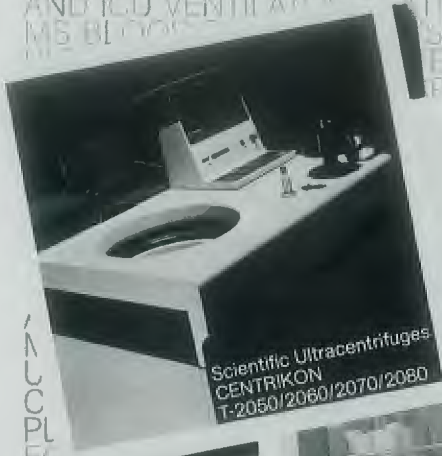

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NEW ERA INSTRUMENTS

Circle 90 on Reader's Reply Card

20 through to 29, are displayed on the V.D.U. Item 21 ("Patient Registration") is used either to register new patients or to recall patients known to the system. Specimen registration (item 22), which normally follows patient registration, comprises entry of specimen numbers, date, time, requested tests, and urgency indicators. There is provision for making special comments (e.g. "phone ward" or "urgent") with free text of up to 16 characters. When laboratory staff are ready to process work, batches are formatted using item 24 ("Create Worksheet"). Urgent samples precede routine samples in the work list. A copy of each batch is printed. On completion of the analytical work, item 25 ("Result Entry") provides the means to enter the test results against the specimen and patient details. Three character precoded comments (e.g. "specimen haemolysed"; "results phoned"), can be added at this stage. The batches of results are verified (item 26) by first printing the results entered, then checking the printed results against the original results entered on the worksheet. After any appropriate modification, the process is completed by the entry of the laboratory worker's initials. This last step authorises the system to add the results to the respective patient cumulative records.

The laboratory has a policy that all cumulative reports are reviewed by senior staff prior to despatch to the wards, for which menu item 27 ("Sign Out") is used. Reports can be reviewed in three ways : singly by patient number, sequentially displaying completed reports, or by sequentially displaying all reports. The results can be modified in numerous ways and free text or precoded comments can be added. Release of a report to the report print file requires input of the reviewer's initials and an instruction to file.

Other features of the normal processing menu are more concerned with the management of work flow. "Registration Specimen", item No. 22, can be used to enter a specimen directly if a patient is already known to the system, but more commonly it is used to check requesting information on a previously entered specimen. "Work Status", item No. 23, permits review of progress through the system for each test or process (e.g. SMA). The system displays the number of specimens in the queue, the number scheduled into batches, the number with results entered and the number with analyses reported. "Patient Enquiry", item No. 29, gives rapid access to the cumulative record on each patient, allowing a marked improvement in answering telephone enquiries.

The Control and Maintenance section of the Master Menu meets the requirements of system "Clean Up" (items 1,2 and 3), "Recovery Routines" (items 2,4,5 and 6) and "System Maintenance" (items 11-14). These items are summarised in Table 2.

Table II

CONTROL AND MAINTENANCE

Item	*Function*
1. List batches in system	Displays analytical batches at all stages before posting to cumulative records.
2. Transfer or Discharge Menu	Permits transfer of results to correct errors of patient or specimen identification. Removes cumulative report on discharge.
3. End of Day	Resets batch numbers. Prints copies of discharged patients' records.
4. Reprint Worksheet	Prints copy of an existing batch.
5. Print Selected Patients Results	Prints copy of specified record.
6. Auto Authorise Patient Results	Allows all complete records to be printed.
11. Enter Tests/Groups	Defined tests by name, reference, interval, check range and units.
12. Enter Processes	Defines format of test batches.
13. Adjust Result Order on GL71	Defines order of results on cumulative report.
14. Comments File Maintenance	Provides standard comments for adding to results.

Discussion

The feasibility of designing a cumulative record system for Clinical Biochemistry was discussed with the operators of the computer bureau service in July, 1984 and development was started in September. Conversion to a fully operational system for blood chemistry in December, 1984, pays tribute to their skill in programming and confirms the value of close consultation with laboratory staff.

The major advantage of using a computer bureau service is in the saving of capital outlay on the computer itself. In our case, the project was initiated with minimal expenditure. Moreover by renting rather than purchasing peripherals including telecommunications equipment and visual display units, the whole system has been tested with a minimum of cost. We therefore avoided major and irretrievable expense if the system had been found to be unsuitable. In retrospect, it is surprising that such an approach has not been tried previously. However, care must be exercised in matching the bureau staff expertise with the laboratory expectations if a positive outcome is to be reached. Our decision was based on discussions with the bureau staff, a practical demonstration and evaluation after a three month trial.

Having established a system for blood chemistry, we are now in a position to extend the operation to include blood gases and urine chemistry within our own department and to offer a computer service to other pathology disciplines at Green Lane Hospital. At this stage, the possibility of purchasing our own computer becomes a reasonable proposition as we now have a substantial base on which to base our claim.

In summary, we have installed a laboratory computer system rapidly and with a minimum of cost. While we may have been fortunate in our choice of computer consultants, the savings inherent in a Bureau Service should be available to all.

Conclusion

The speed of development and implementation followed by some eight months routine use has vindicated our decision to embark on this project. We do not claim that the current system meets all the requirements of a comprehensive laboratory computer system, but the combination of software design, relational data base and "Pick" operating system has the potential to meet these needs.

Acknowledgement

We thank our laboratory staff for their perseverance and goodwill, the hospital management for their support and Integrated Computer Systems Ltd. for their enthusiasm.

Frequency of Hepatitis (B) Antibody in Otago

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Introduction

The presence of antibody to Hepatitis B surface antigen is an indicator of clinical recovery and subsequent immunity to Hepatitis B virus.

In 1975 Leers et al[1] (United States) showed that 14.4% of volunteer blood donors, 14.8% of Blood Bank Staff and 11.4% of other laboratory and nursing staff had antibody to Hepatitis B (anti-HBs). They also showed that laboratory clerical staff had a higher percentage of anti-HBs than administrative clerical staff. An unexpected finding was the absence of anti-HBs in the Haemodialysis Unit, although none had a history of hepatitis.

In 1980 Cleary and Milligan[4] published Dunedin results on anti-HBs found in laboratory staff. Donors were also tested as a comparison. 4.6% of laboratory staff were anti-HBs positive and 0.53% of donors were positive.

In 1983 Austin and MacGuire[3] published results showing that 14% of the New Zealand population had anti-HBs. However this figure varied according to the area i.e. 25% in Northland being the highest and 5% in Southland the lowest, with Dunedin Hospital inpatients at 8%. World studies carried out between 1972 and 1974 showed different populations ranged from 7% to 37% positive for anti-HBs.

A study by Anderson and Woodfield[2] in 1982, tested laboratory staff on three occasions over nine months and found that 20% were positive for anti-HBs.

It would appear from these studies that laboratory staff are more "at risk" than other hospital staff for being exposed to Hepatitis B and therefore may have a higher incidence of anti-HBs.

Our aim is to update Dunedin figures and compare them to the aforementioned studies.

Methods and Materials

Serum samples from hospital inpatients, outpatients and staff were tested for a period of 12 months and random city blood donors for three months. Staff accident data (mainly needle-stick injuries) were collected from the last four year period. A commercial Radioimmunoassay (RIA) kit (Abbott-Ausab) was used for testing by means of a shortened RIA screening method. Any positives were confirmed by the technique described in the manufacturers instructions (see below). All staff and patients were tested by this standard technique.

The system uses a "sandwich principle", a solid phase radioimmunoassay technique, to measure anti-HBs levels in serum or plasma. Plastic beads coated with human Hepatitis B surface Angtigen (HBsAg) are supplied in the kit. The patient's specimen is added and, during incubation any antibody which is present is fixed to the solid phase antigen. When antigen tagged with ^{125}I is added it binds to the antibody on the bead causing a radioactive antigen-antibody-antigen "sandwich". The radio activity on the beads is counted in a gamma scintillation counter. Specimens giving counts per minute (CPM) equal to or greater than the cut off value determined by multiplying the negative control mean count rate ($NC\bar{x}$) by a factor specified by the manufacturer are considered reactive for HBsAb.

Hospital Staff Occupational and Social Categories of Individuals Studied:

Blood Bank staff included technical staff, donor attendants and associated clerical staff. General staff: other hospital laboratories, nursing, medical, para-medical and haemodialysis staff. Hospital patients: inpatients and outpatients from Dunedin Hospital and referral samples from a local private pathology laboratory. Clinical accidents: staff and patients involved in needlestick/scalpel injuries. Random city donors: all donations collected in the city area.

Table 1.
Populations tested for Hepatitis B_s Antibody

CATEGORY TESTED FOR Anti-HBs	NUMBER TESTED	NUMBER POSITIVE	PER CENT POSITIVE	TEST PERIOD OF DATA COLLECTION
General Hospital Staff (Total)	376	37	9.8	1 year
Blood Bank Staff	44	2	4.5	1 year
General Hospital Staff tested after Clinical Accidents	198	20	10.1	4 years
Hospital Patients (Total)	2,305	300	13.0	1 year
Hospital Patients tested after Clinical Accidents	250	20	8.0	4 years
City Donors	2,075	77 (38 new)	3.7 (1.8)	3 months

Table 2.
Staff tested for Hepatitis Antibody in 1980

YEARS LAB WORK	LESS THAN FIVE YEARS		MORE THAN FIVE YEARS		
	NUMBER TESTED	ANTI HBs POSITIVE	NUMBER TESTED	ANTI HBs POSITIVE	TOTAL PER CENT POSITIVE
Laboratory and Blood Bank Staff	24	1	21	2	6.6
Donor Staff	4	0	12	0	0
Clerical Staff	3	0	—	—	0
TOTAL	31	1	33	2	4.6

Results

The data collected on all staff, patient and blood donor groups are shown in Table 1 and illustrate a relative disparity between the frequency of anti-HBs in blood donors and other groups in this district. A further analysis of the results for laboratory and blood donors staff is shown in Table 3. In these groups the frequency of anti-HBs appears low and although statistical analysis of the small number of cases of anti-HBs is not appropriate it is noted that anti-HBs was only present in staff employed for more than five years. In the case of staff working in the Haemodialysis Unit, no individuals with anti-HBs were found.

The results show no substantial change when compared with the study performed in 1980 and illustrated in Table 2. The former study also emphasized a relatively low frequency of individuals with anti-HBs which is commensurate with that found in local blood donors.

Prior to the present study blood donors had been tested for anti-HBs whenever a history of hepatitis could be elicited. This had identified only 39 of the 77 individuals identified in the prospective three month study who were found to have anti-HBs.

Table 3
Staff tested for Hepatitis Antibody in 1984

YEARS LAB WORK	LESS THAN FIVE YEARS		MORE THAN FIVE YEARS		
	NUMBER TESTED	ANTI HBs POSITIVE	NUMBER TESTED	ANTI HBs POSITIVE	TOTAL PER CENT POSITIVE
Blood Bank Staff	9	0	17	1	3.8
Donor Staff	12	0	6	1	5.5
TOTAL	21	0	23	2	4.5

Discussion and Conclusion

The investigations performed are consistent with similar studies done by others and have verified the lack of evidence of hepatitis antibody in haemodialysis staff as published by Leers et al.

Since no apparent difference between the 1980 Dunedin staff results and this present study was noted, it could be suggested therefore that laboratory and hospital staff are now well aware of the risks of contracting Hepatitis B and that procedures for handling blood and blood products and patient specimens do not appear to be inadequate. The fact that none of our staff who have been here for less than five years have a history or serological evidence for this point. During the past eight years provision for the monitoring of clinical accidents i.e. needlestick injuries, scalpel blade cuts; has been introduced in Dunedin Hospital for nursing staff and more recently in the past five years extended to all staff.

The frequency of hospital patients positive for HBsAb has risen slightly since 1979/1980 (was 8%). This could be partly due to the fact that laboratory techniques for the detection of Hepatitis antigen and antibody are more sensitive (manufacturer's claim — evidence not sighted). However during the period of investigation an increased number of Kampuchean refugees were screened and as many of this group were positive for anti-HBs this is the probable reason for the change.

Review of blood donors who had anti-HBs in their blood showed 50% to have no clinical history of hepatitis thus reinforcing the inapparent and subclinical nature of many cases of Hepatitis B. The frequency of anti-HBs in the city donor population is likely to reflect a selected population group which has a reduced frequency of social and ethnic groups where Hepatitis B is more common. It could be argued on the other hand that the hospital patient group may be a population which is more likely to reflect the overall expression of past episodes of Hepatitis B in the population. Since the frequency of anti-HBs in the general hospital staff (although not in the Blood Bank staff) approximates that of hospital patients there may be a small element of risk for acquiring Hepatitis B in some sections of the hospital workforce. Further prospective studies designed to assess the changes in frequency of anti-HBs among health care workers over several years are needed to assess and qualify this suggestion.

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TECHNICAL COMMUNICATION

Polyvinylpyrrolidone as a Substitute for Bovine Serum Albumin in Microplate Work

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Abstract

Polyvinylpyrrolidone can be used to replace bovine serum albumin as a blocking reagent in preventing non specific protein adsorption to polyvinyl chloride and polystyrene micro trays.

Introduction

Polyvinylpyrrolidone (PVP) is a synthetic polymer of vinylpyrrolidone. It was used as a volume expander in World War II but has the major disadvantage of being non degradable in vivo. It has no clinical advantages over dextran or gelatin and its use for this purpose has been mainly discontinued. PVP has been used for enhancing agglutination and preventing adherence of agglutinates to plastic[1].

In the Auckland Blood Transfusion Centre, radioimmunoassay (RIA) and enzyme immunoassay (EIA) modified commercial kit methods have been used in the Infectious Serology Laboratory[2]. These methods utilized bovine serum albumin (BSA) solutions to block the non specific adsorption of proteins to the micro trays. We have now found that 0.1% PVP is suitable for this purpose and can be used as a replacement for BSA in these methods.

Preparation of PVP for Overcoating Micro Trays

PVP (Polyvinylpyrrolidone 350 pract, Serva, from Scientific Supplies, PO Box 14-454, Auckland) was prepared in the buffer in which the antigen or antibody was to be adsorbed onto the micro tray. A 1% w/v stock solution was prepared fortnightly and stored at 4°C. From the stock solution a working solution of 0.1% w/v was prepared each morning. Trays onto which either antigen or antibody had been adsorbed were then soaked in PVP buffer for 30 minutes at room temperature, and washed twice in saline or saline/tween before the test sera was added.

Discussion

PVP has been used in the Infectious Serology Laboratory as a replacement for BSA for 10 months. Using PVP there has been no loss in sensitivity or specificity and no disadvantages have been noticed.

PVP has several advantages over albumin. It costs less and therefore need not be recollected. One litre of 0.1% PVP costs approximately $0.14 as compared with 0.5% BSA at $10/L. PVP is chemically pure, less subject to batch variation and is also bacteriostatic.

We recommend PVP as an effective and economical blocking reagent suitable for selected RIA and EIA methods.

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CONTINUING EDUCATION

Lipoproteins

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Introduction

Lipoproteins have traditionally been separated by ultracentrifugation into four major classes, chylomicrons, very low density lipoproteins (VLDL), low density lipoproteins (LDL) and high density lipoproteins (HDL). Other lipoproteins have also been identified, e.g. very high density lipoproteins (VHDL), lipoprotein (a) and lipoprotein X, but these are not of major importance in the overall scheme of lipoprotein metabolism and will not be considered further. A similar, though not identical, separation can be achieved by electrophoresis followed by staining for lipid. The lipoproteins are composite particles composed of a mixture of triglyceride, cholesterol, cholesteryl esters, phospholipids and proteins. The relative proportions of each component, though somewhat variable, are characteristic of each lipoprotein class. The classes themselves are not necessarily homogeneous and may contain two or more subclasses. A discussion of their physical properties and structure can be found in most clinical chemisty texts[1].

The aim of measuring lipids in blood is to determine the presence of abnormal concentrations of these lipoproteins and if possible, to classify the abnormalities present and thus indicate a rational treatment regime. In the laboratory, it is normal to measure total cholesterol and triglyceride and while this will usually indicate the presence of an abnormality, it does not always clearly define the lipoprotein classes affected. This is due to the distribution of cholesterol and triglyceride between all lipoprotein classes. In order to determine the lipoprotein class affected, additional information is necessary. This has classically been obtained by lipoprotein electrophoresis, but unless a laboratory performs this frequently and with considerable expertise, it is easy to make a misclassification. More recently, it has been recommended that by examining the plasma for chylomicrons, measuring the total cholesterol and triglyceride and the cholesterol content of the HDL (HDLC) together with a knowledge of the the proportion of cholesterol and triglyceride in each class, a good assessment of lipoprotein abnormalities can be made. Once the abnormal pattern is established then further tests can be carried out to elucidate the mechanism of the abnormality present in a particular patient.

Normal Metabolism

In order to interpret alterations in lipoprotein metabolism, it is necessary to have an understanding of normal lipoprotein pathways. Although the basic patterns of lipoprotein metabolism are reasonably well established, the details are not yet completely understood. Postulated mechanisms are therefore only provisional and subject to modification as further information becomes available. A schematic overview of lipoprotein metabolism is shown in Fig. 1. In man two major pathways have been elucidated and can be considered separately. One concerns the fate of dietary or exogenous lipids and the other the production and utilization of lipids by the body.

Dietary or exogenous triglyceride is hydrolysed in the intestine to free fatty acids and monoglyceride. Following absorption, triglycerides are resynthesised and together with cholesteryl esters, phospholipid and apolipoprotein (mainly ApoB-48) are released into the lymphatics as chylomicrons. These are large particles (800A) with a density less than 1.006. The triglyceride of these chylomicrons undergoes hydrolysis by tissue lipoprotein lipase. The free fatty acids are released to the adipose tissue for storage, or muscle for oxidation to supply energy. The remaining chylomicron remnants are taken up by the liver by a specific receptor system. This receptor system does not contribute to the VLDL/LDL system below.

The endogenous pathway begins by the synthesis of VLDL by the liver. The VLDL are relatively large (300-750A) with a density less than 1.006. They are rich in triglyceride (50%) but contain about 20% of both cholesterol and phospholipid. The major apolipoprotein is ApoB-100 with some ApoE and the ApoC proteins. When the VLDL reaches adipose or muscle tissue its triglyceride is extracted by lipoprotein lipase, in a similar way to that of the chylomicron, resulting in a particle reduced in size and enriched in cholesteryl esters, but retaining the ApoB-100 and ApoE proteins. This particle is called intermediate density lipoprotein (IDL). It is not normally found in significant quantities in plasma because it is removed rapidly (half life of about 4 hours) by specific receptors (the ApoB/ApoE receptors) in the liver. Some of these IDL particles lose their ApoE and are converted to LDL, containing ApoB-100 as their sole apoprotein. The liver ApoB/ApoE receptors do not recognise these particles and thus they have a much longer half life than the IDL and are readily identified in the plasma. They carry the majority of the cholesterol in the plasma. The LDL are removed by two mechanisms, one a concentration dependent diffusion into cells in which the amount of cholesterol entering the cells is solely dependent on its concentration in the plasma. This process cannot be regulated by the cell and is responsible for about 30% of the cholesterol entering normal cells. The second process is via the LDL receptors first described by Goldstein and Brown[2]. This process is under a feedback control where the number of receptors is controlled by intracellular cholesterol levels. It is this receptor mediated process that is deficient in familial hypercholesterolaemia.

The biosynthesis and catabolism of HDL is complex and not well understood. This is due to the occurrence of different HDL's within the HDL class. These subclasses have different apolipoprotein and lipid composition. It is probable that several interrelated species exist with corresponding metabolic processes.

Some HDL's arise by de novo synthesis of precursor or nascent HDL by the liver or intestine. Others are derived from excess protein and lipid from the surface layer of the VLDL particles as they are metabolised and shrink in size. These nascent HDL's are discoidal in shape consisting of a lipid bilayer with hydrophilic groups on the outside. These are converted to spherical particles by the action of the enzyme lecithin cholesterol acyl transferase or LCAT. Free cholesterol in the lipid bilayer is esterified, the fatty acid being derived from Lecithin. The cholesteryl esters then migrate to the centre of the particle and the surface cholesterol is replaced from the cholesterol pool. In this way, these particles are able to take up excess cholesterol and transport it to the liver where the HDL particle is removed. The precise details of this reverse cholesterol transport or centripetal mechanism are unknown, but are under active investigation[3].

The various subclasses of HDL are distinguished on the basis of their relative densities, HDL_{2b} (1.063-1.10), HDL_{2a} (1.10-1.125), and HDL_3 (1.125-1.21) or alternatively two groups of HDL can be recognised one with and the other without apoprotein E. Recent evidence suggests that ApoE is required for recognition of HDL by cell surface receptors.

The Apolipoproteins

The protein constituents of the lipoproteins are known as apolipoproteins. Some of these have been referred to in the previous discussion. Ten major human plasma apolipoproteins have been identified and characterised (Table I). These protein molecules are found in the surface layer of the lipoprotein particle with their hydrophobic groups interacting with the fatty acid residues of the triglycerides and phospholipids.

