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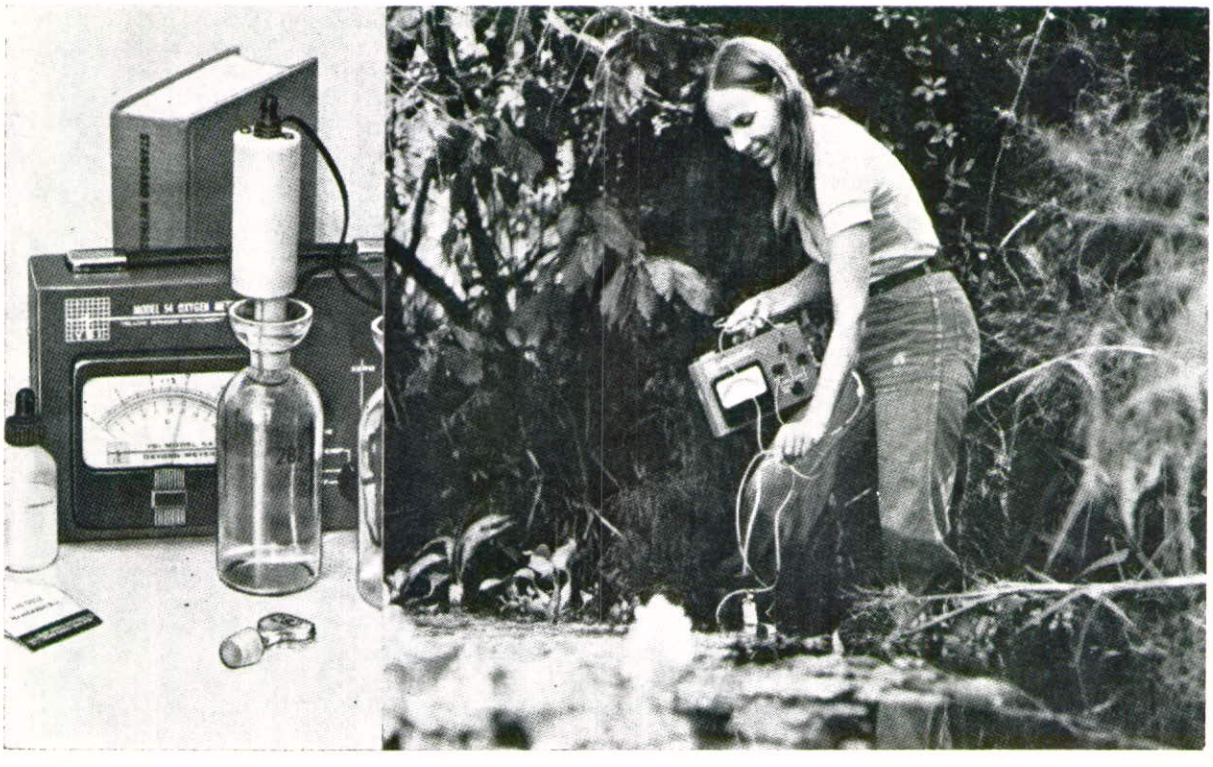