The specific function of some of these proteins has been elucidated (Table I). Some disorders of lipoprotein metabolism have been shown to be due to defects in the production of a specific apolipoprotein, e.g. Apo CII (an activator of lipoprotein

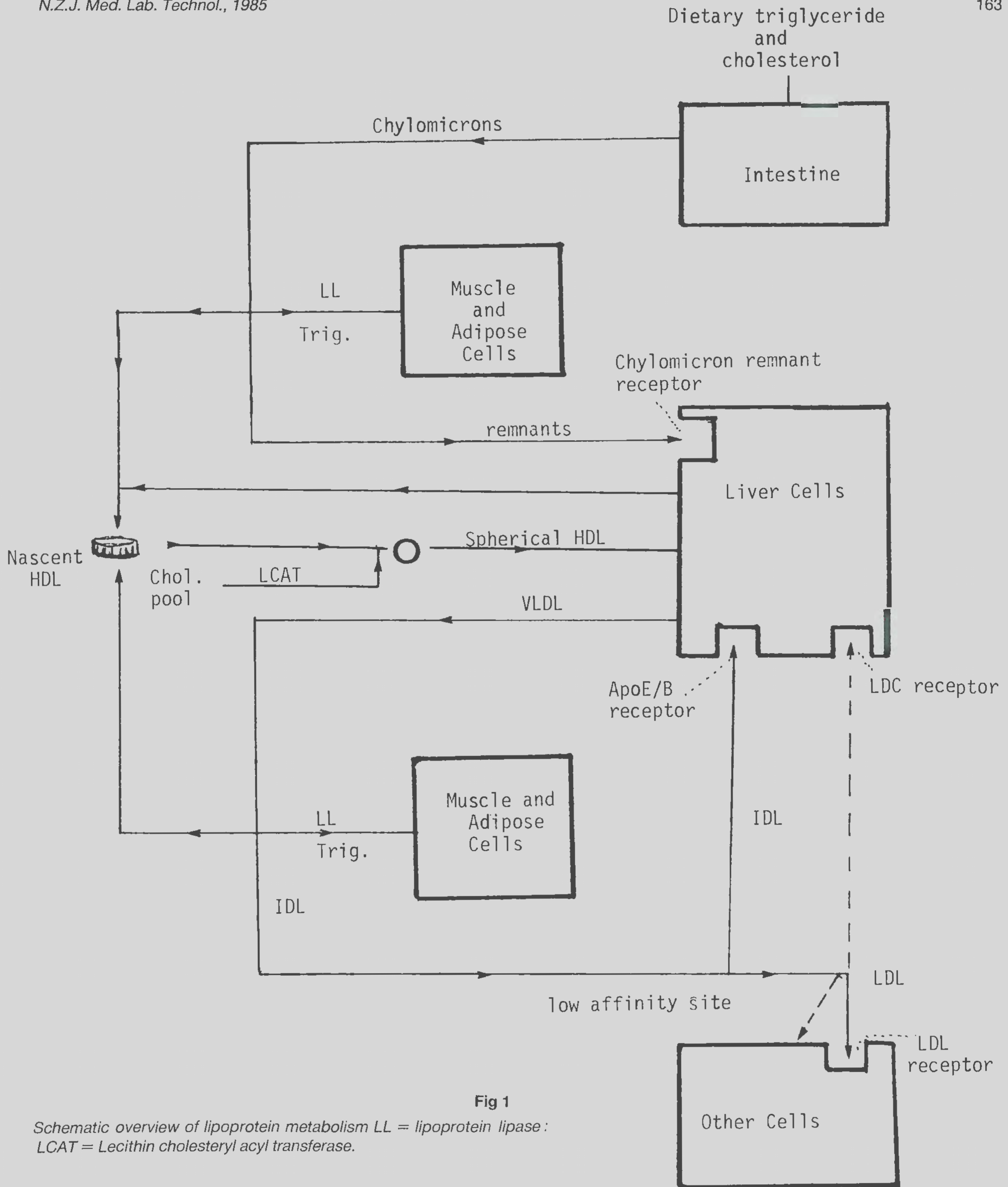

Fig 1

Schematic overview of lipoprotein metabolism LL = lipoprotein lipase: LCAT = Lecithin cholesteryl acyl transferase.

lipase) deficiency results in exogenous hyperlipidaemia.

Reference Ranges

Determination of a valid reference range for lipids is a difficult problem. Traditional population studies give invalid results as a considerable number in most populations, either have or will develop lipid related diseases. For example, a typical population will have a 97.5th percentile between 8 & 9 mmol/L of cholesterol. This is obviously too high as many individuals with cholesterol values in the range 7-9mmol/L will have disease related to cholesterol. Instead the upper reference limit has been artibrarily assigned. This is better described as an ideal value. The magnitude of this value has steadily decreased from about 7.0mmol/L to a recent recommendation of the Australian Lipid Standarization Committee of 5.5mmol/L. Increasing values are found wth increasing age.

The reference ranges used by the Green Lane Lipid Reference Laboratory for fasting patients are cholesterol 2.0-6.0mmol/L, triglycerides 0.00-2.00mmol/L, HDL cholesterol > 1.18mmol/L, LDL cholesterol 2.0-4.8mmol/L and the LDL-C/HDL-C ratio > 3.5.

Abnormal Lipoprotein Metabolism

Abnormalities of lipoprotein metabolism may be due to primary disease, but are often secondary to another disease process. These two groups must be distinguished as treatment of secondary hyperlipidaemia by diet or lipid-lowering drugs is illogical and unlikely to be successful. Very often treatment of the

Table I

Major apolipoproteins, their occurrence and function.

Apolipoprotein	*Density Class*	*Mol.Wt.*	*Function*
A-I	HDL, chylomicrons	28,000	Cofactor for LCAT
A-II	HDL, chylomicrons	17,000	Cofactor for hepatic lipoprotein lipase
A-IV	chylomicrons	45,000	Unknown
B-48	chylomicrons	210,000	Structural protein
B-100	VLDL, IDL, LDL	250,000	Structural protein recognised by LDL receptors
C I	VLDL, HDL	6,500	Unknown
C II	VLDL, HDL	10,000	Cofactor lipoprotein lipase
C III	VLDL, HDL	10,000	Inhibitor lipoprotein lipase
D	HDL	20,000	Unknown
E	VLDL, IDL, HDL	35,000	Recognised by liver receptors

underlying metabolic problem will normalize the serum lipids. Due to the frequency of the occurrence of the primary hyperlipidaemias occasionally primary hyperlipidaemia may co-exist with another disease.

In the primary hyperlipidaemias, the metabolic problem should be identified if possible as this will ultimately lead to better diagnosis and a more rational treatment. A good example of this is discussed in the paper by Goldstein & Brown[2].

Diagnosis of hyperlipidaemia should comprise a measurement of total cholesterol and triglycerides and examination of the fasting plasma for chylomicrons. If the cholesterol is in the range 5.5-8.0mmol/L, the estimation of HDL-C is useful in order to distinguish between patients with a moderate increase in LDL and therefore increased risk of CHD and those with an increased HDL and normal LDL and therefore a reduced risk of CHD. In practice, it is simpler to include the HDLC assay as part of the lipid profile and to calculate the LDL cholesterol using the Friedwald formula LDLC = TC - HDL (0.46 x Trig.) on all specimens. A ratio, either the LDLC/HDLC or TC/HDL-C, can also be calculated. Elevated triglycerides indicate abnormal levels of chylomicrons and/or VLDL.

The hyperlipoproteinaemia can be classified initially as exogenous or endogenous, i.e. whether the defect is one of chylomicron metabolism or of the other lipoprotein class. If it is endogenous then either elevated levels of VLDL (endogenous hyperlipaemia), LDL (hypercholesterolaemia) or both (combined hyperlipaemia) are found. Mixed hyperlipaemia (both chylomicrons and VLDL elevated) is also observed. Pure exogenous hyperlipaemia is rare as is broad beta disease (increased levels of an abnormal IDL). This scheme is illustrated in Table 2.

Serum or plasma from patients with mixed or combined hyperlipidaemia should be submitted to lipoprotein electrophoresis to eliminate broad beta disease (Fredrickson Type III). More detailed investigation of the underlying metabolic defect should be referred to a lipid reference laboratory. Reduced levels of lipoproteins are also observed in at least three inherited conditions. (Characteristic of all the diseases is a reduced level of serum cholesterol).

1. Abetalipoproteinaemia in which chylomicrons, VLDL and LDL are all absent. This has been shown to be due to the defective synthesis of Apolipoprotein B.
2. In hypobetalipoproteinaemia, no lipoproteins are missing, but levels of LDL are very much reduced.
3. Hypoalphalipoproteinaemia or Tangiers disease is characterised by reduced levels or absence of HDL and the accumulation of cholesteryl esters in many tissues throughout the body. A raised triglyceride is often observed in this disorder.

Acknowledgement:

This paper is a distillation of discussions with many people and the reading of numerous publications. A complete list would be several times longer than the article. I would therefore like to thank all those who have contributed. A short list of books and journals is attached that have helpful discussions on the topics above the interested reader is referred to these.

Table II

The hyperlipidaemias — a classification.

Appearance	*Serum Lipids*	*Lipoprotein Class Affected*	*Classification*	*Known Primary Disorders*
Chylomicrons with clear infranatant	Trig ↑	Chylomicrons	Exogenous hyperlipaemia	Familial lipoprotein lipase deficiency CII deficiency.
Chylomicrons with turbid infranatant	Trig ↑ Chol N- ↑	Chylomicrons	Mixed hyperlipaemia	Severe familial hypertriglyceride. Lipoprotein lipase deficiency. CII deficiency.
Clear	Chol ↑ Trig N	LDL	hyper-cholesterolaemia	LDL receptor defect. Unclassified.
Clear to turbid	Trig ↑ Chol N	VLDL	Endogenous hyperlipaemia	Mild familial hypertriglyceride-aemia.
Clear to turbid	Trig ↑ Chol ↑	VLDL, LDL	Combined hyperlipaemia	Familial/multiple lipoprotein type. Unclassified.
Clear to turbid with creamy layer	Trig ↑ Chol ↑	IDL	Broad beta disease	Abnormal ApoE.

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Questions (Answers are to be found on page 181).

Classify the lipid disorders illustrated by the following sets of results. Where applicable, indicate further tests to confirm your classification.

1.	Cholesterol	9.8	mmol/L
	HDL-C	1.21	mmol/L
	Triglyceride	2.23	mmol/L
	Appearance clear		
2.	Cholesterol	16.6	
	HDL-C	0.96	
	Triglyceride	8.2	
	Appearance — turbid with a floating creamy layer.		
3.	Cholesterol	3.2	mmol/L
	HDL-C	0.10	mmol/L
	Triglyceride	3.5	mmol/L
	Appearance cloudy		
4.	Cholesterol	5.2	mmol/L
	HDL-C	0.52	mmol/L
	Triglyceride	5.2	mmol/L
	Appearance cloudy		

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Glaxo Microbiology Meeting

A one day meeting of medical and veterinary microbiologists held at the Sherwood Motor Inn, Palmerston North, 12th August, 1985, was sponsored by Glaxo New Zealand Limited. The programme included a lunch-time tour of the Glaxo pharmaceutical factory, an event which was obviously enjoyed by the participants. Thirteen original or review papers were presented in the course of a full day. The Chairman was Dr. S.D.R. Lang, Clinical Microbiologist, Middlemore Hospiral. Guest speakers from overseas were Professor D.T. Durack, Professor of Medicine and Microbiology, Duke University Medical Centre, Durham N.C. and Dr D. Cooper, Clinical Immunologist, St. Vincent's Hospital, N.S.W.

Professor Durack discussed empirical monotherapy versus combination antimicrobial therapy in the neutropenic patient. He emphasized the fallacy and futility of attempting to provide cover of every potential pathogen. His review of comparative studies showed that broad-spectrum monotherapy produces results comparable to those achieved by polypharmaceutical regimens. Broad spectrum antimicrobials, such as recent third generation cephalosporins, which are being investigated in this role at present, are very different from those antimicrobials used in the 1960's at which time the advantage of synergistic combinations was established. Various investigators have used different criteria for success and this adds to the difficulty of comparing published reports.

Dr Cooper presented first hand information on the clinical spectrum of AIDS virus infection with particular emphasis on the acute clinical illness associated with seroconversion. Most of these data have been published recently by Dr Cooper and his colleagues (Cooper *et al Lancet* March 9 1985 537-540) and a summary of his presentation is not reproduced here.

Dr's Jones and Bremner summarized selected proceedings of the 14th International Congress of Chemotherapy held in Kyoto, 23rd — 28th June 1985. Their papers together with original presentations form the Glaxo meeting are summarized below.

Report on the 14th International Congress of Chemotherapy, 23rd — 28th June, 1985 Update on Ceftazidime

Dr Mark R. Jones, Clinical Microbiologist, Wellington Hospital.

The International Congress of Chemotherapy is a bi-annual event generally regarded as the most prestigious meeting for doctors and scientists involved in the treatment of infectious diseases and to participate in a conference compacted into an intensive progamme designed to cover all that is new in chemotherapy. The venue for this Congress is considered with particular care and ancient European capitals are always popular choices: the richness of their history guaranteeing unlimited entertainment on occasions when minds are satiated with medical facts. The host city for the most recent Congress was Kyoto, the original capital of Japan for a millenium until the responsibility was wrested by Tokyo a century ago. Miraculously spared the ravages of the last war, Kyoto with its 2000 temples and shrines provided an idyllic setting for both the formal and social aspects of the Congress.

The scientific programme was held at the International Conference Hall, an incongruously modern edifice free from the patina of age and respectability which had so gracefully touched the remainder of historic Kyoto. The sudden influx of 7000 delegates instantly created a cosmopolitan society which over the course of the following 5 days was to be stimulated and enriched by the eloquence of the active participants and the generosity of our Japanese hosts.

A total of 1684 papers were devoted to aspects of microbiology, antimicrobial therapy and infectious diseases. Of these, 46 considered developments in the use of ceftazidime — a new third generation cephalosporin which has recently become available within New Zealand. This account summarises the salient features of the latest experience with this agent as presented at the 14th Congress of Chemotherapy.

Development of Ceftazidime

Ceftazidime is one of the newer cephalosporins resistant to degradation by a variety of B-lactamases. Originally discovered, developed and evaluated at Glaxo Laboratories in England it has since been used successfully in clinical practice throughout the world. As with other third generation cephalosporins, the spectrum of activity is directed predominantly against Gram-negative bacteria with retention of good activity against some Gram-positive organisms such as haemolytic streptococci. Ceftazidime possesses only modest activity against staphylococci but of particular importance is the extreme potency of this agent for *Pseudomonas* (MIC 90% of 4mg/L) such that it is the most active B-lactam antibiotic against *P. aeruginosa*.

Although promoted for use as monotherapy for infections caused by *Pseudomonas* and coliform organisms, and as an alternative to the potentially nephrotoxic aminoglycosides, the early clinical use was attended by considerable caution. Commonly, ceftazidime was given in combination with aminoglycosides and relatively few trials have emerged in which ceftazidime treatment alone has been evaluated. Experience with prophylactic use of the single agent is similarly lacking. Despite almost a decade of investigation, three questions relating to the use of ceftazidime remain largely unanswered:

1. Does secondary drug resistance readily emerge during monotherapy?
2. Does combination therapy significantly extend the spectrum of activity?
3. Is combination therapy clinically superior to monotherapy?

Ceftazidime at Kyoto

The 46 presentations which featured ceftazidime covered a variety of clinical and technical matters. (Table 1)

Table 1

Topic	*No. of papers*
Use in immunocompromised hosts	10
Medical and surgical uses	10
Laboratory aspects	9
Pharmacokinetic studies	7
Paediatric and neonatal uses	5
Respiratory tract infections	5
Total	46

It was notable that only one-third of the papers originated from Japan and the UK, the two countries which dominated the early contributions to research and experience with this agent. Equally notable was the small contribution of 8 papers submitted form centres in the USA; presumably a reflection of the very recent availability of ceftazidime for clinical use in that country.

The presentations involving laboratory and technical procedures, the pharmacokinetic studies and the efficacy of ceftazidime in general medical and surgical situations provided very little information which was absolutely new. The findings consolidated but did not significantly advance the knowledge available from earlier literature. Of some interest, however, were two reports from Milan which commented on the combination of ceftazidime and tobramycin. Padoan *et al* found that the addition of tobramycin to ceftazidime in the therapy of *Pseudomonas* infection in patients with cystic fibrosis did not enhance the clinical efficacy of ceftazidime alone. Visconti *et al* presented data on the treatment of experimentally-induced pyelonephritis in rats and demonstrated that synergy between ceftazidime and tobramycin against the infecting organism was not achieved. Both groups of workers concluded that the combination of ceftazidime with tobramycin is unnecessary and that monotherapy is acceptable and effective.

Use in Immuno-compromised Hosts

The treatment of infection in patients with leukaemia, cancers

and other diseases which compromise the immune status has provoked intensive discussion over many years. There is still great indecision concerning the choice of agents for both treatment and prophylaxis and whether or not combinations of antibiotics are more efficacious than single agents. The papers presented at the Congress provided some evidence which permits a more rational approach to the use of ceftazidime in the setting of immune-compromise.

Pisso *et al* from Bethesda, USA, provided data on their management of febrile granulocytopaenic cancer patients. Over 400 episodes of infection were randomly allocated to one of two treatment regimens: either ceftazidime alone or a combination of cephalothin + gentamicin + carbenicillin. The results showed no significant difference in clinical outcome or in the development of breakthrough infections with resistant organisms.

Williams *et al* from the University of Virginia, USA, discussed their experience with the treatment of 26 febrile immune-suppressed patients. These workers compared the effects of treatment using ceftazidime + amikacin followed by the use of ceftazidime alone with those of a second group treated with a combination of amikacin + azolicillin ± vancomycin. From their results it was concluded that the use of ceftazidime plus amikacin for 72 hours followed by therapy with ceftazidime alone was comparable in efficacy to amikacin + azlocillin but had significantly fewer toxic side effects.

The value of amikacin in addition to ceftazidime was further reported by Klastersky in trials at Brussels. In 380 evaluable granulocytopaenic patients there was no statistically significant difference in the efficacy of a short versus a prolonged course of amikacin when combined with ceftazidime.

In only one presentation was the emergence of ceftazidime resistance stated to be a problem. Twenty-six cancer patients in New York (Quesasa *et al*) developed infections which were treated with this agent alone. In 8 of these (30%) the treatment failed and in 4 cases the infecting organisms (*Pseudomonas* and coliforms) were resistant to ceftazidime.

A significant finding which emerged during a trial conducted by Glaxo Research Laboratories drew attention to the potential benefit of the combination of cephalothin with ceftazidime in treating infections during episodes of neutropaenia. In a randomized trial of 120 patients, de Pauw *et al* found that therapeutic failures with ceftazidime alone amounted to 19% whereas with the combined therapy the failure rate was reduced to 8%. The difference in outcome was related to the appearance of superinfecting Gram-positive organisms — (*Staphylococcus epidermidis, Steptococcus faecalis* and *Streptococcus sanguis*) in those treated with ceftazidime alone.

Use in Neonatal Infections.

The pharmacokinetics of ceftazidime in neonates has been well described and dosing for these patients requires modification in view of the prolonged half life of this agent. As is the case in other clinical situations the efficacy of ceftazidime monotherapy has not been adequately evaluated and the results presented at the Congress are insufficient to resolve this dilemma. Thus Gooch (Utah) and de Louvois (U.K.) both support the use of ceftazidime alone for treating a variety of neonatal and paediatric infections, but others state that superinfection precludes its use alone. Finally, Lippens *et al* from the Netherlands commented that in order to prevent the emergence of resistant organisms, ceftazidime is best combined with an antistaphylococcal or antifungal agent in paediatric prescribing.

Conclusions

Three questions were posed earlier in this report and these can now be answered to a limited extent based on the experience and views of the participants at the Congress.

1. Secondary drug resistance does not emerge commonly during monotherapy with ceftazidime. Superinfection, when it occurs, is likely to be caused by organisms which have high-level primary resistance or moderately high ceftazidime MICs.
2. Combination therapy with agents primarily active against Gram-negative organisms does not valuably extend the spectrum of *in-vitro* antibacterial activity. Synergy between ceftazidime and aminoglycosides is uncommon.
3. Combination chemotherapy is not obviously superior to ceftazidime monotherapy, especially with regard to the treatment of infection in compromised hosts. Recommendations for the choice of a second agent in situations where combination therapy is deemed desirable favour the additional agent as being one which is directed against Gram-positive cocci. Anti-staphylococcal antibiotics would therefore, appear to me more appropriate than aminoglycosides.

In no instance was the use of ceftazidime associated with the development of toxic or other side effects. The general conclusion was that this agent is a safe and effective antibiotic which can be especially recommended for the treatment of infections likely to be caused by *Pseudomonas* or coliform organisms.

The Serum Bactericidal Assay
Summary of a workshop held at the 14th International Congress of Chemotherapy

Dr D.A. Bremner, Clinical Microbiologist, Auckland Hospital.

This workshop discussed both the technical and clinical aspects of this test.

The technical problems associated with the test are not due to any inherent difficulty but rather to the lack of a standardised method. This lack also limits assessment of the clinical correlation.

The papers related to the technical performance of the test discussed the effects of variables on the results and concluded that the most reliable method is that described by Reller and Stratton[1].

The clinical aspects discussed included the value of the test in bacterial endocarditis and neutropenia. In bacterial endocarditis the value of the test as a prediction of cure has been hampered by the lack of a standardised method. Early studies showed that a titre of ≥ 1:8 correlated with cure but these studies have been criticised because of lack of uniformity in performance of the test and in definition of clinical cure. A recently published well controlled study[2] has shown that peak titres of 1:64 or more and trough titres of 1:32 or more predicted bacteriological cure in all cases.