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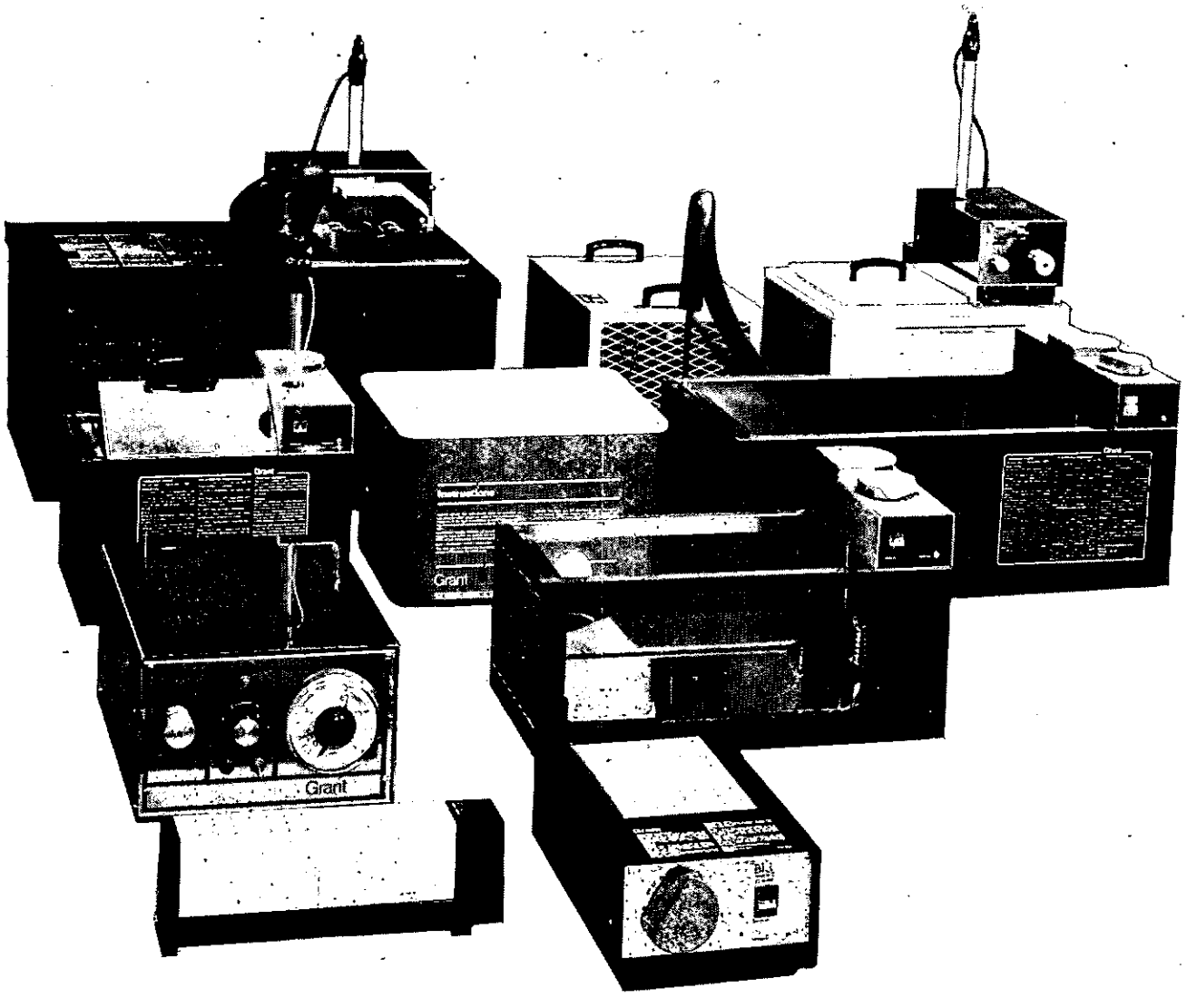

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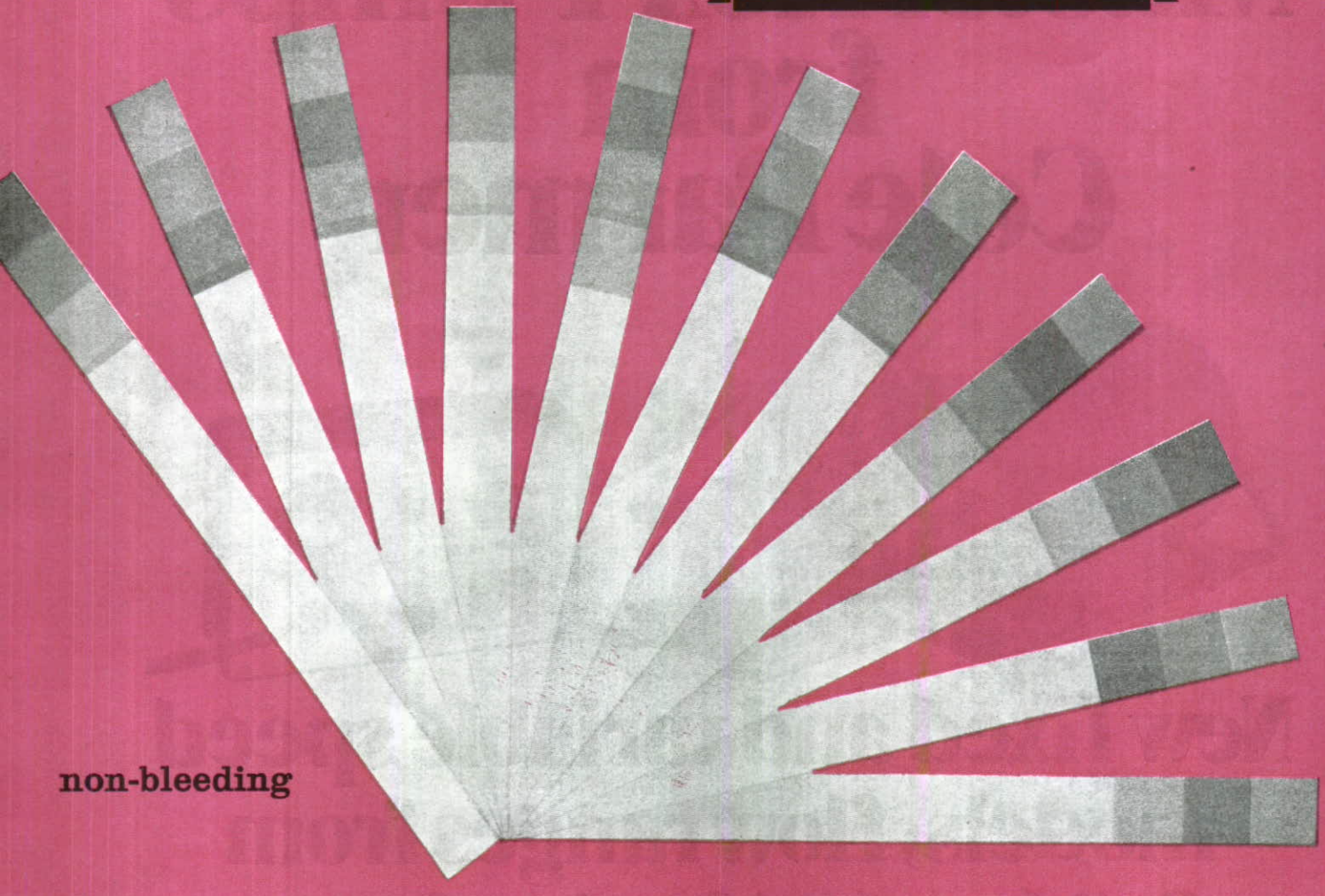