However the serum bacteriological titre was a poor predictor of bacteriological and clinical failure. In this study only in endocarditis caused by *Staphylococcus aureus* was it possible to show a statistically significant correlation between bacteriological cure and peak serum bactericidal titre (titre 1:32 or greater). All the patients with streptococcal endocarditis were cured and the peak titres ranged from 1:8 to 1:2046. In prosthetic valve endocarditis, the 14 patients cured all had titres predictive of cure and the one failure had titres not predictive of cure.

The conclusions were that although a peak serum bactericidal titre of 1:64 or more was predictive of cure of endocarditis, more work needs to be done specifically related to each aetiological agent.

Studies in neutropenic patients with gram negative bacteraemia showed that a peak titre of 1:16 or more and trough of 1:8 or more correlated significantly with a favourable clinical outcome and that the test was a useful and simple method to monitor antibiotic treatment in these patients.

The workshop concluded with three papers discussing the value of this test in volunteer studies. In these studies volunteers were given antibiotics either singly or in combination and their serum was tested against a battery of bacteraemic isolates. Results showed that the serum bactericidal titre could be useful in predicting the efficacy of either single or combination antibiotic treatment.

The major conclusions of this workshop were that there is need

for a standardised method for the serum bactericidal titre and more work needs to be done on the value of this test as a predictor of bacteriological cure in endocarditis caused by specific bacteria.

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Prevention of Needle Prick Accidents

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There are a large number of infectious agents that can be transmitted via blood. The most important include hepatitis B, delta hepatitis, non A non B hepatitis viruses, LAV/HTLV-III and cytomegalovirus, *T. pallidum* and malarial parasites. Hepatitis B appears to be the most common and is the best documented. Health care workers are at significant risk of acquiring hepatitis B from patients by inoculation of blood. A 20 month survey of needle prick accidents at Auckland Hospital uncovered 1091 reported needle accidents involving patients' blood. There were 68 (6.2%) accidents involving HB_sAg positive blood. 17 clinical cases of hepatitis B resulted from these needle accidents (17/1091 (1.56%)). This represents a 25% risk of acquiring clinically apparent hepatitis B if HB_sAg positive blood is involved.

In the wake of the AIDS epidemic, the US Centers for Disease Control made recommendations that needles should *not* be recapped after use, because it has been shown that 80% of needle accidents occur whilst recapping the needle.

We have developed a "Needle Guard" to prevent accidents whilst recapping the needle, which ensures safe disposal of covered contaminated needles. The "Needle Guard" was introduced to a large private pathology laboratory which has 40 venepuncturists who carry out 1000-1100 venepunctures per day. Within 3 months of its introduction "Needle Guard" reduced the monthly number of needle prick accidents from a mean of 6.3 (range 3-11) to 1. It has remained 1 for the last 3 months. This represents an 84.2% reduction in needle prick injuries.

A variety of recommendations and devices have over the years been instituted but none, until "Needle Guard" was introduced, has had any discernible effect on the rate of needle prick accidents.

Campylobacter Pyloridis: Its History, Characteristics and Clinical Relevance

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The history of this newest member of the *Campylobacter* genus began in 1983 when Dr J. Warren, a pathologist in Western Australia, reported on the association between small curved and S-shaped bacteria and the presence of gastritis in gastric biopsy specimens[1]. These bacteria were almost always present in acute and chronic gastritis but were absent in normal biopsies. The bacteria were intimately related to the gastric mucosal surface, being located beneath the protective mucus layer of the stomach. In an accompanying letter Marshall described the characteristic features of these organisms[2]. Since then Marshall *et al* have reported more fully on the features of what now can be called *Campylobacter pyloridis* gastritis[3-5]. Many others have confirmed the association between *C. pyloridis* infection and histological evidence of gastritis and peptic ulcer disease[6-15]. Immunofluorescent techniques have shown that the bacteria observed in biopsy specimens are antigenically identical to *C. pyloridis*[16].

At present the official name of the organism described by Warren and Marshall is *Campylobacter pyloridis*[5]. The similarities *C. pyloridis* has with other *Campylobacter* are shown in Table I. Their size, morphology, gram negativity, oxidase and catalase positivity, motility, need for microaerophilic conditions, respiratory type of metabolism and guanine-cytosine content suit their placement in the genus.

However this placement should be regarded as tentative because of the growing list of differences between *C. pyloridis* and other *Campylobacter* species. These differences are summarized in Table II. *Campylobacter* possess a single unsheathed polar flagellum with straight tips at one or both ends of the cell[17]. In contrast *C. pyloridis* has up to five sheathed flagella

Table I

Similarities between C. pyloridis & other Campylobacter species

1. Size: 0.5 μm diameter, 3-5 μm length.
2. Morphology: curved, S-shaped bacilli.
3. Gram negative.
4. Oxidase positive.
5. Catalase positive.
6. Motility.
7. Non spore forming.
8. Requirement for microaerophilic conditions.
9. Respiratory type of metabolism.
10. Guanine-cytosine content (*C. pyloridis* = 26mol%, *C. jejuni* = 31%)

Table II

Key Features Differentiated C. Pyloridis & C. Jejuni

CHARACTERISTIC	C. PYLORIDIS	C. JEJUNI
Source of infection	unknown	zoonosis
Clinical illness	acute gastritis "epidemic achlorhydria"	enteritis septicaemia
Isolated from	human gastric mucosa	faeces, blood
Cell wall	smooth	rugose
FLAGELLA		
number	1—5	1
type	sheathed	unsheathed
ends	bulbous	straight
attachment	—	pit-like depression
COMPOSITION		
protein electrophoresis	distinct major protein patterns	
gas liquid chromatography major fatty acids	14:0 19:0△	16:1 18:1
methylated menaquinone-6	−	+
PHYSIOLOGY		
growth 42°C	+/−	+
Nitrate reduction	−	+
Alkaline phosphatase	+	−
Naladixic acid	R	S
Cephalothin	S	R
Growth 1% glycine	−	+
Growth Preston's broth	−	+
Urease	+	−

Table 2 summarises the cultural and fluorescent findings of 36 swabs taken from 12 porcine tonsils (all 12 pigs were from the same herd). In this table a 100% infectivity was assumed. This is based on experimental work that showed *S. suis* type 2 could be transmitted to healthy pigs after five days of contact with carriers and that pigs can remain carriers for over 500 days (Clifton-Hadley, 1984).

Table 2

Comparison of Cultural and Immunofluorescent Tests on Twelve Tonsils Sectioned Three Times (n = 36)

Technique	Positive from 3 swabs				Total No. of Positive Tonsils	Total No. of Positive Swabs	Sensitivity
	3/3	2/3	1/3	0/3			
Culture	0	3	4	5	7	10	27
Swab Immuno-fluorescence	6	4	1	1	11	27	75
Primary Culture Immuno-fluorescence	10	1	1	0	12	33	92

It should be noted that the sensitivity for detecting *S. suis* by direct culture was only 27%, while an I.F.A.T. of tonsillar swabs increased the sensitivity to 75%. However, an I.F.A.T. on the mixed growth from a tonsillar swab on blood agar incubated for 18 hours, gave a sensitivity of 92%.

Discussion

Pavlova, *et al* (1972) and Pugsley and Evison (1974) recorded false positives with *Staphylococcus aureus* and their group D antisera which was removed after treatment of smears with 0.1% trypsin. This did not occur with group R antisera when no false positives were detected with the bacteria tested. The technique of fixing in acetone prior to staining may act in the same way as trypsin, disrupting the cells to allow adherence of the antiserum to the specific binding site.

A serious disadvantage of the traditional cultural technique is the difficulty in detecting colonies of *S. suis* type 2 due to the heavy growth of other bacteria present in the tonsil. In this experiment it was found that swabs taken from areas of heavy bacterial growth frequently produced positive fluorescence on the I.F.A.T. whilst not producing cultural isolates. The bacteria that were producing the overgrowth were not apparently interfering with the I.F.A.T. Moody, *et al* (1963) similarly increased the sensitivity of their test by incubating swabs in broth for 2 hours prior to performing an immunofluorescent test on the broth sediment. *S. suis* type 2 are frequently found in small numbers in the tonsil (Arends *et al*, 1984). Incubation for 18 hours on blood agar apparently allows the multiplication of the organism to a more readily detectable level.

Sectioning tonsils three times increased the number of positive tonsils detected. However this is not a feasible procedure in the live animal. The higher initial sensitivity of the I.F.A.T. allows for more accurate identification of *S. suis* type 2 carrier pigs.

The specificity of the I.F.A.T. appears high as on a previous experiment no cultural isolates were detected from 15 tonsillar swabs, all of which were also negative on the I.F.A.T. ($P<0.05$ if cultural sensitivity of 27% is assumed). Further work on the sensitivity and specificity of the tests are being performed.

Identification of *S. suis* type 2 colonies takes at least three days when using cultural, biochemical and precipitin tests, whilst a positive diagnosis can be achieved within three hours with the use of immunofluorescence.

The advantages of I.F.A.T. allow a rapid accurate diagnosis to be made by the pathologist and provide a valuable tool for investigating the epidemiology of the disease.

Acknowledgements

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Sore Throats M Types and Post Streptococcal Sequelae, Auckland 1982 — 1985

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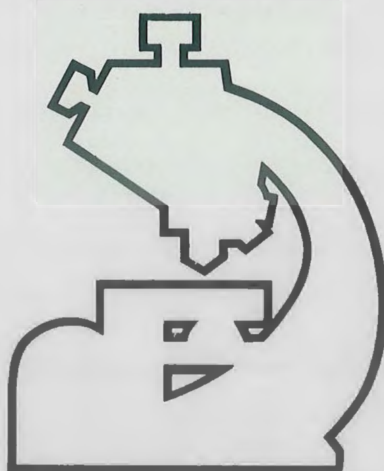
Rheumatic fever remains a problem in the 1980's in New Zealand, particularly in the North Island. Prospective data collection in Auckland for 1982 and 1983 reveal an incidence in 0-14 year old Maori children in South Auckland of 150 cases per 100,000 (mean 78 cases per 100,000 for all Auckland). Pacific Island children have a peak incidence of 43 per 100,000 in the Central Health District (mean 34). The mean for Europeans in Auckland is 2.8 cases per 100,000 with a peak of 7 cases per 100,000 in South Auckland. Sri Lanka has rates of 150 per 100,000 and Sweden 1.3 per 100,000 in similar populations. Other workers have reviewed the factors influencing the decline of rheumatic fever including better living conditions, greater access to health care, secondary prevention and primary prevention. In our retrospective survey of 396 cases of rheumatic fever prior to 1981, 46% had a history of sore throats. Over 12 months 1981 — 1982, 32 families were surveyed about their approach to the sore throat. Fifty per cent said they often took their children to the doctor for such, 35% sometimes did and 15% never did. Consequently it was felt necessary to survey the approach of general practitioners in the Auckland area for their management of streptococcal sore throats in children less than 15 years by mailed questionnaire (response rate 64%). Of the 166 who replied, 13% relied on clinical judgment and never took throat cultures; 96% felt that culture availability was satisfactory; 19% found the weekend service needed improvement and a small number raised the problem of cost of culturing, transport problems to the laboratory and modifying treatment on the culture result. Fifty-four per cent of Auckland general practitioners offered inadequate treatment (i.e. treatment unlikely to eradicate *Streptococcus pyogenes* from the throat); only 28% used recommended treatment. Ninety-two per cent were uninfluenced by the Health Department's requirement for "certified extended supply" on prescriptions for more than four days. Most practitioners in Auckland had seen a case of rheumatic fever in their practice in the recent past. The exceptions are usually recent graduates.

In summary : re throat swabs

1. Swabbing throats is not an obstacle to most practitioners.
2. Culture availability is satisfactory except at weekends.



NEW ZEALAND INSTITUTE OF
MEDICAL
LABORATORY
TECHNOLOGY

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

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

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

The Secretary
Technical Assistants Examination Committee
Haematology Department
Christchurch Hospital
Private Bag
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The examination is offered in the following:—

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Haematology
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Medical Microbiology
Mortuary Hygiene & Technique
Radioisotopes & Radioassay Technique
Immunohaematology
Immunology (Microbiology)

PREREQUISITES

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

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

EXAMINATIONS

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

NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY TECHNOLOGY

What is the Institute?

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

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

What does the NZIMLT do for its Members?

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

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

NEW ZEALAND INSTITUTE OF MEDICAL LABORATORY TECHNOLOGY

Application to Sit the Examination of Qualified Technical Assistant 13 and 14 May 1986

SECTION A — TO BE COMPLETED BY THE CANDIDATE

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

Laboratory ....

Lab. Address ....

....

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

Are you a member of the NZIMLT YES/NO

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

EXAMINATION FEE: $45 reducible to $15 if currently a financial member of the N.Z.I.M.L.T.

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

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

Date Candidate commenced work in examination subject ....

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

Signed ....

Designation ....

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3. Many modify treatment according to culture results.
Note: Clinical judgment is 50% predictive. Four out of 5 sore throats in 5-15 year olds will be non streptococcal and therefore not require treatment.

re Treatment of Streptococcal Throats

1. The cheapest and most effective treatments are rarely used by Auckland practitioners or for long enough. (i.e. benzathine penicillin or 10 days of oral penicillin V).
2. Rheumatic fever (and most streptococcal glomerulonephritis) are seen in most areas in Auckland especially, but not exclusively, in Maori and Pacific Island children.

Possible reasons for the decline in rheumatic fever include, widespread use of antibiotics, decline in streptococcal infections, diminished streptococcal virulence or fewer "rheumatogenic" strains. In Costa Rica, a country of 2.2 million in a recent push for improved health care of children, a campaign to eradicate rheumatic fever was launched with the use of benzathine penicillin for every child with a sore throat over three years of age. An 80% reduction in new cases of rheumatic fever was recorded over 10 years at the national hospital. No throat cultures were done. There is little hard data to support the decline in incidence in streptococcal infections in communities where rheumatic fever has been controlled. There are also few longitudinal data on changes in M typability (somewhat correlatable with virulence) and therefore collection of such data on M typability is important in the further understanding of rheumatic fever.

During 1983-85 71% of *Streptococcus pyogenes* organisms at Princess Mary Hospital were M-typable at NHI. Three-quarters of non-typable organisms were skin isolates. The predominant M type in 1983 and 1984 was M49, and in 1985 (to July) M53. Throat isolates accounted for 30% of *S. pyogenes* cultures. Of those typable, M49 and M12 predominated in 1983 and 1984. M types from cases of rheumatic fever included M53 (x2), M58 (x1) and non-typable (x1). Acute post streptococcal glomerulonephritis peaked in late summer-autumn in 1983, 1984 and 1985 with a mean of 50 cases per year admitted to Princess Mary. A coincident peak of M49 was noted in 1984. Longitudinal M typing raises questions that may be solved by further study in a population with a high incidence of rheumatic fever and acute glomerulonephritis. In comparison M5 and M28 (both uncommon in our population) disappeared in a North American community with the disappearance of rheumatic fever.

The approach to sore throat management appears to be a failure of medical education. Children at special risk of rheumatic fever may need to be singled out for preventive measures.

Epidemiology Typing — For Whom Is It A Service?

Dr Diana Martin

National Health Institute, Wellington

Epidemiological Typing

Epidemiological typing aims to distinguish between micro-organisms from a given situation by examining characteristics demonstrated by the organisms under laboratory conditions.

Various epidemiological typing schemes have been devised over the years; the more important and useful include bacteriophage, bacteriocin, serological, toxin, biotyping, resistogram, antibiogram, and more recently restriction endonuclease analysis, DNA homology, and plasmid profiles. The value of any typing scheme is dependent upon a number of factors including its ease of performance, reproducibility, stability and availability of reagents. Probably the most critical requirement is that adequate discrimination between strains is achievable.

Application of most typing schemes requires specialised knowledge built up over a period of time. This experience cannot be acquired spasmodically with small numbers of organisms. Techniques tend to be costly in time, personnel and materials; a certain level of usage is required if they are to be cost-effective. In a country the size of New Zealand this is probably most efficiently achieved by centralised services possibly best sited at the National Health Institute.

Reasons for Epidemiological Typing

Epidemiological typing may be used for investigative or surveillance purposes. In the investigative situation application of epidemiological typing functions to distinguish extraneous strains from the common source strain in an attempt to identify the source of a problem.

Surveillance typing may be applied on a national or local level or unit level. Surveillance can provide information on the relative frequencies of types of particular micro-organisms. Changes in frequencies of existing types and the introduction of new types are then readily discernible. Recognition of disease relationships of particular types also may be possible. Surveillance is only justified if carried out with careful consideration of the results to be achieved.

As with many biological tests epidemiological typing methods are subject to variables of performance and interpretation. Reproducibility is influenced by many factors depending on the system. However even under the most stringent of conditions it is not always possible to control minor variations. It is essential therefore that all isolates from a particular situation be tested at the same time under the same conditions. Only then can results be compared and advice given with some confidence that distinctions shown are true and not due to technical variation.

Interpretation of the results is based on the premise that strains from different sources will exhibit different patterns of behaviour whereas isolates with a common source will behave similarly unless modified by environmental pressures. It must be remembered however that correspondence of type may have arisen by chance.

What epidemiological typing can not do is prove that strains are identical; simply the system fails to differentiate. If the typing method lacks discrimination correspondence of type may occur because the type is common. In such a situation infections caused by the common type may be attributed to sources from which they did not emanate.

For Whom is it a Service?

This question is discussed in the context of nosocomial infection. Control of nosocomial infection aims at providing an environment in which patients may be safe from intrusion by exogenous micro-organisms, and in which endogenous infection may also be controlled.

The prevention of hospital-acquired infections requires appropriate intervention measures to ensure that micro-organisms are not transmitted from one patient to another, from staff to patient or vice versa, or from equipment to patients. Inevitably, however, barriers are broken and hospital-acquired infections do occur. In hospitals with a programme of monitoring an increase in prevalence of infections caused by a common pathogen will be readily discernible. Similarly, the occurrence of clustered infections with an uncommon pathogen will be recognised. Continuous monitoring of specific 'at risk' ward situations such as intensive care units or burns units also allows for recognition of sudden changes in infection rates.

Once such a problem has been recognised the laboratory has an important investigative role and some designated individual such as the clinical microbiologist must take responsibility for ensuring that appropriate specimens and relevant data are collected. Only sites likely to yield organisms of relevance to the investigation should be sampled. Indiscriminate collection of environmental swabs contributes nothing. Similarly, careful consideration should be given to the implications of yielding positive cultures from staff members before they are sampled. Only when all relevant isolates and data have been collected together should epidemiological typing be undertaken. The information gained provides health personnel with valuable knowledge about spread of infectious disease and may assist in providing a safer hospital environment for patients by effecting modifications in techniques or equipment.

Thus, used appropriately, epidemiological typing services ultimately assist in better health care delivery.

A two-year survey of Branhamella catarrhalis in Dunedin Hospital

John M.B. Smith and Bruce M. Lockwood

Microbiology Laboratory, Dunedin Hospital, Dunedin

In recent years, several reports in the world's literature have commented on the importance of *Branhamella catarrhalis* (syn. *Neisseria catarrhalis*) as a respiratory tract pathogen along the ilk of *Haemophilus influenzae.* During 1983-84, a survey in Dunedin Hospital (a 500-bed general hospital) resulted in the recovery of *Bran. catarrhalis* from the sputa of 35 patients under situations suggestive, on laboratory generated data (direct microscopy, culture), of a disease associated role.

Underlying lung pathology seemed a major factor in permitting *Bran. catarrhalis* to express its pathogenic potential, as around 80% of the laboratory assessed pathologically significant isolates occurred in association with acute exacerbations of bronchitis in patients with long standing obstructive respiratory disease. A lower lobe pneumonia was the other major clinical association.

A feature of the *Bran. catarrhalis* isolates studied in the Dunedin survey was the increasing incidence of Beta-lactamase producing strains. In 1983, around 3% of the isolates were Beta-lactamase positive; this figure has risen steadily to a level of over 60% in mid 1985. A similar, but less dramatic, increase in Beta-lactamase positive strains of *H. influenzae* has also occurred over the same period.

These observations have important implications as far as the laboratory is concerned, and it is now obvious that reports concerning direct microscopy and culture of sputa must be more informative and include some statement concerning the possible significance of isolates in the *Haemophilus/Branhamella* group.

S. Typhi Infection in Adults

R.B. Ellis-Pegler, J. Clark, D. Downey

Auckland Hospital, Auckland

We reviewed the case notes of 23 adult patients infected with *Salmonella typhi* and admitted to the Infectious Disease Unit, Auckland Hospital between January 1977 and December 1984. Fifteen had typhoid fever and eight were chronic carriers of *S. typhi.* All isolates were sensitive to amoxycillin, chloramphenicol and cotrimoxazole.

Ten of those with typhoid fever had recently been in tropical countries, predominantly the Pacific Islands. The remaining five all lived in South Auckland, had not travelled out of New Zealand, were either Maori or Polynesians and enjoyed raw shellfish. We suspect that they acquired infection from contaminated shellfish collected from the Manukau Harbour in South Auckland, which takes Auckland's treated sewage.

We usually used oral amoxycillin for 18 days for patients with typhoid fever. One patient failed to respond and one relapsed. Cholecystectomy and subsequent oral antibiotics (either amoxycillin or cotrimoxazole) for two to six weeks eradicated *S. typhi* from 5 carriers. We cured one of two others with 30 days of oral amoxycillin; the other was shown to have failed two years later when she infected a relative and was shown to have exactly the same phage type as before.