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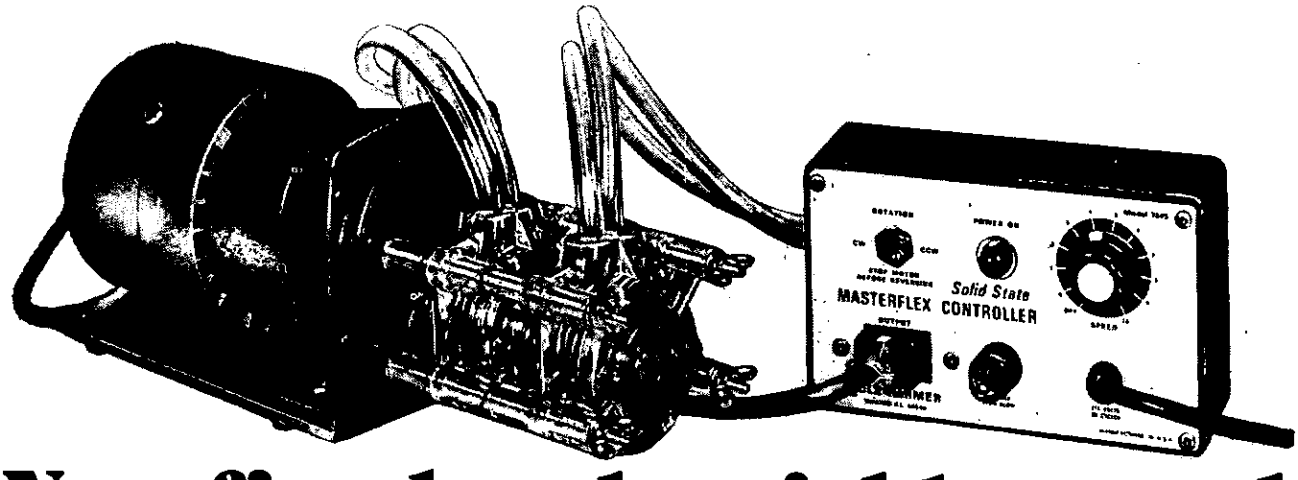

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1974 SALARY SURVEY

P. K. Foster, J. H. Darwin, N. E. Wignall

This report summarises salary data supplied by members. The data gives information at June, 1974, i.e. before the 9 percent rise was applied.

As usual there is no best time to do a salary survey, and the information becomes rapidly out of date in absolute terms. A record of relative salary positions is, however, useful.

To enable easy comparison with previous surveys, the information here is presented in much the same way.

Main points to be noted are:

1. General remarks in previous surveys, particularly in relation to large standard deviations and the need for care in ascribing reality to differences between figures, apply equally here.
2. A new result is the significance of differences between some employment groups (Tables 6 and 8). Industry, previously not significantly different from Government, is significantly lower at about the 3% level. A group in the analysis for the first time, Hospitals, emerges as significantly lower. The estimate of the difference is greater than for the Industry difference, with about the same level of significance. This is consistent with the much lower number in the Hospital group.

At first sight there appear to be some conflicting facts. While on the one hand overall sample means have moved 37 percent on 1971 values for Industry, 40 percent for Government and 55 percent for Universities, on the other hand, the correlation analysis (Tables 6 and 8) show that Government is not significantly different from University, and Government and University are significantly higher than Industry. There have been, however, some important changes in the characteristics of the samples. The age distributions have changed such that the following estimates of movements in mean salaries are to be expected from sample age changes:

Industry	<	1% increase
University		3% increase
Government		10< increase

If the age distributions had been the same as in 1971, the mean Industry salary for this 1974 survey would be very slightly decreased, the Universities 3% decreased, and the Government increased 10% thus putting movement in Government salaries much on a par with Universities, and significantly ahead of Industry. There could be other changes in the samples also. Table 6 considers them all. The present discussion is sufficient to show that an apparently large discrepancy is quite reasonable.

It is presumably combination of the further increase in Government salaries over Industry, together with the larger sample sizes possible in the present analysis which have led to a significant difference being established in the present survey.

The advantages of the type of analysis of Table 6, and the danger in looking at overall mean figures, even over such a short time as 3 years, are well illustrated.

TABLE 1

Value of "t"	Significance level (%)
0.25	80
0.67	50
1.28	20
1.65	10
1.96	5
2.33	2
2.57	1
3.29	0.1

Corresponding values of "t" and significance levels for comparison of differences.

TABLE 2—AGE GROUP-EMPLOYMENT GROUP

Age Group	*School Teaching*	*Industry*	*Government*	*University*	*Research Assn.*	*Self-Employed*	*Technical Institutes*	*Hospitals*	*Other*
<25									
No	2	20	7	5	3	—	—	—	1
Mean	4,949	6,426	5,551	5,318	5,688	—	—	—	5,926
S.D.	337	1,095	554	418	423	—	—	—	—
26-30									
No	7	61	39	20	12	1	7	8	3
Mean	7,269	7.706	7,305	7,662	7,237	9,200	7,119	5,661	7,800
S.D.	1,098	2,246	1,368	1,064	1,096	—	1,281	759	853
31-35									
No	9	42	32	33	13	3	5	5	2
Mean	8,367	8,589	8,638	9,072	9,324	17,920	9,795	8,295	10,328
S.D.	567	2,850	1,393	1,992	1,555	8,773	835	787	2,808
36-40									
No.	8	24	13	32	6	—	5	1	—
Mean	9,480	9,424	9,363	10,635	9,732	—	10,649	8,870	—
S.D.	1,046	2,125	1,523	1,404	698	—	1,236	—	—
41-45									
No.	15	31	15	17	6	1	3	1	2
Mean	9,239	10,778	11,466	12,223	12,352	6,000	9,985	7,431	8,983
S.D.	1,262	2,962	2,318	2,560	1,256	—	929	—	871
46-50									
No.	2	40	25	18	7	—	5	4	—
Mean	11,094	9,826	11,224	12,034	11,659	—	10,126	8,780	—
S.D.	1,866	3,068	2,264	3,339	2,193	—	683	430	—
51-55									
No.	2	17	27	13	4	1	1	1	1
Mean	11,242	9,937	11,506	14,442	14,084	9,000	10,941	10,312	7,973
S.D.	3,476	2,752	1,882	3,791	2,429	—	—	—	—
56-60									
No.	3	19	10	4	1	—	2	1	—
Mean	9,089	10,061	12,460	10,864	11,249	—	12,582	8,391	—
S.D.	1,197	4,642	4,062	3,807	—	—	2,237	—	—
61-65									
No.	1	11	8	3	1	1	—	—	1
Mean	11,700	10,211	11,898	18,261	7,432	8,000	—	—	16,295
S.D.	—	2,778	1,501	5,174	—	—	—	—	—
>65									
No.	—	1	—	—	—	2	—	—	—
Mean	—	10,200	—	—	—	8,000	—	—	—
S.D.	—	—	—	—	—	4,242	—	—	—