Typhoid fever was seen predominantly in young travellers returning to New Zealand with fever, diarrhoea, abdominal pain and headache. Most had abdominal tenderness, many had splenomegaly and most had mild anaemia, disturbed liver function tests, elevated ESR and normal white cell count.

Carriage of *S. typhi* was seen predominantly in immigrant Polynesians from the Pacific Islands who probably acquired their infection in those islands. They were mostly phage types E1a and 46; phage types from patients from other tropical sources or New Zealand were more varied. The Department of Health identified five of the nine episodes of carriage by screening the family contacts of children admitted to hospital with typhoid fever.

Comparison of two tests that detect low fequency resistance to Cefotaxime and Ceftriaxone

D. MacCulloch, Green Lane Hospital, Auckland 3.

Treatment failures due to the emergence of resistant bacteria have been reported with third generation Cephalosporins. A paper strip test using a heavy inoculum and a beta lactamase induction test were described. They demonstrated resistant variants in some clinical isolates that appeared sensitive when tested by standard disc sensitivity tests. This was seen only with isolates of *Serratia* sp., *Citrobacter sp., Proteus sp.* and *Pseudomomas sp.* which were the same species in which clinical failure has been reported. Further studies are required to confirm the clinical significance of these tests.

These data have been reported previously:

Menzies R.E. and MacCulloch D.
Comparison of a beta-lactamase induction test with a test that detects low-frequency resistance to Cefotaxime.
Antimicrobial Agents and Chemotherapy 27:672-673 (1985).

ELI LILLY MICROBIOLOGY SCHOLARSHIP

This award, consisting of $500 kindly donated by Lilly Industries (NZ) Ltd, is to be used **either** for the purpose of funding a research project which cannot otherwise be undertaken or to attend an overseas scientific meeting. The scholarship is open to all financial members of the NZIMLT currently working in the field of Microbiology. Applicants for the Scholarship must apply on the official application form available from the Secretary of the NZIMLT.

Acceptance of the Scholarship will require the recipient **either** to prepare an article for publication in the NZIMLT journal relating to that research **or** prepare a full report on the meeting attended for publication in the NZIMLT journal.

Applications close on **1 July 1986** with the Secretary, NZIMLT, Haematology Dept, Christchurch Hospital, Christchurch. The successful applicant will be announced at the Annual Scientific Meeting.

The Pacific Way

News from the P.P.T.C.

A course in Haematology/Blood Banking was held during the May, June, July period. This was most successful and included students from a wide area of the Pacific. The P.P.T.C. was pleased to welcome students from Indonesia and the Philippines for the first time. Their presence on this course was made possible by the generous assistance of the New Zealand Red Cross Society.

His Excellency Sir Kwamalo Kalo High Commissioner for Papua New Guinea making the presentation speech.

THE CLASS
BACK ROW: Philip Anaroai (PNG), Kesler Lakutak (Kosrae), Suganda Permana (Indonesia) Andrew Wagira (Solomons).
MIDDLE ROW: Plumber Nicholls (Cooks), Esau Kalfabun (Vanuatu), Victor Wale (Solomons), Tekaibeti Tarataake (Kiribati), Ina Samuel (Cooks).
FRONT ROW: Steward Dixon (Tutor), Andi Eltanal (Phillipines) Mike Lynch (Tutor).

News from Fiji

The recently formed Fiji Medical Laboratory Technologist Association is planning to hold its Annual conference later this year. N.Z.I.M.L.T. members and Trades people who may have the good fortune to be in Fiji at the time of the Conference may wish to encourage the efforts of the F.M.L.T.A. in some practical way.

Smith Biolab recently received this letter from the Secretary of the F.M.L.T.A. and forwarded it for publication in this Journal.

"Dear

You may be aware of formation of Fiji Medical Lab. Technologist Association and its ongoing activities. Needs for formation of such an association was long overdue to promote science and technology in the country and the region.

Its also my pleasure to inform you that Fiji Medical Laboratory Technologist Association (FMLTA) had successfully organised two days Mini Seminar on Role of Laboratory in Sexually Transmitted Diseases. Number of scientific papers dealing with etiological, scientific and epidemiological aspect were presented in this Seminar.

F.M.L.T.A. will be holding its Annual Conference sometimes in late November or early December, 1985. As you are aware many educational activities are promoted by F.M.L.T.A. and not only Medical Lab. Technologist of Fiji are keenly participating but a good deal of interest is shown by M.L.T.S. of the other neighbouring South Pacific Island.

We look forward to major manufacturer and supplies of equipment and reagents for their support and assistance in promoting worthy scientific activities for mutual interest. Along with our annual seminar we also wish to organise a trade fair of latest equipments and if your company is interested in being represented please let me know with all relevant details. Subsequently F.M.L.T.A. will welcome your possible assistance in any possible way in making this annual event successful. F.M.L.T.A. would also welcome commercial advertisements in F.M.L.T.A.'s newsletter which is a quarterly publication.

Thanks

Yours sincerely,
Rajendra Parmar,
SECRETARY

It is no easy task to start an Association anywhere. The F.M.L.T.A. deserves every encouragement. It is heartening to note that other South Pacific Islands are interested in participating in the Annual Conference in Fiji. The President is Mr Satish Sudhakar and the Secretary is Rajendra Parmar. The address is Fiji Medical Laboratory Technologist Association, P.O. Box 4121, Samambula, Fiji.

Bad news for Mossies.

The University of Otago and Volunteer Service Abroad have combined to assist a programme in Fiji aiming to control mosquitoes which transmit serious diseases. Janet Gardner, a Master of Science graduate in Microbiology, has already begun village trips for field tests of a fungal parasite found in New Zealand and researched by the University's Department of Microbiology. The parasite is said to be effective against certain species of mosquito larvae found in Fiji.

In Fiji mosquitoes transmit dengue and dengue/haemorrhagic fever and Ross River viral infections. These have been occurring with increasing frequency and often fatal consequences. There is also a continuing problem of mosquito transmission of Bancroftian filariasis which is endemic to Fiji and many other countries of the South Pacific.

The mosquito which spreads filariasis breeds in crab holes along the shore lines of the Fijian islands and it is planned to test

the fungal parasites in these crab holes. Initial laboratory work has been carried out but now field tests are required to measure the efficiency of the fungus as a biological control.

News about Kava

The U.S. Food and Drug Administration (FDA) has prohibited the import of Kava (piper methysticum) for human consumption under the U.S. Food and Additive Amendment of 1958 according to the South Pacific Bureau for Economic Co-operation Newsletter. The F.D.A. ruled that Kava is not safe or suitable as a food or food additive due to its "narcotic effect" which depresses the central nervous and respiratory systems and affects the heart. Kava imports for use in scientific research and as an ingredient in medicinal drugs by pharmaceutical manufacturers are not affected by the ban. Pacific trades are warned that Kava shipments for human consumption if seized by F.D.A. agents would be returned to the country of origin at the exporters expense. Meanwhile the U.S. Agency for International Development (USAID) is trying to collect evidence for the safety of Kava through laboratory tests on export quality samples and examination of scientific literature with a view to persuading the F.D.A. to lift the ban of Kava imports.

REDUNDANT EQUIPMENT

If you have laboratory equipment or textbooks that are no longer being used, don't throw them away or leave them in a cupboard gathering dust. Old equipment and textbooks are wanted and can be used by the Pacific Paramedical Training Centre. The following equipment would be most useful:

All haematology glassware — red and white cell pipettes, counting chambers, ESR tubes (both kinds), Sahli pipettes.
Graduated pipettes of all sizes.
Blood grouping tiles.
Test tube racks, bijou and universal racks.
Microbiological swab transport systems.
Blood group viewing boxes.
General glassware.
All types of instruments.
Old text books and technical bulletins.

Any materials should be sent to:

Dr R. MacKenzie,
Administrative Technologist,
Department of Laboratory Services,
Wellington Public Hospital,
WELLINGTON.

The Case for Vaccination for Hepatitis B for New Zealand Laboratory Workers

This report was prepared for the NZIMLT Council to be circulated to the Health Department, Hospital Boards Association and Health Service Personnel Commission.

The report was prepared by Walter Wilson.

Introduction:

Hepatitis virus infections in man have been shown to be caused by at least three and probably more separate viruses.[1,2] The various individual forms differ primarily in serological markers, mode of transmission and sequelae. The two most well characterised variants are Hepatitis A (HAV) and Hepatitis B (HBV) and of the two, HBV infections are considered the more serious and due to its more varied mode of transmission especially by infected blood and body fluids, it is the most serious of the work related illnesses for New Zealand Medical Laboratory Workers.

Hepatitis B.

Hepatitis B infection is caused by a 42 nm double shelled desoxyribonucleic acid (DNA) virus. It is also known as Serum Hepatitis. The virus identifiable when present in blood plasma is known as Hepatitis B Surface Antigen (HB_sAg), Australia Antigen or Hepatitis Associated Antigen. Transmission is similar to Hepatitis A, i.e. person to person contact but also because the virus particle is present in most body fluids it is often transmitted in these fluids through direct intravenous injection (drug abusers and blood or blood product transfusion), mucous membranes, broken skin or alimentary ingestion. The incubation period is 45-160 days and mortality is generally less than 2% although a high percentage of longterm HB_sAG positive persons develop hepatic cirrhoses and/or carcinomas. The development into carriers is reported to be up to 10% of all persons acquiring HBV infection.[1,2]

Risk Groups

The population groups considered "high risk"[2] are:

1. Health Care workers involved with frequent blood contact.
2. Staff of Institutions for the Mentally Retarded.
3. Haemodialysis patients.
4. Sexually active homosexual males.
5. Users of illicit parental drugs.
6. Household contacts of HBV carriers.
7. Immigrants/refugees from areas of high HBV endemicity.
8. Inmates of Institutions for the Mentally Retarded & Prisoners.

Symptoms & Treatment of Clinical HBV.[1,2]

Clinical symptoms are usually various combinations of anorexia, malaise, nausea, vomiting, abdominal pain and jaundice. Skin rashes, arthralgias and arthritis can also occur. Recovery is usually spontaneous over a period of several weeks to years. There is no known treatment which will either arrest or modify the progression of the infection. Severe acute infections may result in total liver failure, coma and death.

The Risk to New Zealand Laboratory Workers

Three surveys of the infectivity of New Zealand laboratory workers have been published to date. One from Dunedin[3] found the incidence of HBV markers in laboratory workers to be 4.3% as opposed to 0.7% for the blood donor population. The second from Christchurch[4] found an incidence in laboratory workers of 8.5%

An Auckland study[5] reported an average of 20.2% of laboratory workers with an incidence of 30% in one Hospital Laboratory compared to 14.1% for random blood donors, (only 3.5% of the Auckland Laboratory staff are non European compared to 14% of Auckland Blood donors).

All of these studies confirm a significantly higher incidence of hepatitis markers in laboratory workers compared to general population groups. These findings are very similar to most overseas studies.[6,7,8,9] The North American life-time risk of HBV infections for laboratory workers is calculated 15-30% or 5 to 10 times the general population risk.[10] The community incidence found in the northern half of the North Island is very much higher than that found in any other predominantly European area in the

world.[3,4,5] The North American Community incidence of HBV is similar only to that found in the South Island of New Zealand.

As a result of laboratory acquired HBV infection there are a number of New Zealand laboratory workers who are long term carriers of the HB_sAg and as a result most will suffer long term permanent liver damage.

Of special concern from the Auckland study was the finding that over the 9 month period under review 11 staff (3.8%) developed markers for HBV indicating that they had acquired the virus during this period. Also significant was the very strong correlation between developing HBV markers and length of employment in a medical laboratory.

At least one New Zealand Medical laboratory worker has died in the last decade from a laboratory acquired HBV infection.

Prophylaxis:

Vaccination:

Experience to date with HB vaccine[2,11,12] has shown that up to 98% of all persons receiving the vaccine who were known to be free from any HBV markers prior to vaccination developed anti-HB_s and thereby gained an immunity against subsequent infections for several years.

Immunoglobulin:

Hepatitis B Immunoglobulin (HBIG) is useful only to provide temporary passive immunity to persons possibly innoculated with contaminated material and who have no detectable HBV markers. The passive immunity is limited to 1 to 3 months being the time the immunoglobulin remains in the system.

Summary:

1. HBV infections are a particular hazard for medical laboratory workers because the infective virus is found in most body fluids of infected persons.
2. New Zealand has an exceptionally high incidence of clinical Hepatitis B and very high rates of HBV carriage in many mixed race communities.
3. New Zealand medical laboratory workers show identical endemic features for HBV infection to their overseas counterparts except the actual incidence in many North Island laboratories is much higher than other Western laboratories reflecting the local endemicity of the virus.
4. In spite of measures taken since the early 1970's to improve laboratory practice and safety, medical laboratory workers are still being infected with HBV from the specimens they process.
5. Only vaccination has proven to be an effective means of controlling the continued spread of the disease.

Recommendations:

1. HBV vaccination be offered to all present and new susceptible medical laboratory workers who have no detectable HBV immunity. This is consistent with the recommendations and practices of most of the major developed countries[2,10,13] and in New Zealand with our much higher incidence of HBV, vaccination[1] is the only positive means for providing immunity to those not previously infected and especially to those who are about to enter a career in the profession of medical laboratory practice.
2. To monitor the effectiveness of the vaccine all laboratory workers should be tested at least annually for HBV markers and on every occasion following a laboratory accident in which innoculation with blood or body fluids may have occurred when if negative for HBV markers they may be offered Hepatitis B Immunoglobulin then vaccination.

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Answers to Continuing Education — Lipoproteins

1. The typical picture of hypercholesterolaemia (the type IIA of Fredrickson). The borderline elevation of the triglyceride is due to the triglyceride carried by the increased LDL.
2. The floating layer could be chylomicrons or IDL. Electrophoresis is required to differentiate the two. In this case a broad lipid band was observed between the beta and prebeta positions. This may be a broad beta (dysbeta-lipoproteinaemia). Ultracentrifugation of the plasma and demonstration of particles of density less than 1.006 with a cholesterol to triglyceride ratio of about 2 would confirm the diagnosis.
3. This is the typical pattern observed in Tangier's disease. This would be confirmed by the clinical picture.
4. Hypertriglyceridaemia (increased VLDL). The patients often have reduced HDL-C levels and therefore have an increased risk of coronary heart disease.

NZIMLT SCHOLARSHIP

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BOOK REVIEW

Atlas of Medical Parasitology — 2nd Edition,
Viqar Zaman.
Professor and Head of the Department of Microbiology,
Faculty of Medicine,
University of Singapore.
Publisher Adis Health Science Press 404 Sydney Road,
Balowiah, NSW 2093, Australia.

The second edition of the Atlas of Parasitology is an enhancement of what was already a very significant contribution to medical parasitology.

The author has presented an outstanding visual aid of the morphology, life cycle and clinical aspects of the medically important parasites. He has put together a superb collection of colour and black and white photographs and illustrations. The book consists of three hundred and thirty gloss pages with five hundred and fifty illustrations, three hundred and fifty of which are in colour and thirty three life cycle diagrams with ninety new illustrations — some additional and some replacements. The format remains very much the same as in the previous edition. It is well set out with brief descriptive text to accompany the illustrative material. There is a definite emphasis on the important diagnostic features in the differentiation of the similar and related species of the Protozoa, Amoebae, Flagellates, B coli, Malaria, Toxoplasma, Sarcocysis, Isospora, Pneumocystis, Cestodes, Trematodes, Nematodes and Arthropods.

The staining techniques used and the microphotography, interference and phase contrast microscopy along with the scanning electron microscopy has revealed detail which is not commonly found in other publications.

For NZ$140 this second edition will be very useful in the laboratory, and clinical practice, and especially to the students of Medical Parasitology.

Neville Wiles.

LETTERS TO THE EDITOR

Wellcome/NZIMLT International Travel Award

Dear Sir,

On behalf of the judges I would like to congratulate Mr Kevin McLoughlin of Christchurch as the recipient of the 1986 Wellcome/N.Z.I.M.L.T. International Travel Award.

All other applicants are also to be congratulated on the high standard of their applications but in any award of this type there can be only one winner. Each of the unsuccessful applicants would have been a worthy recipient and I look forward to seeing their application in 1987 when next we offer this award for the 1988 I.M.L.T. Conference in Japan.

Congratulations to you all.

Yours sincerely
Ian D. Breed
Diagnostics Manager

The Institutes Dissidents

Dear Sir

Last October about 40 Laboratory Assistants attended a meeting to discuss their dissatisfaction with the Institute. Arising from this meeting an interim committee was formed to investigate the possibilities of forming an Industrial Union specifically for Medical Laboratory Assistants.

After a thorough investigation, we have found that it is possible for such a Union to be formed, although there could be much debate about the quantity of possibility.

Who Are We?

At the moment we have the names and addresses of approximately 200 medical laboratory assistants who wish to form their own organisation. We are from both the public health system and the private medical laboratories. We have names from within the Auckland Province and from most other main cities of New Zealand. We are not just a movement of dissatisfied Auckland laboratory assistants.

Why Are We Dissatisfied?

We are totally dissatisfied by the performance of the Institute, so far, particularly with respect to our work conditions and wages. We see the Insititute as being totally dominated by Technologists who are only interested in themselves, and who treat us as second class citizens. A glance at the types of claims in previous negotiations points this out stongly.

There is no communication at all to assistants by the Institute. It is only since we started that we are finding out about what negotiations are all about. What the Institute is asking for, how the Institute fails etc. We intend to have the fullest communication possible.

Before we started it was impossible to find out anything about our conditions of employment. If we have a grievance over some matter and wish to pursue it through the legal channels the very person with whom we have the grievance is most likely to be a technologist — a member of the Institute, and most likely to be the person who should be helping us. We see the need for a separation between us and the people who supposedly are our superiors — the technologists.

What Do We Hope To Achieve?

We do not believe that by forming our own Union all our problems would be solved. We do not believe that by using professional negotiators etc that all our problems will be solved.

We want control of the negotiations of our wages and conditions. We want to negotiate for us and for us alone — not as an appendage to other people. We want to form a Union to cover both private and public health systems. We hope to have a healthy relationship with the Institute because we believe that the Institute should be more a body looking after the profession rather than involved in negotiations etc.

How Are We Going To Form This Union?

Investigations have shown that we would have more chance of

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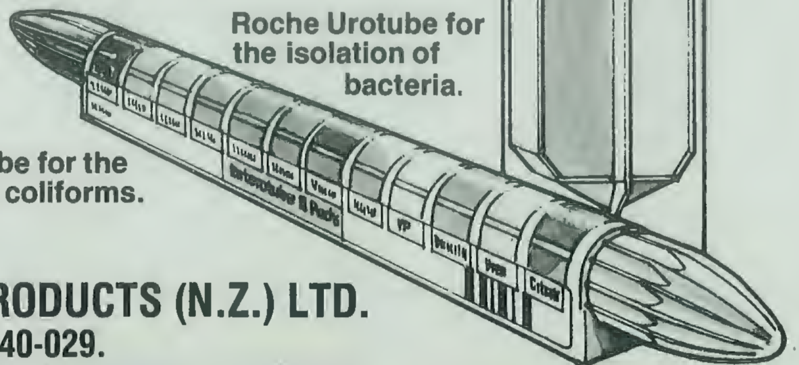

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recognition if we are a national organisation. This is taking time but indications are that we have national support.

The private laboratory assistants have an easier road to travel to form the Union, and we will have a Union in this field by Christmas 1985 when we can all join our Assistant Secretary in a hot pool with a bottle of champagne.

Yours sincerely

Marie Aldcroft
Union President

Dear Sir,

Thank you for the opportunity of responding to the above letter from Marie Aldcroft, Laboratory Assistants Union President. As one President to another I would like to take this chance to highlight some of the major misconceptions in the letter and at the same time reassure all members of the NZIMLT that your Council does in fact work for the benefits of all in this profession.

1. Less than 300 of the 900 laboratory assistants in the Health Care system have bothered to join the Institute. If the majority were members with voting rights they could have exerted a great deal of influence.
2. I personally am concerned regarding the incorrect implication that the council of this Institute is unreceptive to approaches from laboratory assistants or any members regarding grievances or interpretation of regulations; a perusal of the annual report will show that in each of the last few years reports I have requested members with problems to communicate with me direct. The same plea has been reiterated at the AGM each year. The majority of the many requests I have received have been dealt with by me promptly and usually to the advantage of the members who have made the approach. Very few of these have been from laboratory assistants.
3. I strongly object to the assertion that there has been no communication from the Institute to its members. Journals containing newsletters are published four or five times a year, and regional members of council put individual newsletters out to laboratory notice boards after each Council meeting. I have personally seen these on notice boards throughout the country.
   In addition Council have in the past two years held meetings with the membership in each of the major centres to which all members have been invited to attend.
4. I would further suggest to the critic that an in depth read rather than a glance at previous salary and conditions claims would prove my assertion that all sections of the Institute have been addressed in formulating claims especially in respect of transport allowances, meals on duty etc.
   The evidence is there in newsletters, journals and reports published over the last 7 years and longer. I invite the writer to read the evidence of the past before using incorrect inflammatory language to denounce her own professional employee organisation.
   I might add that this is the first official communication from the proposed Union addressed to Council that I have seen and wonder how this type of approach can result in a continued healthy relationship with the Institute which *is* the body looking after the profession including negotiations.