TABLE 3—AGE GROUP—PRIMARY QUALIFICATION

Age Group	3 yr. B.Sc. or ANZIC	4 yr. B.Sc. or M.Sc. Pass	3rd Class	2nd Class	1st Class	Five Year Degree
<25						
No.	14	5	—	8	9	2
Mean	5,971	6,306	—	5,507	6,053	6,600
S.D.	1,148	1,224	—	496	967	424
26-30						
No.	34	17	7	71	26	3
Mean	7,214	6,942	6,616	7,352	8,501	7,014
S.D.	1,467	1,951	791	1,922	1,122	523
31-35						
No.	46	21	1	44	27	5
Mean	8,646	8,832	8,900	9,242	9,406	9,036
S.D.	3,370	3,812	—	1,799	988	945
36-40						
No.	17	14	3	23	29	3
Mean	9,163	9,084	9,619	10,024	10,766	10,000
S.D.	1,618	1,981	426	1,445	1,448	1,000
41-45						
No.	30	10	8	21	20	2
Mean	9,482	11,663	9,868	10,678	13,035	11,493
S.D.	2,174	2,976	1,943	1,971	2,534	697
46-50						
No.	40	11	14	22	14	—
Mean	10,019	9,888	10,202	11,356	12,685	—
S.D.	3,100	2,079	2,474	2,621	2,342	—
51-55						
No.	18	13	8	21	7	—
Mean	11,243	10,036	11,142	12,638	13,859	—
S.D.	2,800	2,246	2,347	2,811	4,655	—
56-60						
No.	19	4	5	8	7	—
Mean	9,224	9,586	10,005	10,034	16,435	—
S.D.	1,976	1,823	2,003	3,435	5,830	—
60-65						
No.	9	1	2	9	5	—
Mean	10,347	11,986	10,000	11,740	14,991	—
S.D.	3,204	—	707	2,132	6,282	—
>65						
No.	—	1	—	1	1	—
Mean	—	10,200	—	11,000	5,000	—
S.D.	—	—	—	—	—	—

TABLE 4—PRIMARY QUALIFICATION—EMPLOYMENT GROUP

Age Group	School Teaching	Industry	Government	University	Research Assn.	Self-Employed	Technical Institutes	Hospitals	Other
3 yr. B.Sc. or ANZIC									
No.	18	124	39	12	7	4	8	8	4
Mean	8,734	8,633	9,268	9,634	9,365	13,940	10,378	8,109	9,180
S.D.	2,217	2,633	2,348	3,610	2,632	9,933	1,954	1,393	2,111
4 yr. B.Sc. or M.Sc.									
Pass									
No.	15	42	17	6	4	1	4	4	4
Mean	9,189	9,306	9,540	7,352	7,853	9,000	11,026	6,723	8,049
S.D.	1,433	3,583	2,611	2,353	2,938	—	1,124	2,270	1,564
3rd Class									
No.	4	24	12	3	4	—	1	—	—
Mean	9,298	8,921	10,334	11,493	11,375	—	9,700	—	—
S.D.	685	1,913	2,940	2,950	2,201	—	—	—	—
2nd Class									
No.	9	54	69	55	20	3	11	6	1
Mean	8,396	9,152	9,231	10,010	9,932	10,733	8,749	6,499	16,295
S.D.	1,494	2,838	2,471	3,079	3,184	1,418	2,038	1,303	—
1st Class									
No.	2	14	37	69	16	1	2	3	1
Mean	9,466	11,136	10,848	11,379	9,630	5,000	9,212	8,711	7,002
S.D.	2,122	5,554	3,279	3,376	2,228	—	17	731	—
5 yr. Degree									
No.	1	8	2	—	2	—	2	—	—
Mean	7,412	8,714	9,479	—	9,535	—	8,628	—	—
S.D.	—	1,935	3,544	—	0	—	1,515	—	—