Colvin Campbell
President, NZIMLT

Re: Laboratory Assistants Union

Dear Sir,

At a meeting held for laboratory assistants on the 21st August 1985, the persons present unanimously decided against the formation of a 'Laboratory Assistants Union' as it is called at present.

We feel that this union could actually work against us rather than for us. We would rather see laboratory assistants working as a body within the Institute. We do not think the Institute will back the union as a separate body and feel that laboratory assistants have not made full use of the channels open within the Institute.

If laboratory assistants joined together and made the Institute aware that something was needed to be done for the good of all, then surely the Institute must do something. If all laboratory assistants joined the Institute we may be on the way to obtaining a majority decision in our favour, after all the Institute is a representative body. The Institute offers educational and re-employment opportunities and we fear these may be lost if this union goes ahead.

In our laboratory trainees, technologists and assistants all work well together. We do not want to see laboratories split up through different sections moving in different directions, all it will achieve is bad feeling all round.

Yours faithfully

Geraldine Mason
for Palmerston North Laboratory Assistants

Re: Commercial Swabs and Transport Media

Dear Sir

It may be of interest for all Microbiological Laboratories using commercially made swabs with their accompanying transport media to reassess the products that they are using from time to time. Recently we compared two brands (A) and (B), both with Amies transport media without charcoal, and one of the brands with Amies transport media with charcoal (AC).

A series of swabs were inoculated with the same inoculum of a "wild strain" of *Neisseria gonorrhoeae,* and then left on the bench at room temperature. At various time intervals one swab from each of (A) (B) and (AC) was subcultured onto Thayer Martin agar.

It was found that at 7 hours swabs (A) had a very marked reduction in growth viability, whereas swabs (B) and (AC) showed no reduction. At 25 hours swabs (A) did not support growth, whilst swabs (B) and (AC) still supported growth in an appreciable amount.

This simple exercise has shown us that not all transport systems are equal, and that periodic re-assessment should be performed in general and in particular before purchasing.

David Robertson
Pearson Laboratory

1984 ELI LILLY AWARD

Report on the Sixth International Congress of Virology in Sendai, Japan. 1-7th September, 1984.

Elizabeth Poole, Virology Department, Dunedin Hospital

With a population of 700,000, Sendai is the capital of Miyagi Prefecture and is the cultural, political and economic centre of Japan's Tohoku (northeastern) district. Located on the Pacific coast about 230 miles north of Tokyo, Sendai was originally developed as the castle town of Lord Masamune Date, who built his castle in 1602 on the western outskirts of the city. Although much of old Sendai was destroyed during World War II, it has since been rebuilt into a modern city surrounded by low forested hills, not altogether dissimilar to Dunedin. Popularly known as "City of Trees" because of the many tree lined streets and parks, it is also referred to as "City of Universities and Schools" with over ten colleges and universities. Because Matsushima, Mt Zao Quasi National Park and the rugged Rikuchu Coast National Park are close by, Sendai is one of the most popular areas of northern Honshu.

The 2,000 virologists attending the Sixth International Congress of Virology in Sendai came from 56 countries — alphabetically, from Algeria to Zimbabwe. Half the participants were from Japan, a large group from the U.S.A. and, closer to home, 61 Australians and 10 New Zealanders. There were even virologists from Burma, Iran and Costa Rica.

Registration was an exciting time. Greeting old friends, recognising eminent virologists and exploring the Congress "bag". This consisted of a very heavy zippered and velcro closing

shoulder bag containing the 133 page congress programme, the 400 page book of abstracts, an equally large book on Sendai Virus, a list of participants — unfortunately without addresses, Sendai guide maps to shopping, restaurant and cultural areas, and a gift of the traditional folkcraft specific to this region, the woodturned Kokeshi doll.

Every morning from 8.30 to 11.30 a.m., Sunday 1st September to the following Friday, general symposia were held on subjects at the forefront of scientific endeavour. Topics examined were "New Concepts in Immunisation", "Structure and Strategy of Viral Genes", "Viruses as Gene Vectors", "Viruses and Onc Genes", and "Virus Ecology and Molecular Evolution". With up to five speakers giving half-hour overviews of their latest research, these symposia were very stimulating. For those who were "jet-lagged" — especially the Americans who had jumped backwards over the dateline — presentations could be watched by simultaneous video less formally in adjoining rooms.

Following lunch every day, concurrent workshops were held from 1.00 p.m. to 3.30 p.m. with half an hour for "discussion" before the start of the next concurrent workshop series at 4.00 p.m. They covered an extreme variety of fields for the medical, molecular, industrial, animal, insect and plant virologist. These workshops included sessions ranging from "Double Stranded RNA Viruses of Fungi", through to "Viruses of Aquatic and Marine Animals". However, the vast majority of the fifty workshops were on medically orientated topics such as "Therapy of Viral Diseases", "Strategy of Vaccine Usage", "Sexually Transmitted Virus Infections", "Viral Papillomas" and "Enteric Virus Infections".

I was particularly interested in workshops discussing techniques for diagnosis of viral infections. One such workshop on "Virion, Antigen and Nucleic Acid Detection" had many speakers outlining the use of monoclonal antibodies, nucleic acid sandwich hybridization techniques, and especially the increasing utilisation of biotin-avidin interactions in detection systems. Assays utilising the high degree of affinity of biotin for avidin can be very convenient for large scale usage since the same reagents (e.g. avidin-enzyme) can be utilized for all immunoassays, and their sensitivity compares very favourably to the most sensitive assay systems available using conventional conjugates.

Standing room only was the norm at some of the workshop venues. Attending the workshop on "Viral Hepatitis" was a most exacting experience. The basement room was air conditioned, but with the outside temperature in the high twenties and raging humidity, I limply wilted against the wall. Making notes standing in the dark — all presentations were in the dark as slide projectors were the only visual medium provided — was virtually impossible. I must confess to not lasting to "Hepatitis a Virus: Cell Free Translation and Processing in vitro of Translation Products", but I did catch the papers on "Delta Agent and its Epidemiology" and "Hepatitis B Vaccines" before expiring!

Posters were displayed in a gymnasium near the main Congress venue. At any time up to 200 posters were on view during the same afternoon as their related workshops. Unfortunately the venue was cramped with little room to view displays. The precious half-hours between workshops were often spent jostling amongst the posters with very hot and sweaty participants! In spite of the uncomfortable conditions I did have several stimulating discussions with authors. One that stood out in particular was with a group of "diarrhoeal" virologists, over whether a particular electron micrograph of a faecal "virus" was indeed of human viral origin, or was an ingested plant virus, or merely a plant or even parasite artifact!

In addition to the main programme, evening and satellite symposia were also held during the week. Three concurrent sessions began on Sunday evening examining the topics of "Monoclonal Antibodies", "Rabies", and "Prevention of Viral Hepatitis". I chose to attend the "Monoclonal Antibodies" session especially to hear Dr Tom Smith of the Mayo Clinic discuss the use of monoclonals in rapid virological techniques.

Part of Monday afternoon was set aside for five satellite symposia. For those of a philosophical bent, there was a symposium "On the Origin of Viral Species". However, others could choose between "Viruses, Genes and Cancer", "Current Topics in Interferon Research", "Structure and Replication of Togaviruses" and for those more interested in gut reactions — "Diarrhoeal Viruses". Enthusiastic verbal diarrhoea flowed at this session. The Chairman, Dr T. Flewett, directed a very lively meeting stretching well beyond the two hours allotted and dominated by discussion on rotavirus. As well, Dr Hung Tao detailed the recent discovery of a novel rotavirus which was the cause of a water-borne outbreak of diarrhoea in adults in China.

On the final afternoon before the closing ceremony an "ad hoc" workshop on "AIDS" was scheduled between 3.30 p.m. and 5.00 p.m. The largest conference room was packed wiith delegates and the media to hear Dr L. Montaigner from the Pasteur Institute describe his studies with LAV, Dr J. Curran from C.D.C. outline the epidemiology and natural history of the disease, and several members of Dr R. Gallo's team describe aspects of the virus itself. Because the previous session had run seriously overtime, the speakers had only five minutes each to present their findings! This meant that those whose first language was not English often had difficulty following these rapid presentations.

During the Congress a meeting was held with those from S.E. Asia and the Western Pacific to form the Asian Group for Rapid Viral Diagnosis. The aim of the Asian Group is to develop and promote techniques for rapid diagnosis of viral diseases of the region. An important role of the Asian Group will be the production of good quality reagents for distribution to members. In the future the Asian Group will provide a very important link for the dissemination of information to improve viral diagnostic services.

The Congress was not all work and no play. The Tuesday was left as a "free" day. As Sendai was in the heart of the tourist district there was much to see. The day dawned drizzly and grey but very warm. Five of us decided to venture forth by train to nearby Matsushima which has the reputation of being one of the three most beautiful areas of Japan. It is a small traditional town that hugs a lush bush covered bay dotted with tiny islands covered in pine trees. It is also the town in which the very old Zuiganji Zen Buddhist Temple was built in 828 amongst the most sumptuous green tree covered surroundings. Lord Masamune Date — called the "One-Eyed Lord" as he lost an eye through smallpox — largely rebuilt the Temple using hundreds of workers over a period of six years, completing reconstruction in 1609. It was a most pleasant tranquil place to visit away from the rush and pressure of the Congress.

Later that evening our Congress hosts organised a "Japan Night". We were treated to a very extravagant theatrical performance of many folk and traditional dances of the region. We also heard recitals on the traditional instruments of the shamisen and koto, and the energetic playing of enormous steel tympanic drums beaten with sticks the size of small logs!

Samples of gastronomic delights were presented later in the week at the "Sayonara Banquet". All 2,000 Congress participants were treated to a sumptuous selection of many different styles of Japanese food: sukiyaki, tempura, sushimi, sushi and yakitori. This was all washed down with sake drunk out of square wooden boxes, and Japanese beer. In pride of place was a 10 sq. ft ice carving of the Congress logo.

All Japanese I met were familiar with New Zealand. Kiwifruit were evident in all fruit shops, streetside stalls and decorating western style desserts. I was very impressed with the Japanese friendliness, courtesy and generosity. If you looked in the least confused or lost someone would approach and ask in careful English whether they could help.

My memories are dominated by the Congress. It was expertly and efficiently organised even to the extent of issuing a new series of postage stamps for the occasion. It was also the first Congress of Virology to be held outside Europe or the U.S.A., and was unanimously acknowledged as a huge success.

I gratefully appreciate the assistance of Eli Lilly (NZ) Ltd in enabling me to attend this Congress and to meet with many world virologists.

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Membership fees for the year beginning April 1, 1985 are:
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Presidential Address
Colvin Campbell

My colleague and mentor, Alan Harper, told me after last year's meeting in Dunedin that the most difficult task of the Presidency was selecting a topic for the annual address. In most organisations this is a State of the Nation address — where we've been, where we are at and where we are going. In this Institute we have a written annual report which brings you the good and bad news of the past year so you know where we've been, largely where we are at and, to be quite frank, I'm not sure any of us know where we are going, at least with the current Minister of Health.

I want to take as my central theme — Past, Present and Future.

The Past

We are particularly fortunate today to have among us the collective wisdom of many of our past Presidents. Council is grateful to Syd Shepherd for putting in the necessary effort to encourage them to come to this reunion in Palmerston North. I commend them all to you.

The first two of our Presidents, Laurie Buxton and Norm Ellison have left us for that great laboratory in the hereafter. Doug Whillans is unable to be with us through ill health. However, I am delighted that my own first boss, Gordon McKinley, will be with us tonight. Many of you will remember him with his ever present pipe. In nearly forty years at Waipukurau he wore away two window sills tapping out that pipe. This was long before smoking and health and medical technology and, dare I say it, TELARC were regarded as incompatible. The next, Les Reynolds, though I had heard of him 25 years ago in Waipukurau, was an unknown force to me. In a recent telephone call I expressed doubts as to how I would get the AGM/SGM through in less than six hours. He said "show them who is boss, 2 minutes each on a subject maximum, and you'll be able to take me out for drinks and dinner at five o'clock". I hope the advice was sound. We regret that ill health has kept him away.

Now to the two Hughs — Olive and Bloor. My recollection of Hugh Olive is being grilled at my intermediate exam in Wellington while my wife was in the maternity unit with our firstborn. I was nervous, wanted to get back to Waipukurau, but no hint of whether or not academic success was to be mine issued from Hugh's lips.

In this brief historical odyssey we come to the modern era when I attended my first NZIMLT conference with Malcolm Donnell in the chair and marvelled at his skill and composure. Harry Hutchings and I have a number of things in common, Waipukurau and Palmerston North, and the good of the Institute. However, there are some things I will never be able to follow. It would be great to be able to emulate Desmond Philip in his wit and articulation. Regrettably all I have is something approaching his girth. Brian Main as President gave me the task of looking after this Institute's interest in SHEO. I travelled to Wellington thirty times to SHEO meetings before I said to Brian I'd had it — the travel and SHEO. "Stand for V.P." he said. Due to Brian I stand before you today. In retrospect it's about the only good thing that came out of SHEO for me. The accomplishments of Syd and Alan, being of recent origin, are well known and need no further amplification.

However, Presidents do not an Institure make; at least not on their own, so we also think of the long serving journal editors, John Case and Bob Allan, and the even longer serving secretaries in Rod Kennedy and John Morgan, and Barrie of the recent past. As much as anyone these have kept the profession advancing. These men of the past, these giants of medical technology, have seen us grow from pathologists' assistants to an organisation with a potential membership of over 2,000 which should be able to stand on its own feet.

We must not forget the women of the past either — though none have yet made it to senior office on Council I would predict we will see a Madame Chair in the next few years.

Bear with me briefly while I go back to the beginnings, the first minute book of the Insititute, and take three excerpts to show where we were and where we might have been in 1985. From August 7, 1945.

> **Registration:** It was moved that lab workers who hold COP be placed on a register — it took us a long time to achieve — some would agree it hasn't done us that much good.
>
> **Education:** It was reported to the Conference of the N.Z. Association of Bacteriologists by Gordon McKinley that there was a strong desire by the N.Z. Society of Pathologists for the minimum educational qualification of laboratory workers to be a B.Sc. degree or its equivalent. We haven't got that yet.
>
> **Salaries:** It was recommended that the starting salaries for graduates be £316 and for cadets with U.E. £160. Salaries have moved somewhat in the last 40 years but have they moved in proportion. That is the question.

The Institute has had many "knockers" over the years but it is significant that few of these critics have stood for election to

Council to show they can do better. You have a very keen able enthusiastic group of people representing you at national level — they deserve your support.

This brings me to the **Present** and the subjects of salaries and conditions and laboratory assistants' unions. There is little doubt these will be discussed again during this meeting. Some among you will be aware of significant developments in the Auckland region over the past few months.

1. A major initiative by a group of laboratory assistants to form a nationwide laboratory assistants' union. This group wish to pursue their own salaries and condition claims whilst remaining affiliated to the NZIMLT for continuing education and qualifications (QTA) purposes. Some of the more senior members present will remember the tremendous fight the Institute had to prevent us being taken over by the Hospital/Hotel domestic workers' Union during the 1950's. Others will remember an equally big battle in this region to try and protect the jobs and rights of technologists and laboratory assistants in a private laboratory in Palmerston North in the early 1970's.
2. A second major initiative from the same area sees this year a request that the Institute negotiate a salary increase across the board of 35%! in addition to the annual general adjustment of, my guess, 12-15%. Last year I predicted some two months before it was announced that the AGA would be 6.5% — it was, in fact, 7%. Please remember that a disputed claim being taken to the Tribunal (if we even have a case to take) will mean that all members and non members of the Institute will forgo increases of between 40 and 80 dollars per week on an adjustment of 15% for up to six months or until the case is settled. This while inflation and mortgage interest rates are taking more and more from what we have left.

And now to **The Future:**

Five million children defaecated to death last year from diarrhoea. Consider for a few minutes the grim world outside New Zealand and the part that we, as a profession, might play.

In the past few years the Pacific Paramedical Training Centre strongly supported by this Institute, and other actions we have taken as an Institute, have started to do something for the people of the Pacific Basin. The World Health Organisation has as its declared aim — "clean water for *all* by the end of this decade and health for *all* by the year 2000". Noble and lofty aims to be sure but almost certainly unobtainable.

Despite the problems of this country much of the developing world is still a pretty unhappy place to live and die young in.

I am reminded of the old Arab proverb —

"I moaned because I had no shoes
until I met a man who had no feet".

Dr Houang will tell us tomorrow of the development of medical laboratories set up to provide basic — I emphasise basic — techniques in other parts of the world. The time has come to consider how best to export some of our 41 years' skill, knowledge and experience in medical technology to those less fortunate. Let's do something about those 5 million kids defaecating to death each year.

A major initiative taken by Council in the past few months will see the setting up of a legally constituted Medical Technology Trust. It is expected that any conference profits, donations from the commercial sector and individual donations from the membership will enable a reasonable amount of money to be distributed by the Trustees each year.

We have been concerned at the low number of applications for the Eli Lilly and NZIMLT scholarships and feel that if people are able to apply for assistance at any time this would be better. This assistance could be for visits to other laboratories, attendance at workshops, seminars and conferences in New Zealand and overseas or for help in funding small research projects. Council are excited by these prospects.

In conclusion I hope we have all learned some lessons from the past and recognise the efforts on our behalf of those people who got this organisation on its feet. When you come to discussing some of our present concerns remember the past but also look to Medical Technology in the year 2000 and beyond. Finally, please, please don't forget that although we are a small country our medical laboratory technologists are of high professional standard and maybe we can do something for those dying kids in other parts of the world.

Comments from my tour of Auckland, Wellington, Christchurch, and Dunedin on behalf of the NZIMLT — May-June 1985

Dr Peter L. Schwartz

From my side, I found the tour enjoyable and stimulating, and I hope that those on the receiving end had similar perceptions of the sessions. It was very pleasant working with groups that were so interested, receptive and co-operative.

The following comments are related entirely to what I heard from trainees, as one of my main aims in meeting with them was to find out about their concerns and their ideas on why substantial proportions were failing their examinations. In actual fact, the few suggestions in that regard were about what one might have expected, the most important one being the lack of time and lack of incentive for studying after spending full time working in the laboratory. Without enough time to study everything that is required, there is the temptation to guess what will be examined and to study only that — with the attendant danger of being proven disastrously wrong. There were several comments about the excessive amount of detail in the material which the trainees had to study, about the relevance of some of the studies, and about problems with misunderstanding what is actually being asked for in examination questions, especially the multiple choice ones. No one thought that it was just that the course was too difficult, and very few acepted the proposition that many (or possibly *any*) trainees deliberately failed their exams just so that they could keep their jobs and their pay for one more year. (In fact, some trainees got quite heated over the suggestion that any of their number would do such a thing, even though they might consider it briefly.)

To me one of the most discouraging things was to find that many of the trainees confessed to having quite low levels of motivation for their work. On average, they said that their motivation tended to drop partway through their course and it did not necessarily rise as they got into the upper levels. In Auckland in particular the motivation levels were reported to be low, although the reason for this difference from the other centres was not clear to me. In various ways I tried to encourage the trainees to maintain their enthusiasm, and I asked especially for their ideas on what problems they saw or what suggestions they had in areas that could influence their satisfaction with their course.

The comments which follow were mostly generally accepted at all centres. For the most part I have deliberately avoided indicating which centre was the source of any particular comment.

1. One of the most frequently commented-upon topics was examinations, examiners, or preparation for exams. The tone of the trainees' comments can be appreciated from the following remarks:
   - the examinations should be designed to test understanding and application, not just memory for facts;
   - the final result should not be based solely on performance on a single end-of-course examination;
   - the practical exam should be abolished in its present form; internal assessment or ongoing evaluation of work could easily replace it;
   - examiners should receive some training in how to set good examination questions;
   - simple 'A', 'B' or 'C' grades for examinations are of little value; trainees would like more feedback and possible even actual marks;
   - those who have failed examinations would like extensive feedback on what their problems are and what went wrong in their examinations;
   - those who have failed cannot see why they should have to wait a whole year to retake the examination;
   - there was some ill feeling generated because some disciplines allow their trainees time off to study before exams, while others do not. The trainees would like some consistency of policy, especially during Polytech time;
   - at least one trainee was frustrated by lack of information and then inconsistent information on the granting of a conceded pass.
2. Of almost as much concern were items related to teaching/

learning/training and similar matters:

- many syllabi were felt to be outdated and/or poorly defined
- more closely defined objectives were thought to be valuable;
- the trainees have little indication of the depth of learning required of them, especially at the advanced levels;
- trainees find it difficult to motivate themselves to do extra reading when they have so little time and so many lecture notes to go through;
- the Polytech system was thought to need improvement, with special suggestions being that the teachers need training in how to teach and some sort of guidelines in presentation of material that is relevant to trainees;
- some tutors seem to be not up to date and are lacking in enthusiasm, leaving the trainees at loose ends and deficient in confidence — sometimes trainees have to chase up tutors to give sessions that have been scheduled;
- some heads of departments at training hospitals appear to have lost interest in what is happening at Polytech and are not able to help trainees with problems they may have encountered there;
- many specialist doctors and technologists are poor teachers, talking at levels well above those of the trainees, or talking on irrelevancies;
- some of the specialist technologists are not as good at teaching as are some of those at lower levels — perhaps *they* should do more of the teaching;
- co-ordination among departments should be improved;
- it would be useful to have special remedial sessions *at work* to help with problems encountered at polytech and which were poorly managed there;
- trainees would like to see more consistency in the approaches among various departments to tutoring and to the use made of trainees. For the first three years, they feel undervalued — "he's only a trainee" — and they are not given responsibility or help, so they lose enthusiasm and feel that they're not valuable or competent. (At the same time, they like to have a backup person to call upon in case of problems.) Later on, they see different departments taking different approaches: "in .... they think you're there to learn; in .... you're just there to provide a pair of hands";
- it could be valuable to have a set of guidelines on the examination which could be made available to tutors so that they will be sure to deal with important topics, not ones that couldn't possibly be in the examination;
- it would be valuable to have more time allocated for study, especially at stage 5 NZCS;
- finally widespread dissatisfaction was expressed about the philosophy, methods, and attitudes of two tutors in particular — regrettably, both of them in biochemistry, thus leading to a whole bunch of trainees being 'switched off' to what could and should be an enjoyable and useful subject.