TABLE 5—MAJOR FUNCTION—EMPLOYMENT GROUP

Major Function	School Teaching	Industry	Government	University	Research Assn.	Self-Employed	Technical Institutes	Hospitals	Other
Research									
No.	—	6	91	30	30	—	—	8	—
Mean	—	8,078	9,513	8,619	9,070	—	—	7,541	—
S.D.	—	1,568	2,364	2,982	2,376	—	—	1,885	—
Teaching									
No.	37	1	1	98	—	—	24	—	—
Mean	8,204	10,200	14,200	10,652	—	—	9,157	—	—
S.D.	1,263	—	—	2,640	—	—	1,596	—	—
Development									
No.	—	41	4	—	5	—	—	5	—
Mean	—	7,527	9,235	—	9,814	—	—	6,028	—
S.D.	—	1,609	941	—	2,274	—	—	968	—
Admin./Lab.									
No.	2	70	28	7	10	—	2	4	3
Mean	9,158	8,624	11,648	13,165	12,146	—	13,332	8,990	10,085
S.D.	1,685	2,194	2,781	5,922	2,396	—	1,176	459	2,029
Admin./Other									
No.	10	99	12	8	2	2	2	1	3
Mean	11,227	10,755	11,999	15,285	11,767	11,380	11,161	8,500	10,665
S.D.	1,114	3,634	3,755	3,695	3,157	3,365	205	—	4,948
Sales and Service									
No.	—	15	—	—	—	1	—	—	—
Mean	—	7,897	—	—	—	6,000	—	—	—
S.D.	—	1,556	—	—	—	—	—	—	—
Anal. and Test.									
No.	—	7	38	2	5	—	—	2	4
Mean	—	6,873	8,000	6,512	8,442	—	—	8,156	7,491
S.D.	—	1,375	1,766	753	2,591	—	—	344	1,078
Process Control									
No.	—	25	—	—	—	—	—	1	—
Mean	—	7,190	—	—	—	—	—	5,645	—
S.D.	—	1,619	—	—	—	—	—	—	—
Consulting									
No.	—	2	2	—	1	6	—	—	—
Mean	—	6,600	7,000	—	5,867	12,200	—	—	—
S.D.	—	424	1,290	—	—	8,119	—	—	—

Table 7

Mean Salary Correction (from Table 6)	Qualification Group	"t" levels of differences between qualification groups				
		3 yr. B.Sc. or ANZIC	4 yr. B.Sc. or M.Sc.			
			Pass	3rd Class	2nd Class	1st Class
0	3 yr. B.Sc. or ANZIC					
+ 318	4 yr. B.Sc. or M.Sc. Pass	1.14				
— 18	4 yr. B.Sc. or M.Sc. 3rd Class	.06	0.83			
+ 380	4 yr. B.Sc. or M.Sc. 2nd Class	1.56	0.20	1.06		
+1,236	4 yr. B.Sc. or M.Sc. 1st Class	4.24	2.74	3.10	3.5	
+ 356	5 yr. degrees	0.58	0.07	0.56	0.02	1.39

TABLE 6—CORRELATION FROMANALYSIS OF VARIANCE STUDY (N = 720)

Basic Salary in Dollars	*Age Group Correction*		*Primary Qualification Correction*		
	<25	+ 0	3 yr. B.Sc. or ANZIC		0
4677	26-30	+1,047			
	31-35	+2,197	4 yr. B.Sc. or M.Sc.	Pass	+318
	36-40	+2,929	4 yr. B.Sc. or M.Sc.	3rd Class	— 18
	41-45	+3,999			
	46-50	+4,178	4 yr. B.Sc. or M.Sc.	2nd Clas	+380
	51-55	+4,838	4 yr. B.Sc. or M.Sc.	1st Class	+1,236
	56-60	+4,216	5 yr. degrees		+356
	61-65	+4,940			

For "t" levels of differences within group. see Table 7

Doctoral Qualification Group Correction		*Employment Group Correction*		*Major Function Group Correction*	
		School Teaching	0	Research	0
		Industry	— 193	Teaching	+ 472
Without	0	Government	+ 507	Development	+ 187
With	+1436	University	+ 682	Administration	
		Research Assn.	+ 746	Management—	
		Self Employment	+1,930	Laboratory	+1,410
		Technical Inst.	+ 918	,, Other	+2,814
		Hospitals	— 562	Sales and Service	+ 317
		Other	+ 679	Analysis and Testing	— 308
				Process or Quality Control	+1,115
				Consulting	+1,877

For "t" levels of differences with group— see Table 8 see Table 9

Table 8

Mean Salary Correction (from Table 6)	*Employment Group*	*"t" levels of differences between employment groups*							
0	School Teaching	School Teaching	Indus.	Govt.	Univ.	Res. Assn.	Self Empl.	Tech. Inst.	Hosp.
— 193	Industry	0.45							
+ 507	Government	1.02	2.27						
+ 682	University	1.61	2.38	0.53					
+ 746	Research Assns.	1.36	2.42	0.69	0.13				
+1,930	Self Employed	1.84	2.20	1.45	1.22	1.17			
+ 918	Technical Inst.	1.73	2.09	0.77	0.49	0.30	0.91		
— 562	Hospitals	0.90	0.74	2.03	2.20	2.27	2.32	2.14	
+ 679	Other	0.82	1.20	0.24	0.01	0.08	1.05	0.29	1.45