3. Several comments related to feedback in one form or another:
   - there was perceived to be a lack of feedback during the course, especially on practical work in the laboratory. Trainees requested formal evaluations which they would be able to see and comment on themselves;
   - similarly, some requested feedback from their immediate superiors on their performance and attitude. They believed they got feedback only when something went very wrong, rarely on the positive side;
   - one trainee reported having filled out an overall evaluation of the course and then never heard anything more. There was no feedback on the results of the course evaluation or what happened in response to the evaluation.
4. And of course at least some of the trainees were worried about getting a job of any sort (let alone one in the specialty they want) after they finish.

Those then are the main issues raised by the trainees. I could add a number of my own concerns, but I want to mention only three. First, I believe that a number of the trainees' problems relate to their being full-time employees and then being expected to be almost full-time students on top of that. I'm impressed that so many are able to do it! At the very least, I believe that tutors should keep this problem in mind when deciding what they expect of the trainees. Second, I would recommend that the examinations be designed to test the attributes and skills that you want your trainees to demonstrate. Surely that is something more than the memory for facts which is the main requirement for doing well in many of the examinations I have seen so far. And, finally, I agree wholeheartedly with the call for more internal, ongoing assessment and less dependence on the final examination in deciding the trainees' fates. I am convinced that the considered judgments of people who have worked closely with a trainee over a long interval are a much more valid indicator of the trainee's ability than is performance on a single examination (which may not even be relevant) at the end of the course. I only wish that I and my colleagues had the luxury of working so long and so closely with small numbers of students. Were such a state to exist, I for one would give up final examinations completely.

Membership Sub-Committee Report — August 1985

Membership

Since our May meeting there have been the following changes:

	8 Aug '85	31 May '85	13 Mar '85
Membership	1409	1373	1411
less resignations (23), deceased (1)	24	6	7
less G.N.A.	12	5	2
less deletion unfinancial	2	30	130
	1371	1332	1272
plus applications	121	74	101
plus reinstatements	3	3	-
	1495	1409	1373

Membership Composition:

1. Life Member (Fellow)	13	13
2. Life Member (Associate)	2	2
3. Life Member	-	-
4. Fellow	42	43
5. Associates	700	683
6. Member	557	524
7. Complimentary Member	139	110
8. Non-practising Member	28	19
9. Honorary Member	14	15
	1495	1409

Applications for Membership August 1985:

Miss Louise Fiona YARROW, Auckland; Mrs Helen Mary EGERTON, Auckland; Miss Angela Mary McKINSTRY, Auckland; Miss Paula Marie WHITEHOUSE, Auckland; Miss Susan Jane RUSHEN, Auckland; Mr Philip B. FINCH, Auckland; Ms Elizabeth Grace HIDE, Christchurch; Miss Susan Elizabeth GARRITY, Auckland; Mr Russell Terence COLE, Auckland; Miss Wendy June van TIEL, Auckland; Miss Marie Louise ALDCROFT, Auckland; Mr Mark Anthony KILGOUR, Auckland; Mrs Jacqueline Carmel WRIGHT, Auckland; Mr John Robert WICKENS, Auckland; Miss Wendy Marlene BRYDON, Auckland; Mr Lance LITTLE, Auckland; Miss Lisa BRIDSON, Auckland; Miss Michelle WHITE, Auckland; Miss Jocelyn WILLIAMS, Auckland; Mrs Nicolette Maree JAMES, Auckland; Miss Kamla PRASAD, Auckland; Ms Kim STRINGER, Auckland; Miss Andrea Leigh ABERNETHY, Auckland; Miss Stephanie Alice WILLIAMS, Auckland; Miss Anne McINTYRE, Auckland; Miss Diana Angela CAMMELL, Auckland; Miss Kamala PATEL, Auckland; Miss Kay Diane MOONEY, Auckland; Mrs Ingrid THOMASSEN-HEINS, Auckland; Miss Susan Dianne PRIESTLEY, Auckland; Miss Gail Frances BARRAR, Auckland; Mr Paul William HUBBARD, Auckland; Mrs Lisa Jayne HESLIN, Auckland; Mrs Jennifer Mary MORGAN, Auckland; Miss Allison Lorna KENA, Auckland; Miss Julie SORENSON, Auckland; Miss Jeni Marion LONGMAN, Hamilton; Miss Tania Jane Carroll, Hamilton; Miss Evelyn Mary TWENTYMAN, Hamilton; Mrs Julie BEATTIE, Auckland; Mrs Karen Anne CASEY, Auckland; Ms Susan Jane GRANT, Christchurch; Miss Vickie HANRAHAN, Whangarei; Miss Nicola Claire ARMSTRONG, Auckland; Miss Catherine Anna GROENESTEIN, New Plymouth; Miss Christine Ann HURLEY,

New Plymouth; Ms Jennifer Mary STONE, Thames; Miss Denise Ann DRADER, Auckland; Ms Elizabeth Anne LONGSON, Auckland; Mrs Yvonne Alma CAMERON, Auckland; Miss Sharron May MILHAM, Auckland; Mrs Janice Edith WADSWORTH, Auckland; Ms Beverly Charlotte TELFER, Christchurch; Mrs Linda Patricia HUNTER, Auckland; Mrs Judith Anne HODGETTS, Wellington; Miss Lisa Anne STERRITT, Hamilton; Mr Frederick Anthony FITZHUGH, Rotorua; Miss Jill WALTON, Hamilton; Miss Judith Maria NIELAND, Hamilton; Miss Jenny Leah BATY, Hamilton; Mr Robin Charles HUNTER, Rotorua; Miss Karen Janette CURTIS, Rotorua; Ms Rochelle Marie FERGUSON, Rotorua; Mrs Patricia Ann KING, Hamilton; Miss Claire Elizabeth EBBETT, Hamilton; Miss Jillian Fay MIDDELKOOP, Hamilton; Mr John Demden EVANS, Tauranga; Mrs Elaine BENNETT, New Plymouth; Miss Catherine Anne MAHONEY, Wellington; Miss Carol STEWART, Wellington; Mrs Bronwyn SHEPPARD, Auckland; Miss Karen COOPER, Auckland; Miss Yvonne Anne FLOOD, Auckland; Ms Jan Maree PRITCHARD, Whangarei, Miss Amelia Prunella BROWN, Gisborne; Mrs Heather Ann CHILD, Auckland; Miss Katherine Elizabeth EXTON, Auckland; Miss Ngaire HART, Whangarei; Miss Laura SCHONEWILLE, Auckland; Miss Caroline Mary BOWDEN, Wellington; Miss Charmaine Mary MOSS, Wellington; Miss Jacqueline May CORNWELL, Wellington; Miss Robyn Jane WALLER, Ashburton; Mrs Lois May HARRISON, Auckland; Mrs Eugenie Louise HARRIS, Dunedin; Miss Marjdein Maria Angeline SNIJDERS, Nelson; Miss Veronica J.R. DUGGAN, Nelson; Miss Christina Mia MESMAN, Nelson; Miss Trudy Louise MILSON, Nelson; Mrs Kristin Joy WARN, Nelson; Miss Tanya Maria ARCHER, Nelson.

Applications for Associateship August 1985:

Mrs Carolyn Ann BUNKALL, Auckland; Mrs Sheila E. HOOKER, Auckland; Mrs Norma Margaret BECK, Auckland; Mrs Christine BLACKWELL, Auckland; Mr Peter Kenneth HUGGARD, Auckland; Ms Lea VALLIS, Wellington; Miss Colleen WORTERS, Auckland; Mrs Jan GEMPTON, Auckland; Mrs Theresa Anne HAYSOM, Auckland; Mrs Sheila Mary RYKEN, Auckland; Mrs Colleen RUSSELL, Auckland; Mrs Jill Margaret O'BRIEN, Auckland; Miss Anna Louise JOLLY, Auckland; Mrs Marie WILLSON, Gisborne; Mr Thomas Bernard MULVEY, Auckland; Mrs Pauline Joy FLETCHER, Auckland; Mr John Arthur POUNTNEY, Auckland; Mrs Jayne Anne VENNELL, Auckland; Miss Linda Marie TAYLOR, Auckland; Mr Ian Peter MACKAY, Auckland; Miss Rosamund PAYNE, Auckland; Mrs Susan Grace CHAMBERS, Auckland; Mr Bernard Colin CHAMBERS, Auckland; Miss Sharon LAW, London, England; Mrs Janiece Margaret FORTUNE, Christchurch; Mrs Glennis WHITE, Wellington; Mrs A.S. JOHNSTON, Masterton; Ms Greta Lois Pauline BEATTIE, Auckland; Ms Lynne Elizabeth BUSCKE, Tauranga; Mr Peter BRYAN, Nelson; Mr Geoffrey Arthur PATTON, Dunedin; Mr Christopher Noel BOWDEN, Dunedin; Mrs Barbara Anne SILVESTER, Palmerston North.

Resignations:

Miss C.J. WISEMAN, Wairoa; Mrs A.W. FULTON, Palmerston North; Mrs J.G. KUYPERS, Auckland; Mrs T.M. BAKKER, Auckland; Ms M.C. HAY, Wellington; Miss B.M. ANDERSON, New Plymouth; Mrs J.A. EATON, Christchurch; Miss S.L. STROUD, Christchurch; Mrs G.A. WATSON, Napier; Mr R.J. TRACEY, Napier; Miss C. HENDERSON, Auckland; Mrs D.N. CHINN, Dunedin; Miss J.A. HANSEN, Taumarunui; Mrs R.J. EDEN, Wellington; Miss M.D. UNDRILL, Dunedin; Mrs P.J. WILLIAMS, Auckland; Mrs K.H. HEATLEY, Kaiapoi; Mrs R.D. ROLLINSON, Christchurch; Mrs G. JONES, Hamilton; Mrs A.L. SIM, Dunedin; Mrs F.E. MASSEY, Wellington; Mrs S.E. ANSELL, Hamilton; Mrs H.J. MAGUIRE, Wellington.

Gone No Address:

Miss N.L. CRAWFORD, Auckland; Mrs J.A. GODDARD, Auckland; Miss C.J. NORWOOD, Napier; Miss A.J. VASS, Napier; Miss B.A. McCOOL, Napier; Miss S.E. BIRCH, Auckland; Miss L.M. JONES, Auckland; Mrs C.J. PEARCE, Wellington; Miss B.J. LAURENT, Wellington; Miss J. MEDGWICK, Auckland; Miss B. BINNEY, Auckland; Miss J. SAINSBURY, Auckland.

BRANCH NEWS

At the Annual General Meeting of the Christchurch Branch of the NZIMLT, the following were elected as members of the committee.

Chairman: K. Ahern
Secretary: J. Aitken
Treasurer: A. McDury
Committee: B. Hobson
S. Joyce
H. Potter

NZIMLT LIBRARY

The following Journals are available for loan from the NZIMLT Librarian, Haematology Dept, Dunedin Hospital.

Laboratory Medicine Dec 1984 Vol 15, 12
1. Monoclonal Antibodies : Clinical Utility and the Misunderstood Epitope.
2. B2-Microglobulin in Laboratory Diagnosis.
3. Predicting Urine Culture Results Comparison of Nitrituria, Leucocyturia and Micorscopic Bacteruria.

Laboratory Medicine April 1985 Vol 16, 4
1. Platelet Transfusion Therapy.
2. Evaluation of a Laser-based Three Part Differential Analyzer in Detection of Clinical Abnormalities.
3. Improvements for Routine Renal Pathology.
4. The Clinical Microbiology Laboratory and Hospital Infection Control.

Canadian Journal of Medical Technology Vol 46, 3
1. T and B Lymphocyte Phenotyping by Flow Cytometry.
2. Thick Paraffin Sections of Skin to Show Pilosebaceous and Sweat Gland Units.
3. Bacterial Isolations from Peritoneal Fluids in CAPD Patients.

Canadian Journal of Medical Technology Vol 46, 4
1. IgG Synthesis and the Immunology of CSF.
2. Colloid Osmotic Pressure — an overview.
3. A comparison of Histoclear to other Cleaning Agents.
4. Evaluation of the Microbiology of Urine Specimens from Patients with Long-term Indwelling Catheters.

Australian Journal of Medical Laboratory Science Vol 6, 1.
1. Dose-Response Characteristics of a Monoclonal Antibody Based Two-Site Immunoradiometric Assay Hb_sAg.
2. Microplate Techniques — Improved Efficiency in Blood Group Serology.
3. Comparison of some A.P.T.T. Reagents.
4. The Use of Test Strips as a Rapid Screen for U.T.I.

Australian Journal of Medical Laboratory Sciences Vol 5, 3
1. Reporting of Semen Analysis — A Basic Approach.
2. Thiol and Superoxide Dismutase in Rheumatoid Arthritis and Chron's Disease.
3. Evaluation of Three Commercially Available ELISA Assays for Routine Hb_sAg screening of Blood Donors.

Journal of Medical Technology Vol 1, 7
1. Exercise Induced Changes in Laboratory Chemistries.
2. Exertional Heat Illness — A Review.
3. Anabolic Steriods — The Facts.
4. Faecal Straining Methods for Screening *Cryptosporidium oocysts.*
5. LISS Panagglutination Interfering with Compatibility Testing.
6. Discontinuous Density Gradient Method for Separating Reticulocytes.

Journal of Medical Technology Vol 1, 11
1. Rapid Virus Diagnosis.
2. Importance of Bacterial Strains in the Diagnosis of Infectious Disease.
3. The Future : DNA Probes for Microbial Detection.

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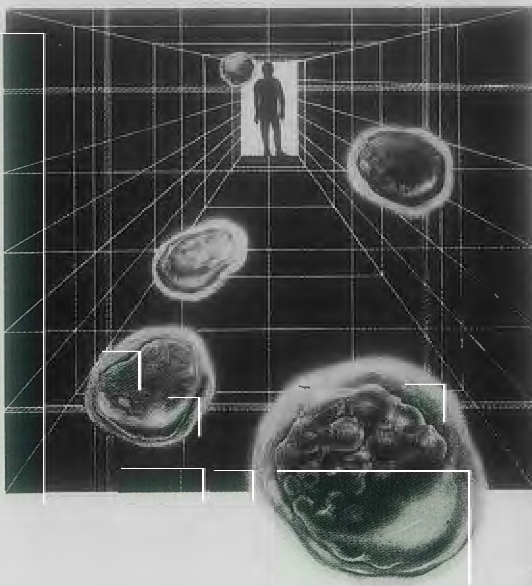

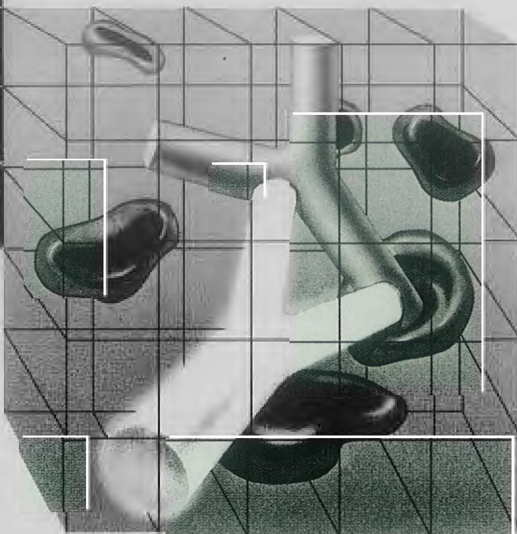

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Patent Pending

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Circle 96 on Reader's Reply Card

Journal of Medical Technology Vol 1, 12
1. Differential Diagnosis in Effusion Cytology.
2. Fine Needle Aspiration Cytology.
3. Hormonal Cytology : An Introduction.
4. An "Abnormal" PAP Smear : What Does it Mean?
5. A.Q.A. Program for the Histopathology Dept.

Journal of Medical Technology Vol 2, 1
1. Clinical Application of Arterial Blood Gases : How Much Accuracy do We Need?
2. Inaccuracy in Blood Gas/pH Measurements caused by Blood Samples.
3. Comprehensive Statistical Quality Control Programme for Blood Gas Analysers.
4. Raji Cell Assay for Immune Complexes by Immunofluorescence.

Journal of Medical Technology Vol 2, 3
1. Molecular Biology Techniques in the Clinical Microbiology Laboratory.
2. Clinical Microbiology of AIDS.
3. Efficacy of a Simplified Screening Procedure for Hyperlipoproteinemias.

1985 Technical Assistant's Examination Results

Q.T.A. in Clinical Biochemistry

DONAGGIO, Jillian Mary; FITZGERALD. Karen Michele; HOWARTH, Elaine Debra; LUCAS, Stephanie Ellen; MACKAY, Elizabeth Dianne; PRIESTLEY, Susan Diane; SCOTT, Meren June; THOM, Christine; WILLIAMS, Joanne.

Q.T.A. by General Certificate.

CUNNINGTON, Jennifer Ellen; NEILL, Beverley Rewa; TAYLOR, Kenneth Charles; TIPENE, Lillian; WHITE, Cheryl Lee Ann.

Q.T.A. in Haematology.

BELCHER, Christine; COVELL, Gordon Ross; HEARNE, Claire; HOUSE, Lesley Ann; HUNTER, Jenni Ann; MARTIN, Fiona Gaye; MCLEOD, Janette; MILES, Karen Lesley; PERRY, Jacqueline Jane; RATCLIFFE, Jayne Ina; ROWAN, Clare; ROYCROFT, Shona Jean; STAPLETON, Andrea Kathleen; THOMASON, Heather Jean; WHITE, Felicity Jane; WIGMORE, Marina Joan; WILDBORE, Maurice John; WOODS, Caroline Helen.

Q.T.A. in Histological Technique.

FARQUHAR, Alexander Ross; KYLE, Susan Margaret.

Q.T.A. in Medical Cytology.

ELEY, Linden Margaret; HOWE, Margaret Joyce; JAMES, Yvette Irene; KIDMAN, Lisa Maree; LIM, Beng Yim; PHILLIPS, Kathryn Jane; TURTLE, Erin Kim.

Q.T.A. in Medical Microbiology.

BALL, Nicola Mary; BIRCH, Susan Elizabeth; EDLIN, Rosemary Janice; GRIFFITHS, Rochelle; GROOM, Lisa Catherine; HENSCH, Tania Isabelle; HORNE, Janet Elizabeth; KILTY, Rachael Ann; KRAMER, Julie Adele; McKAY, Robyn Anne; McNOE, Patsy Rose; SCOTT, Tarnea Maria; SMITH, Davina; STENHOUSE, Katharine Ann; STEPHENSON, Michelle.

Q.T.A. in Radioisotope & Radioassay Technique.

BUTLER, Cherilynn May.

Q.T.A. in Immunology (Immunohaematology).

ANGROVE, Heather Leigh; BURROWS, Linda Mary; CROSBY, Tracey; HARRISON, Veronica Decilia; KING, Patricia Ann; MASON, Lynette Joy; SCARBOROUGH, Heather Angela; STEWART, Judith Suzanne; THORNTON, Alison Maree.

Q.T.A. in Immunology (Microbiology).

ENGLISH, Pamela Jane; GANLEY, Michelle Erin; WHINERAY, Susan Jane; WICKENS, Gillian Wendy; WILLIAMSON, Leigh Vivienne.

Q.T.A. By Special Certificate — Public Health Microbiology.

INGLIS, Kerryn Anne Louise.

Q.T.A. By Special Certificate — Blood Products.

BEANLAND, Megan Diane; HURREN, Pamela Jane; STEWART, Kaye; TAUATI, Nicky; TIRAA, Anna Elizabeth.

Q.T.A. By Special Certificate — Virology.

FISHER, Ellery Jane; GRANT, Catherine Anne.

Apology

Eli Lilly Ltd were inadvertently omitted from the list of sponsors published in the annual report. The NZIMLT apologises for this omission and would like to thank Eli Lilly for their continued support.