Table 9

Correction Mean Salary (from Table 6)	*Major Function Group*	*"t" levels of differences between major function groups*							
+ 0	Research	Research	Teaching	Develop-ment	Admin./ Mtg.- Lab'tory	Admin./ Mtg.- Other	Sales and Service	Anal. and Testing	Process Qual. Control
+ 472	Teaching	1.31							
+ 187	Development	0.49	0.59						
+1,410	Admin./Mtg. Laboratory	4.67	2.42	3.40					
+2,814	Admin.//Mtg. Other	8.76	6.13	7.37	5.02				
+ 317	Sales and Service	0.52	0.21	0.21	1.83	4.25			
— 308	Analysis and Testing	0.89	1.67	1.12	4.6	7.95	0.94		
+1,115	Process/Quality Control	2.16	1.12	1.76	0.60	3.49	1.13	2.56	
+1,877	Consulting	2.10	1.51	1.84	0.51	1.06	1.53	2.39	0.77

NEW ZEALAND AND AN ENERGY POLICY

We are told that New Zealand spent three hundred million dollars in 1974 on importing oil and petrol. In other words about equal to the export income of our Dairy Industry or 60 percent of our Meat Industry.

In such terms the energy cost to this country looms as a mammoth problem. The world-wide energy crisis has exposed the vulnerability of industrial societies to shortages of energy. A ready source of energy is basic to the development of the complex social and technical order which appears to be most countries' aspiration.

If New Zealand desires to continue to have freedom in the rate and direction of its development it must obviously have the best of all possible energy policies. Such a long view seems only likely from our politicians combining to develop a national energy strategy outside the party political arena. The approach to the ideal cannot be determined within a partisan political system.

If energy is this country's life blood, its people must know and appreciate the policies relating to its production and use. At the present time we appear to be very far removed from this ideal. In such a situation contradictions abound in the pressures upon us to save and yet use our energy resources. Such a situation leads quickly to national indifference.

The development of an energy plan is in itself long-term and extremely complex and would require a detailed examination of many aspects of this country's functioning. Critical information is likely to be turned up in quite unexpected areas.

Diagnosis precedes therapy, so given the complexity and seriousness of the problem the question must be asked—should not a Royal Commission on Energy Resources and Usage be instituted as a first step to developing a national, long term energy strategy?

Only then will such issues as the use of coal, natural gas and nuclear material to generate electricity, the export of hydro-electricity as added value to smeltered metals, and the possible export of our coal and oil produces be brought into sensible context.

C. L. DAVEY

NOTICES

SCALE OF FEES

For the past two years there has been increasing discussion amongst Institute members of ways to improve the status of the profession of chemistry. In comparison with other professions one feature of our membership that is lacking is a recommended scale of fees. Such a scale may seem of little importance to many members who have few opportunities to charge for specific tasks, but for the Institute as a whole and for those engaged in full time consulting work in particular, the concept of a scale has real merit.

Consulting chemists have often complained that other Institute members who carry out occasional consulting work frequently charge less than full time workers. They may charge less because they do not have to meet overhead expenses or because they wish to take work away from full time consultants. For whatever reason such under-cutting tends to lower the whole level of charges that people will accept as reasonable, thus lowering profitability of full time consultants and hence impairing their ability to provide good services, but probably more importantly lowering the status of the whole profession. It is a simple fact of life that in the eyes of the general public, the greater the status, the greater the fee that will be accepted. How can chemists as a group ever hope to raise their status and be taken seriously as a profession if members charge for professional consulting work at rates equal to or less than tradesmen?

Apart from individual members there are also organisations that tend to lower the overall level of charges. These include government departments such as DSIR who frequently charge rates well below reasonable cost. The Institute is in no position to require a Department to raise its charges, but there is a strong case for the Department to indicate to its clients that a fair charge is in excess of what is being charged and that the difference is virtually a grant or a measure of government support. All too often people who have had work carried out by a department later quote the rate charged as being a "fair" charge and resist paying private firms what is truly a fair charge based on salaries and overheads. Organisations should welcome a recommended scale of fees so that reductions in charges can be clearly seen to be a measure of support or subsidy.

After deciding that a recommended scale of fees should be prepared, the Council of the Institute appointed a committee of four Auckland members all of whom had had experience in consulting work. The four members belonged to different occupational groups, i.e. industry, government, university, consulting. The committee decided that a simple scale of fees based on a reasonable rate per hour would be a useful guide to members and it could be easily up-dated annually. The alternative, a detailed scale of charges for specific tasks, would involve an enormous amount of work and could not be justified.