1985 Technical Assistants Exam Result Summary

EXAMINATION	NO ENROL	NO SAT	NO WITH EACH GRADE A	B	C	D	E	AEGROTAT P	F	% PASS	AV MARK
Q.T.A. in Clinical Biochemistry	10	10	1	3	5	1	0	0	0	90.0	61.6
Q.T.A. by General Certificate	7	7	1	0	4	0	2	0	0	71.4	56.2
Q.T.A. in Haematology	21	20	4	8	6	1	1	0	0	90.0	65.8
Q.T.A. in Histological Technique	3	3	0	1	1	0	1	0	0	66.7	54.2
Q.T.A. in Medical Cytology	7	7	3	1	3	0	0	0	0	100.0	67.1
Q.T.A. in Medical Microbiology	21	20	1	4	10	2	3	0	0	75.0	54.4
Q.T.A. in Radioisotope & Radioassay Technique	1	1	0	1	0	0	0	0	0	100.0	65.5
Q.T.A. in Immunology (Immunohaematology)	9	9	2	5	2	0	0	0	0	100.0	69.7
Q.T.A. in Immunology (Microbiology)	5	5	3	0	2	0	0	0	0	100.0	74.4
Q.T.A. by Special Certificate – Public Health Microbio	1	1	0	0	1	0	0	0	0	100.0	58.0
Q.T.A. by Special Certificate – Blood Products	6	6	2	2	1	0	1	0	0	83.3	62.5
Q.T.A. by Special Certificate – Virology	2	2	0	2	0	0	0	0	0	100.0	70.5
TOTAL	93	91	17	27	35	4	8	0	0	86.8	62.4

AWARDS AND PRIZES

Examination Prizes

These are all subject to the restriction that the candidate must obtain an aggregate 'B' pass or greater in the Board's Examinations and be a financial member of the Institute.

1. NZIMLT Examination Prize for Qualified Technical Assistants — $50
   Donor — New Zealand Institute of Medical Laboratory Technology
   Subjects — Clinical Biochemistry
   Medical Cytology
   Histological Technique
   Microbiology
   General
2. NZ Blood Foundation Prize for Qualified Technical Assistants — $50
   Donor — New Zealand Blood Foundation
   Subjects — Immunohaematology
   Haematology
3. Medical Laboratory Technologist Board Certificate Level Examination Prizes $50

Subject	Donor
Clinical Chemistry	— Roche Products NZ Ltd
Haematology	— Kempthorne Medical Supplies Ltd
Histology	— Kempthorne Medical Supplies Ltd
Immunohaematology	— Technicon Equipment Pty Ltd
Immunology	— Hoechst NZ Ltd
Microbiology	— Roche Products NZ Ltd
Medical Cytology	— Biotek Supplies
Nuclear Medicine	— Amersham Pty Ltd
Cytogenetics	— Sci Med (NZ) Ltd

4. Medical Laboratory Technologist Board Specialist Level Examination Prizes $100

Subject	Donor
Clinical Chemistry	— Watson Victor Ltd
Haematology	— General Diagnostics
Histology	— Sci Med (NZ) Ltd
Immunohaematology	— Medic DDS Ltd
Immunology	— Hoechst NZ Ltd
Microbiology	— Wilton Scientific Ltd
Virology	— Gibco NZ Ltd
Medical Cytology	— Biotek Supplies
Nuclear Medicine	— Amersham Pty Ltd
Cytogenetics	— Sci Med (NZ) Ltd

Journal Awards

Restricted to financial members of the Institute. The sum of $200 awarded biennially for the best original or review article in the following categories:

1. NZIMLT Journal Student Award
2. Roche Products Microbiology Award
3. Roche Products Clinical Chemistry Award
4. McGaw-Dade Haematology/Immunohaematology Award
5. Hilder Memorial Prize for the best Technical Communication
6. NZIMLT Journal Prize for subjects not covered above.

Registered Medical Laboratory Technologist' Badge

At the 1984 Annual General Meeting Council was requested to investigate introducing a badge for Registered Medical Laboratory Technologists who are Fellow or Associates of the Institute.

It was the view of Council that the badge should carry the logo of the Medical Laboratory Technologists Board rather than the Institute and subsequently approval was granted by the Board subject to the provision of awarding a badge be incorporated into the rules of the Institute.

This requirement was met at the recent General Meeting by amending Rule 7 as follows:-

7 (c) Every Fellow or Associate who is registered with the Medical Laboratory Technologists Board, shall be entitled upon proof of registration and payment of the appropriate fee, to receive a Registered Medical Laboratory Technologists badge' from the Institute.

(d) Every diploma and badge shall be issued under the seal of the Institute and shall be in such form as the Council may from time to time determine, and shall be the property of the Institute, and upon the member ceasing to be a member shall be recoverable on demand.

A badge (above) has been approved by Council and is now available for purchase in accordance with the above rules. The badge is blue with gold print and measures 35 x 30mm. The cost of the badge is $5.00 including postage.

If you wish to make application for a badge then please complete the form below:-

APPLICATION FOR REGISTERED MEDICAL LABORATORY TECHNOLOGIST BADGE

NAME (Block letters): ....

MAIDEN NAME: ....

ADDRESS: ....

....

YEAR QUALIFIED: ....

"I certify that I am a) A Fellow or Associate of the New Zealand Institute of Medical Laboratory and
b) I am registered with the New Zealand Medical Laboratory Technologist Board"

SIGNED: .... DATE: .... Fee enclosed: $5.00 payable to the NZIMLT.

Forward to Mr B. T. Edwards, Hon. Secretary, NZIMLT, Haematology Department, Christchurch Hospital, Christchurch.

Travel Awards

Application forms are available from the Secretary, NZIMLT. Winners are announced at the Annual Conference.

1. **Wellcome NZ Ltd International Travel Award**
   Donated by Wellcome NZ Ltd for single return airfare plus accommodation to assist an NZIMLT Fellow or Associate member to attend the biennial Congress of the IAMLT as official delegate.
2. **The NZIMLT Scholarship**
   $500 donated annually by the NZIMLT for research or to attend an overseas scientific meeting. Applications close on the 1st July.
3. **The Eli Lilly Microbiology Scholarship**
   $500 donated annually by Eli Lilly for research or to attend an overseas scientific meeting. Applications close on the 1st July.

The NZIMLT would like to thank Biotek Supplies and Amersham Pty Ltd for their sponsorship, this being their first year, and to all other firms for their continued support.

Minutes of the 41st Annual General Meeting of the New Zealand Institute of Medical Laboratory Technology Held in Palmerston North on 13 August 1985 Commencing at 3.45pm.

Chairman

Mr C. Campbell

Apologies

It was resolved that apologies be accepted from L. Reynolds, J. Reese, D. Romain, G.R. Rose, J. Marsland, M. Eales and D.S. Ford.

D. Pees/K. McLoughlin

The Secretary read a message of best wishes from the New Zealand Haemophilia Society which was greeted wth acclamation.

Proxies

A list of proxy holders was circulated to the meeting.

Minutes

It was resolved that the minutes of the 40th Annual General Meeting as circulated be taken as read and confirmed.

D. Dixon-McIver/B. Main

Annual Report

It was resolved that the Annual Report be received.

B. Edwards/B. Main

Speakers on the Annual Report included K. McLoughlin (Fellowship), D. Pees (Membership), D. Dixon-McIver (Publications), J. Parker (Awards), W. Wilson, M. Donnell, J. Aitken, G.D.C. Meads (Negotiations), B.T. Edwards (Technical Assistants Examinations), K. McLoughlin (Education), M. Young (Laboratory Assistants) and D. Reilly (Continuing Education).

It was resolved that the Annual Report be adopted.

B. Edwards/G. Cameron

Financial Report

It was resolved that the Financial Report be received.

D. Reilly/A.D. Nixon

Other speakers on the Financial Report included M. Lynch and D. Pees.

It was resolved that the Financial Report be adopted.

D. Reilly/D. Dixon-McIver

Election of Officers

The following members of Council were elected unopposed:-

President	Mr C. Campbell
Vice Presidens	Mr K. McLoughlin & Mr W. Wilson
Secretary	Mr B.T. Edwards
Treasurer	Mr D. Reilly
Regional Representatives:	
Auckland	Mr D. Pees
Central North Island	Mrs M. Young
Wellington	Mr J. Elliot
Christchurch	Mr P. McLeod
Dunedin	Mrs J. Parker

Presentation of Awards

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

Certificate Examination Awards

Clinical Biochemistry	Miss J.A. Duncan
Haematology	Miss S.W. Boag
Microbiology	Mrs J.M. Wright
Immunohaematology	Miss M.M. Phipps
Immunology	Ms S.G. Feeley
Virology	Mr W.T. Gee
Nuclear Medicine	Miss A.J. Letham

Specialist Certificate Examination Awards

Clinical Biochemistry	Mrs D.L. Bell
Haematology	Miss M. Janssen
Microbiology	Miss K.M. Pitts
Immunohaematology	Mr S.M. Henry
Histology	Mr G.A. Patton
Cytology	Mr C.N. Bowden
Cytogenetics	Mrs N.A. Monk

Qualified Technical Assistants Awards

Immunohaematology	Miss L. Burrows
Clinical Biochemistry	Miss J. Williams
Haematology	Miss F. White
General Certificate	Miss J. Cunnington
Medical Cytology	Mrs M. Howe
Medical Microbiology	Miss L. Groom

Journal Awards

Roche Products Microbiology Award	Mr M. McCarthy
Hilder Memorial Award	Mr G. Storey

Special Awards

NZIMLT Scholarship	Mr S.M. Henry
Eli Lilly Microbiology Scholarship	Mr G. Mills
Annual Scientific Meeting Best Trade Exhibit Award	Boehringer Mannheim Limited
Wellcome (NZ) Ltd/NZIMLT International Travel Award	Mr K. McLoughlin

Honoraria

It was resolved that no honoraria be paid.

B. Main/D. Dixon-McIver

Auditor

It was resolved that Deloitte, Haskins and Sells be appointed the Institute Auditors.

D. Reilly/D. Pees

1987 Annual Scientific Meeting

Mr P. McLeod proposed that the 1987 Annual Scientific Meeting be held in Nelson. There were no other nominations and the decision was met with acclamation.

There being no further business the meeting closed at 4.55 pm.

C.H. Campbell
Chairman

Minutes of the Special General Meeting of the New Zealand Institute of Medical Laboratory Technology Held in Palmerston North on the 13 August 1985 Commencing at 4.55pm.

Chairman

Mr C. Campbell

Minutes

It was resolved that the minutes of the Special General Meeting held on the 16 August 1984 be taken as read and approved.

J. Elliot/I. Buxton

Business Arising

Mr Elliot reported on and distributed samples of the Registered Medical Laboratory Technologist badge recently approved by the Council.

Remits

1. It was moved J. Elliot, seconded D. Reilly that Rule 7(c) be amended to read:

   (c) Every Fellow or Associate who is registered with the Medical Laboratory Technologists Board, shall be entitled upon proof of registration and payment of the appropriate fee, to receive a "Registered Medical Laboratory Technologist Badge" from the Institute.

   And the following subclause added:

   (d) Every Diploma and Badge shall be issued under the seal of the Institute and shall be in such form as the Council may from time to time determine, and shall be the property of the Institute, and upon the Member ceasing to be a member shall be recoverable on demand.

   The motion was carried on a show of hands.

2. It was moved W. Wilson, seconded D. Pees that Policy Decision number 6 be reaffirmed.

   Policy Decision No. 6 (1979/82): That the Council must be informed in advance of national workshops, seminars or similar gatherings which are being conducted under the aegis of N.Z.I.M.L.T. Branch organisations.

   The motion was carried on a show of hands.

3. It was moved D. Phillip, seconded M. Crowther that the meeting instruct Council to investigate the formation of a separate organisation to handle negotiations and industrial matters for medical laboratory workers, and to report back to the membership with proposals for consideration at the next Special General Meeting.

   The motion was carried on a show of hands.

4. It was moved A. Pratt seconded E. Johnson that the category of Laboratory Assistant become known as Medical Laboratory Technician.

   After the counting of hands and proxies the motion was declared lost with 142 for the motion and 133 against which meant it failed to reach the required two thirds majority.

5. It was moved A. Pratt seconded P. Clarke that the voting system be changed to postal voting on circulated remits.

   The motion was declared lost on a show of hands.

6. It was moved A. Pratt seconded I. Steed that this meeting instruct Council to reintroduce the Q.T.O. examinations.

   The motion was declared lost on a show of hands.

7. It was moved D. Pees seconded I. Guild that the Institute waives the provision under rule 9(c), relating to subscription arrears for the current financial year. This will enable those members whose membership has lapsed and wish to rejoin, to do so without incurring a possible penalty fee.

   The motion was declared carried on a show of hands.

8. It was moved J. Aitken seconded M. Murnane that the NZIMLT negotiate for a sole charge responsibility allowance for laboratory staff working outside normal working hours while in sole charge of the laboratory for emergency and urgent services.

   The motion was declared carried on a show of hands.

General Business

1. It was moved W. Wilson seconded D. Pees that a $10,00 levy be made on all Fellows, Associates, Members and Complimentary Members of the Institute to meet the cost of retaining an industrial advocate.

   It was moved E. Norman seconded G. Cameron that the motion be amended to increase the $10.00 levy to $30.00.

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

   The original motion was then put to the meeting and carried unanimously.

2. It was moved D. Dixon-McIver seconded D. Pees that Council investigate the composition of Council so it better reflects the distribution of the membership.

   The motion was carried on a show of hands.

3. It was moved A. Pratt seconded M. Aldcroft that the composition of NZIMLT negotiating committees established after 12 August 1985 should consist of two laboratory technologists, two laboratory assistants and 1 person nominated by the Executive Committee who shall act as a Chairman.

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

4. It was moved M. Lynch seconded D. Pees that this meeting be pleased to note the presence of four of our colleagues attending the Scientific Meeting from Fiji.

   The motion was carried with acclamation.

5. Mr C.S. Shepherd then proposed a vote of thanks to the Chairman which was carried with acclamation.

There being no further business the meeting closed at 6.21 pm.

C.H. Campbell
Chairman

POETS CORNER

The Brains Behind the Machine

Technology has reached a point where all have recognized
That many of the attributes of humans should be prized.
For even NASA found their shuttles always failed when
Shot up to space without a cargo of good, well-trained men.

And now we see that Roche, a firm we always have admired,
Have come up with a new idea we feel is quite inspired!
Their Cobas Fara, just released, has such a clever plan —
It has its own computer, and an extra, plug-in man.

It's well thought out, they have him seated on a shelf behind,
And cables plug right through his fingertips, up to his mind.
That way, he always knows the status of the whole machine,
And from the front, expression on his face is clearly seen.

When all is well, and when control results that go on file
Are all in range, his face has such a warm and charming smile!
But ah! when problems loom, or if the Fara should close down,
The staff will cringe in terror from his horrifying frown!

Whatever problems should arise, he can describe them all,
No need to watch for error codes, he'll simply give a call.
Whenever anything goes wrong, the batch he'll quickly halt,
And tell the operator what he needs to fix the fault.

They say at Roche that problems were initially involved
In hooking up a man, but these eventually were solved.
He doesn't need to sleep, his memory writes itself each day
Across to printed circuit boards, where dreams are cleared away.

A special mix of food and vitamins must be supplied,
And drain lines run across from him to bottles at the side.
Each year, he must be unplugged for a week of holidays,
And then a substitute is found, (for which, of course, Roche pays).

And so, for all of you out there who tire of Automation,
I'm sure you can appreciate from this brief information
The benefits of Roche's latest brilliant innovation!

Robin Cooper

COMING EVENTS

The Combined meeting of the International Society of Haematology and the International Society of Immunohaematology.

The combined meeting of the above societies is being held in Sydney from the 12th to the 16th May, 1986. Group travel is available for those wishing to participate. The cost will be approximately $1500 based on Auckland return. The cost will include travel, accommodation and registration (meals are excluded)

For further information contact Walter Wilson, Blood Transfusion Centre, Park Ave, Auckland.

SOUTH PACIFIC CONGRESS ON MEDICAL LABORATORY SCIENCE

SYDNEY, AUSTRALIA
18th — 22nd August, 1986

CONGRESS VENUE:
Sydney Hilton International

CONGRESS SECRETARIAT:
All enquiries and correspondence should be addressed to:

The Secretariat, South Pacific Congress on Medical Laboratory Science, G.P.O. Box 2609, Sydney, NSW., Australia, 2001.
Telephone: (02) 241 1748; (02) 27 6940
Telex: AA74845 CONSEC
Cables: CONVENTION Sydney.

• PLENARY SESSIONS • SYMPOSIA
• POSTERS • MAJOR EXHIBITION

* DNA Probe Technology; * Bedside Pathology;
* Fibronectins; * AIDS — Current Status; * Specific Proteins; * The Impact of Technology;
* Medically Transmitted Disease;
* Computers in the Laboratory; * Microbiology of Abscesses; * Organ Transplantation.

Asean Conference in Medical Laboratory Technology

24-28 November, 1986

Conference Information

Call For Papers

Original research and other scientific papers on any of the topics scheduled for discussion will be accepted for presentation at the symposia-workshops, and free papers sessions. Audio-visual equipment will be provided for presentors.

Abstract forms for the use of authors are available upon request and must be sent to the Chairman, Scientific Committee on or before July 1, 1986. Presentors will be allowed twelve (12) minutes for their presentations and three (3) minutes for discussions.

Technical Exhibits

Displays of the latest equipment, devices, materials and supplies will be featured in the technical exhibits. Producers, manufacturers and dealers are all invited to show their newest, state-of-the-art technology and products to participants.

Scientific Exhibits

Scientific exhibits and posters will also be displayed during the conference, and authors are invited to submit their summaries, descriptions and specifications to the Chairman. Scientific Committee on or before July 1, 1986.

Official Language

English is the official language for all discussions, proceedings, publications and other activities.

Accompanying Persons' Program

An exciting and colourful social program has been scheduled for accompanying persons. These include sightseeing trips, shopping tours and other entertainment activities. They are also invited to all receptions for participants and can enjoy a variety of

optional tours to different tourist spots in the country through the official travel/tour agency.

Registration Fees

The fees are: (US Dollars)	Before Dec. 31/85	Before Jan. 30/86	After Sept. 30/86
Participants	$90	$120	$130
Accompanying Persons	65	75	90

These fees include: one cocktail, one dinner, six snacks, one city tour, conference bag, and admission to exhibits and all sessions.

Travel Documents

A valid passport is a basic requirement for entry. Visitors with valid tickets for return or onward journeys may stay for 21 days without a visa, except those from countries without diplomatic relations with the Philippines, stateless persons and those from certain restricted countries. Visas are extendable up to 59 days.

International health certificates for smallpox and cholera are required. Yellow fever vaccination is needed for travellers coming from infected areas, except infants under one year of age.

Conference participants are accorded special courtesies of the port to facilitate entry. It is, therefore, important to provide advance notice of arrival to the Secretariat.

WELCOME TO STOCKHOLM

The 17th Congress of the International Association of Medical Laboratory Technologists Stockholm 3—8 August, 1986

A SCIENTIFIC PROGRAM, INCLUDING VARIOUS FIELDS OF LABORATORY SPECIALITIES AND FOCUSING ON LABORATORY TECHNIQUES

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AN EXHIBITION OF EDUCATIONAL MATERIAL USED IN THE TRAINING OF MEDICAL TECHNOLOGISTS AND RELATED HEALTH PERSONNEL

A SEMINAR SUPPORTED BY WORLD HEALTH ORGANIZATION ON "THE LABORATORY IN PRIMARY HEALTH CARE"

WORKSHOPS LABORATORY VISITS HOME HOSPITALITY

CONTRIBUTIONS OF PAPERS AND POSTERS

Abstract forms can be obtained from each member society or SLF.

For further information please contact: SLF, Östermalmsgatan 19, S-114 26 STOCKHOLM, Sweden
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NEW PRODUCTS & SERVICES

NEW SINGLE VIAL TRIGLYCERIDES GPO REAGENT

Bio-Rad ECS Division has announced the development of a new Triglyceride GPO Reagent with single-vial capability to speed assays. A definite improvement over other currently available triglyceride reagents, the Bio-Rad product requires no stopping reagents, and results can be read after only five minutes incubation at 37°C. This five minute assay requires just one vortexing step and uses a liquid standard for increased convenience. This makes the product the fastest reagent available today.

Bio-Rad Triglycerides GPO Reagent is an enzymatic method employing the Trinder Colorimetric reaction through glycerol phosphate oxidase. The test requires only 20ul of patient serum or plasma, and results maintain excellent correlation with other major triglycerides methods on the market. It is linear up to 1000 mg/dl.

Competitively priced, Bio-Rad Triglycerides Reagent is designed for the cost-conscious lab that requires fast test turnaround time. The product features a two-year shelf-life for the reagent and standard, with two week reconstituted stability for the reagent when maintained at 2 - 8°C.

Applications currently available are : Roche COBAS-BIO, Centrifichem 400, ABA 100, Hitachi 705. Other instrument applications are forthcoming.

Bio-Rad Triglycerides GPO Reagent is available in 4 x 25ml of lyophilized reagent and 1 x 3ml liquid glycerol standard. Bio-Rad ECS Division manufactures chemistry reagent kits and a complete family of controls for Immunoassay, Therapeutic Drug Monitoring, Urine, Haemoglobin A_{1c}, Anemia and Spinal Fluid testing, under the brand name LYPHOCHEK.

For further information, please contact:
Scientific Products Division, Smith-Biolab Limited,
Private Bag, Northcote, Auckland.
Phone: Auck. 483-039 — Well. 697-099 — Ch.Ch. 63-661
or **circle 77 on Readers Reply Card**

"RUBELLA" BOTH ANTIBODIES 10 MINUTES TOTAL FROM SERUM SAMPLE

Introducing the Rubella screening revolution priced in line with the Health Department Schedule.

"Rubascan" Card Test from Hynson Westcott and Dunning, a Division of Becton Dickinson, is a passive latex agglutination test for the qualitative detection and/or quantitative determination of serum antibodies to Rubella virus.

The kit contains ready to use reagents and the entire procedure can be performed at room temperature. The latex agglutination is clearcut which makes results easy to interpret and reduces rubella antibody screening time by 90%. A special 50% trial offer of one kit — 100 tests. Cat. No. BBL 8617-01.

For further information, please contact :
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Private Bag, Northcote, Auckland.
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STAPHAUREX

Wellcome diagnostics announce the availability of Staphaurex, a rapid latex test for the identification of *Staphylococcus aureus* employing fibrinogen and IgG coated to the latex surface.

Most strains of *Staph. aureus* produce coagulase and protein A, although some strains produce only one of these factors. Most other staphylococci produce neither factors.

Coagulase interacts with clotting factors in plasma whilst protein A has a specific affinity for the Fc Moiety of Immunoglobulin G. Essers and Radebold demonstrated that *Staph. aureus* cultures possessing these factors could be identified using plasma coated latex particles, which clumped in their presence in a rapid slide agglutination procedure.

The Wellcome latex reagent has improved on this procedure and consists of polystyrene latex particles which have been coated with fibrinogen to detect coagulase and immunoglobulin G to detect protein A.

When this reagent is mixed on a slide with *Staph aureus* organisms, rapid strong agglutination occurs.
Wellcome Diagnostics Limited, P.O. Box 22-258 Otahuhu, Auckland.
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LIQUID PYRONEG — LABORATORY DETERGENT

Specially formulated for routine laboratory cleaning, Liquid Pyroneg is designed to remove soils particularly encountered in laboratories, hospitals, clinics and surgeries. Liquid Pyroneg is extemely effective in removing organic contamination such as blood, tissue, animal fats, food residues etc from laboratory glassware, plasticware, instruments and vitreous enamelled surfaces.

Liquid Pyroneg does not interfere with delicate testing, its free rinsing qualities ensure clean, residue free equipment. Evaluated by an independant N.A.T.A. registered laboratory, it has been found to be pyrogenically negative.

Liquid Pyroneg is supplied as a concentrated, ready to use, liquid packed in 5 litre containers. Full information is available from the New Zealand distributors:-
Kempthorne Medical Supplies Limited, P.O. Box 1234, Auckland. Phone - 775-289
or **circle 80 on the Readers Reply Card.**

NEW ADDRESS

New Zealand Diagnostics Limited will be moving on October 1 to larger premises at

7 Kings Crescent Lower Hutt
P.O. Box 30-683 Lower Hutt
Telephone (04) 660 840

New Zealand Diagnostics are agents for Gilford Chemistry's, and Controls (previously Ortho Controls), Gilford electrophoresis equipment and consumables, spectrophotometers and biochemistry analysers. Corning R.I.A. systems ("Magic" and Immuphase), Kone biochemistry analysers, Contraves haematological analysers, James Hardie plastics, and Greiner evacuated tubes and specialised medical plastics.

BILIRUBIN CONTROL

Paediatric Bilirubin Control Packaged 10x3ml Product Code 9754 — paediatric testing should be fast and reliable. Fast, accurate and precise results require an efficient dependable control. Gilford now offer the first paediatric control — an extended reconstituted stability control product that meets paediatric testing needs. Key levels of paediatric constituents are assayed by current methods to give dependable control values for your stat and routine testing as well as elevated total and direct bilirubin values.

This product supersedes Gilford's (formally Ortho) Elevated Bilirubin Control product. For further information please contact New Zealand Diagnostics Limited, 27 Kings Crescent, Lower Hutt, P.O. Box 30-683 Lower Hutt. Telephone (04) 660 840. Or **circle 86 on Readers Reply Card**

NEW LAB BENCH TECHNOLOGY SEES INTRODUCTION OF 'DESK TOP' CAPABILITIES FOR CHEMISTS

Conducting sophisticated chemistry experiments without stepping into a laboratory is the role of MacChemistry, a unique computer software development that allows teachers, students and technicians to bypass physical laboratory experiments.

MacChemistry is the exclusive product of Auckland based software developers Southern Software Ltd., whose software systems already are widely used in the United States.

Designed for use with the Macintosh micro-computer, MacChemistry provides the professional realism of chemical experimentation using only a desk top monitor.

Unlike physical lab experiments, MacChemistry allows the user to stop, advance or go back one or more stages of an experiment, at the simple press of a button.

The system features a rich resource of carefully delineated illustrations — from crystal lattices to quick-fit glassware which at all times results in neat and accurate graphic reports.

The Chemlab is a specialised lab set which provides acids and bases for multiple and complex 'on-line' titration experiments. An electronic storage tray, 'Nest', is included to provide the user with the facility to create a personalised annotated indexing system. Intrinsic to the MacChemistry system is an advanced Chemfont feature with an advanced collation of chemical signs and symbols. MacChemistry represents an 'open-ended' laboratory system which considerably advances the pace with which experiments can be carried out with the benefits of quick reference to previous experiments, recall of experiments by stages, accurate graphic reporting and valuable build up of

graduated information which can be stored, without tedious report writing.

MacChemistry was officially launched in the United States on August 21 on the Apple Computer Company stand at the Macintosh Computer Fair in Boston.

Southern Software's American associate company, Fortnum Software Inc of Sierra Madre, California will be spearheading the marketing arrangements in the U.S.A. for the New Zealand produced MacChemistry software. Further enquiries: Southern Software Ltd, 58 Symonds Street, P.O. Box 8683, Auckland, phone 778-525.
or **circle 81 on Readers Reply Card**

COLORZYME — THE ANA TEST

New Zealand Diagnostics Limited wish to announce the availability of Colorzyme — the ANA test that you can read on a light microscope from Immuno Concepts.

Colorzyme is for the detection of anti-nuclear antibodies. Anti-nuclear antibodies are related to SLE and other systemic rheumatic diseases. Patterns exhibit a sharp 3 dimensional, high detail appearance that is easy to read. The low background means less fatigue for your eyes. All required reagents are provided, including ready-to-use liquid controls (4 patterns) and liquid Horseradish Peroxidase conjugate in a work station package. This gives convenience as well as an exceptionally high quality ANA reagent system. The HEp-2 patterns are easy to read and permanent because they don't fade. There are 4 positive controls in every system for pattern and system verification. A protective moat reduces dangers of cross contamination. The stabilized colour reagent is ready made. The Colorzyme system is packaged as follows:

150 Determinations 15 10 well slides — Catalogue No. 4150
40 Determinations 10 4 well slides — Catalogue No. 4040

For further information please respond to New Zealand Diagnostics Limited, P.O. Box 41-007 Wellington.
or **circle 83 on the Readers Reply Card.**

TECHNICON INTRODUCES NEW GENERATION OF AUTOMATED CLINICAL CHEMISTRY ANALYSERS AT INTERNATIONAL CONGRESS IN PARIS.

A revolutionary new analyser technology recently made its debut at an International Congress in Paris. Scientists from all over the world gathered on May 21 and 22 at the Maison de la Chimie for Technicon Instrument Corporation's introduction of the next generation of automated selective analyzers, the TECHNICON CHEM 1 SYSTEM.

Based on CAPSULE CHEMISTRY, a radical and simple new technology, the CHEM 1 system is the first analyzer capable of performing efficient discrete testing at high speed.

"The development of the CHEM 1 system will revolutionise the practice of laboratory medicine", stated Dr. Louis Foissac, President of Technicon's International Division. "For the first time we can perform discrete assays on microsamples, at high speed, without sacrificing accuracy or precision".

CAPSULE CHEMISTRY uses only 1 ul of sample per test, about the minimum required for the methods. The CHEM 1 system doesn't slow for probe washing or batching. It carries out all its analytical operations in a single pathway, at up to 1,800 tests per hour.

No reagent preparation is required for the CHEM 1 system. All reagents for a particular method are prepacked in a single reagent cassette holding a quantity sufficient for up to 1200 tests. Once the cassette is loaded into the system's refrigerated reagent carousel the reagents remain stable for up to 30 days.

The system forms an oil capsule a few millimetres long, around the initial sample aliquot and the 14 ul of reagents necessary for the first of the tests that have been ordered. Seconds later it has created new customised sample/reagent capsule for the next in the sequence.

The operator can choose from a test menu of 35 on-board methods, including three electrolytes by ISE, that can be run in any order. The CHEM 1 system runs both end point and rate reactions. Non isotopic immunoassays will be available for the system. Results are read colorimetrically or nephelometrically.

The capsules are confined to one analytical pathway from sampling to readout. All reagents and sample transport, blanking, mixing and reactions take place in a Teflon* tube 1-1.5mm in diameter. Reactions are monitored and read directly through the walls of the tube itself.

For further information contact: Technicon Equipment Pty Ltd, P.O. Box 52144, Auckland.
or **circle 84 on the Readers Reply Card**

AUSTRALIAN SPECTROPHOTOMETER SYSTEM RELEASED AT THE PITTSBURGH CONFERENCE

A totally new concept in atomic absorption analytical systems was launched world-wide by Melbourne-based Varian Techtron at the Pittsburgh (USA) Conference on Analytical Chemistry in February.

Totally designed and manufactured in Australia the system, known as SpectrAA, features 'central control'. A single computer terminal is the sole point of interface between the operator and all components of the system. This concept provides a high level of automation, data handling and flexibility, while at the same time simplifying operation. The system includes a user oriented protocol — requiring the operator to simply 'fill-in-the-form' to set up even the most complex analysis.

The SpectrAA-40 model provides for fully automated analysis of up to 12 elements using flame, furnace and hydride atomization. The extensive software available provides such capabilities as graphics, error detection, data storage, editing and archiving to floppy disk. Of particular value is the ability to generate complete reports of an analysis — reports configured by the operator to include as much or as little information as may be considered appropriate for the expected audience.

With advanced capabilities in atomization — flame, furnace and hydride — and the most extensive data management software available, SpectrAA is indicative of future trends in AA instrumentation.

Varian Techtron is based in Melbourne and is the world's second largest designer and manufacturer of atomic absorption instrumentation.

For further information contact: Wiltons, P.O. Box 31-044, Lower Hutt.
or **circle 85 on the Readers Reply Card**

NEW AGENTS FOR AMICON IN NEW ZEALAND

New Zealand Medical & Scientific Ltd is pleased to announce that it is now the sole New Zealand distributor for the laboratory equipment developed and manufactured by Amicon Corporation.

Amicon's equipment encompasses the fields of membrane technology and chromatography for the identification, concentration, purification and separation of substances over a wide range of clinical and research applications. Included in the range of products of interest to medical laboratories are:

Centricon Disposable Microconcentrators

Amicon's Centricon Microconcentrators provide fast, efficient concentration of small-volume solutions (2ml or less) containing proteins, enzymes, nucleic acids, and micro-organisms. Designed for use in centrifuges with fixed-angle rotors, these completely self-contained devices feature simple operation, high recovery, and convenient sample storage; all in a low-cost, disposable unit. Two ready-to-use models: Centricon-10 (10,000 MW cutoff) and Centricon-30, (30,000 MW cutoff) are available.

Sample concentration is accomplished by ultrafiltration through a low-adsorption YM membrane contained in each concentrator. Centrifugation time is just 30-60 minutes. Use of a fixed-angle rotor provides polarization control, guaranteeing consistently high flow rates. In addition, a deadstop at 25-40ul prevents filtration to dryness. Unique centrifugal recovery of the concentrate assures minimal loss of sample. Centricon's design permits rapid desalting or buffer exchange, with simultaneous concentration, within a single device.

Each model is offered in 24-unit packages, with bulk packs of 100 and 300 also available. A special starter kit with 12 Centricon-10 and 12 Centricon-30 may also be purchased for evaluation.

CENTRIFREE AND MPS 1 MICROPARTITION SYSTEMS

These devices quickly and efficiently separate free from protein-bound microsolute in small volumes (0.15 — 1.0ml) of serum, plasma and other biological samples. Ultrafiltrate with microsolute is obtained in an easy 5-10 minute centrifugation step, without sample dilution or change in pH or ion composition. Multiple samples are conveniently handled under identical

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conditions. Centrifree micropartition provides maximum efficiency for multiple sample processing in the clinical laboratory. For determination of binding parameters the systems allow accurate partition of small samples without dilution. This avoids change in physiologic pH, ion composition, or the unbound concentration of specific ligand and competitors (metabolites or related ligands).

New Zealand Medical & Scientific Ltd are also now agents in New Zealand for Mochida Bilmeter-D bilirubin meters.

For further information contact New Zealand Medical & Scientific Ltd, P.O. Box 10-131 Balmoral, Auckland 763-432, or **circle 82 on the Reader's Reply Card.**

SITUATIONS VACANT

SALES REPRESENTATIVE
(PART-TIME)
LABORATORY DIAGNOSTICS

A new position has been created to promote our range of Laboratory reagents to laboratories in the South Island or Wellington area.

The successful applicant will be able to work hours to suit and be responsible for managing the territory with some overnight travel required.

If you have a background in medical technology and/or Laboratory sales and are capable of working efficiently without constant supervision you may be the person we require. Full product training will be given on commencement and in the future as required to launch new products.

Remuneration is by way of a generous commission scheme on all sales with existing business making a good base income. Own transport essential.

For an initial inquiry please telephone Ian Breed (09) 276-1877 or write,

DIAGNOSTICS MANAGER,

WELLCOME NEW ZEALAND, LTD
BOX 22-258, OTAHUHU, AUCKLAND 6

Staff Technologists

At Diagnostic Laboratory, Auckland, we are looking to increase the number of qualified technologists in most departments.

Applicants must have certificate, preferably Specialist Level examinations, but continuing training is available to the right applicant with plenty of opportunity for advancement.

The Laboratory is well staffed with about 180 people to handle an average of 2,000 patients per day. It is also very well equipped with up to date analysers and modern computers.

Salaries are according to hospital scales.

Apply to: Dennis Reilly
Diagnostic Laboratory
43, Symonds Street
Auckland. PO Box 5728
or phone collect — 795-225

STAFF TECHNOLOGIST

A vacancy exists for a Staff Technologist at the Taumarunui Hospital with suitable qualifications of Registered Medical Laboratory Technologist with Certificate of Proficiency in Haematology or Immunohaematology an advantage.

For further information, conditions of appointment and application form please contact:

The Chief Executive
Taumarunui Hospital Board
Private Bag Taumarunui

Closing Date: Open

WORK WANTED

TWO TEMPORARY LABORATORY POSITIONS WANTED

Two Finnish girls (23 and 27 years old) who have undergone the Medical Laboratory Technician education and are currently studying Public Health Administration at Helsinki University seek temporary positions for about six months in a New Zealand medical laboratory.

Please send replies to: **Miss Tiina Palotie,**
Paivankilonkuja 6 as,23
02210 Espoo
FINLAND.

TRAINEE POSITION WANTED

A Sri Lankan medical laboratory technician with 10 years experience seeks a position as a technologist trainee. His Sri Lankan certificates are recognised by the Medical Laboratory Technologists Board as equivalent to the Basic Training Certificate.

Please send replies to: **Mr S. Wijayawardene**
877, Peradeniya Road,
Kandy,
SRI LANKA

Technologist Position Wanted In Microbiology

A 26 year old, single, British-trained Medical Laboratory Technologist seeks employment in a New Zealand Laboratory in Microbiology. Qualifications held are ONC in Medical Laboratory Science, HNC in Medical Laboratory Science with elective in Medical Microbiology and FIMLS in Medical Bacteriology. Three years post qualification experience. Eligible for registration in New Zealand.

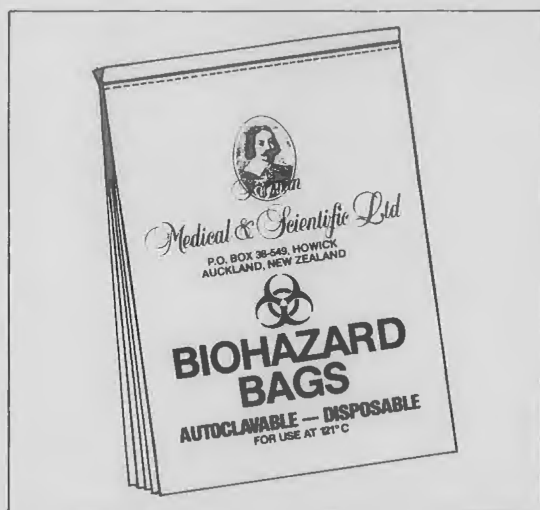
Position sought — Staff Technologist or Graded Laboratory Officer in Microbiology.

Curriculum Vitae available on request.

Replies to: **Bernard Cotton**
68 Moorcroft Road
Northern Moor
Manchester M23 ØWW
ENGLAND

BIOHAZARD BAGS

from Tasman



Available in 3 sizes.
Now in a convenient rippa-style

Sizes: 300 x 600mm
600 x 720mm
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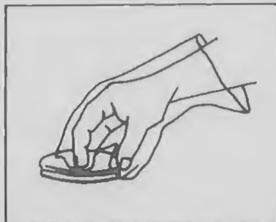
An autoclavable bag simplifies handling of contaminated wastes in clinical, industrial and research laboratories. The durable bag is made of high strength plastic that can resist temperatures to 121°C. The bag has a standard OSHA biohazard symbol.

A HANDY HINT: *Can be used as Biohazard Material Handlers.*

The 300 x 600mm dimension makes it ideal as a grab bag to pick up all types of biohazard materials, petri dishes, pipette tips, biohazard waste, etc. Turn the bag inside out in the manner shown below for a unique new way of safely and conveniently handling and disposing biohazard materials.

Insert hand into bag.


Pick up biohazardous materials with hand inside bag, such as: petri dishes, pipette tips etc.

Peel bag over the hand turning it inside out while maintaining grip on biohazardous material.

Biohazardous waste is now inside bag and ready for autoclaving.

Available exclusively through
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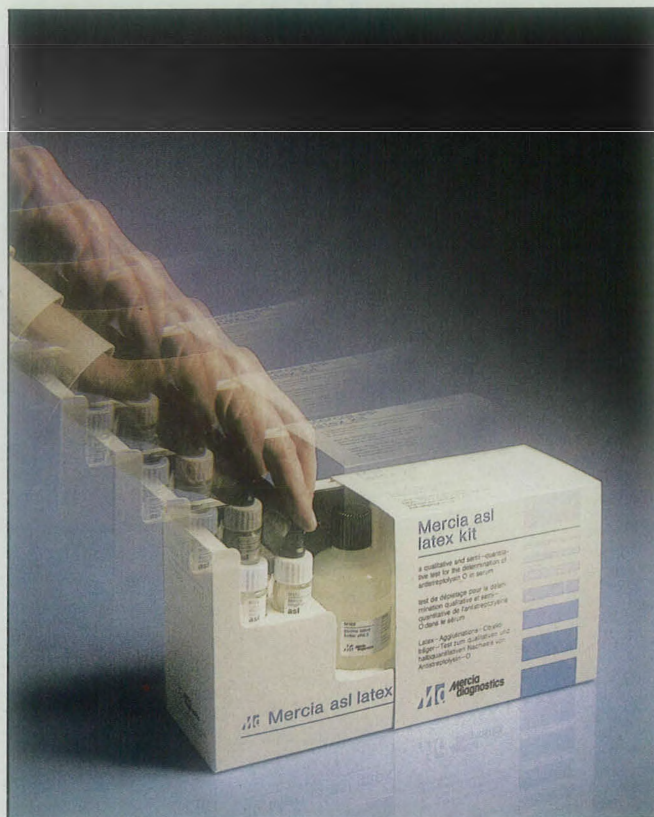
Circle 97 on Reader's Reply Card

Mercia ASL Latex Kit



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Circle 98 on Reader's Reply Card

FLUORESCENT CHLAMYDIA ANTISERUM

FROM

Whittaker M.A. Bioproducts

With *Chlamydia trachomatis* now a leading cause of venereal disease, the need for rapid staining of chlamydia cultures is more important than ever. Our new fluorescein-tagged chlamydia antiserum allows you to make a diagnosis in as little as 24 hours. It picks up elementary bodies from both high and low positives and brilliantly illuminates them. Inclusion bodies stand out clearly and dramatically against the Evans' blue counterstain.

Our new stain allows your chlamydia testing to be:

- **Specific** — Third party tests show that this antiserum is sensitive to all 15 serotypes.
- **Conver[illegible]** — The stain is vialed at use dilution and is ready to use.
- **Rapid** [illegible] You can make determinations in less than 24 hours.
- **Easy** [illegible] Our 2ml dropper bottle makes staining easy.
- **Flexib[illegible]** Chlamydia antiserum is available both fluorescein-conjugated and unconjugated.
- **Econo[illegible]** Our polyclonal antiserum gives accurate results less expensively than monoclonal antiserum.
- **Full Sy[illegible]** Transport, isolation and determination. We provide the transport media, McCoys cells, overlay media, prescreened serum, and stain, all from one source.
- **Servic[illegible]** We guarantee all our products, with over 30 years of diagnostic experience.

New Product Information

Description	Host	Size	Product No.
Chlamydia fluo[illegible]gated antiserum	sheep	2ml (use dilution)	51-350L
Chlamydia unc[illegible]tiserum	sheep	1ml	30-250N
ALSO AVAILAB[illegible]MV POLYCLONAL ANTISERUM			
CMV fluorescein-conjugated antiserum	sheep	2ml (use dilution)	51-351L
CMV unconjugated antiserum	sheep	1ml	30-251N

These new products join our existing line of fluorescent reagents which also include Adeno, Herpes I and Herpes bivalent antisera.

For more information on our complete line of diagnostic products contact:

Whittaker M.A. Bioproducts

Marketed By:

SMITH-BIOLAB LTD.,

Scientific Products Division

For Research use only. Not approved for In Vitro Diagnostics.

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