Bearing in mind the qualification requirements and overheads of professional chemists compared with other professions in New Zealand, the rates per hour tabulated below are possibly conservative. Where very expensive equipment is involved in analytical work, a greater charge could be readily justified.

To be strictly scientific the scale should be based on calculations involving real situations rather than comparisons with other professions and opinions of a committee of members. The committee welcomes all members' comments, either directly or through the Journal, and information on their laboratory costings, to assist the committee extend and up-date the scale.

As a preface to the scale of fees some quotations from the Institute's Code of Ethics, to which all members subscribe, seem appropriate.

Section 9. A member shall not attempt to compete with another practitioner on the basis of professional charges, by reducing his usual charge in order to under-bid, after having been informed of the charge already named by that practitioner.

Section 10. A member shall, as far as possible, fix fees at a point high enough to warrant complete and adequate service, since unreasonably low charges tend toward inferior or unreliable work.

Section 11. While it is desirable that members engaged in teaching and research work be permitted to use their special knowledge and skill in direct service to individual clients, it is prejudicial to the welfare of the profession for such service to be rendered at rates which ignore the ordinary costs of equipment, supplies and overhead expenses.

Finally, it should be stressed that the Institute has no power nor desire to rigidly enforce this scale of fees. It is published as a guide in the hope that it will encourage all members to charge a fair professional fee for professional consulting work and so help to improve the status of the chemical profession.

Scale of fees (1975)

Senior members of at least ten years standing and with considerable experience in the subject in question	$15.00-$20.00/hr.
Members of five to ten years standing	$10.00-$15.00/hr.
Junior members and senior technical staff	$8.00-$12.00/hr.
Technicians	$6.00- $8.00/hr.

Ian Devereux, FNZIC

Chairman, Scale of Fees Committee
Address for correspondence: 10 Haast Street, Auckland 5.

TECHNICIAN MEMBERSHIP

At the Council meeting of November 29, 1974, it was "Resolved (Otago/1st Vice President) that Council agrees in principle to offer membership to technicians on the basis of Example 2 in **"Chemistry in New Zealand,'** 1973, p. 164."

New rules and a commentary have been drafted to give effect to this resolution. These in turn required alteration and adjustment to existing rules to avoid anomalies and ambiguities. Rather than work on patches and deletions it has been considered worthwhile to redraft the whole version of the 1973 Rules. These contained a Commentary for the first time but were essentially the 1964 version amended to accept the new grade of Graduate and the new title Member. This amendment to rules which had not envisaged a non-corporate grade resulted in a number of anomalies, particularly in the distinctions between the rights of members and Members.

In the new draft these points have been clarified and the Commentary revised to accord with experience gained in its use by the Membership Committee.

The draft was first reviewed by the Branch Delegates and other Council members at the June Council meeting. This draft and revisions from the meeting were further revised by the immediate past-president and the Membership Committee. The completed revision is now being circulated to the Branch Committees with a view to a final version being adopted at the Council meeting set down for August 18, 1975.

Two new grades are provided for technicians. The first, "Technician Member", is intended for those who have just qualified, and adopts the New Zealand Certificate in Science (Chemistry) as the basic academic qualification.

The second, "Associate Member," is a status grade for experienced qualified technicians. Admission requires a thorough scrutiny of qualifications and experience. Normally the experience needs to have been gained under a corporate member of the Institute. The holder is entitled to the abbreviation "Assoc. N.Z.I.C."

A third new grade "Companion" is also proposed. This too is a non-corporate grade but requires a professional standing equivalent to Fellow for admission. The aim is to provide a stronger link with people in other professions whose interests associate them with the learned body functions of the Institute.

These three plus the existing Graduate grade comprise the non-corporate grades in the professional functions of the Institute.

Entry requirements to the corporate grades of Member and Fellow are more firmly defined than in 1973. As in the past there is a rule to cover the admission to Membership of persons who do not meet the standard requirements, but who can demonstrate adequate professional experience and expertise. The aim continues to be the upholding of high professional standards in combination with a flexibility to cater for individual cases.

Although the requirements for professional training are not as radical as those recently adopted by the R.I.C., they do place increased emphasis on the quality of post-graduate experience and its attestation by responsible corporate members of the Institute.

The non-corporate grades have full voting rights at Branch level, permitting all to have a full say in the learned body activities of the Institute and a voice at Council through the Branch Delegate.

To preserve and protect the professional functions of the Institute the key administrative positions continue to be limited to the corporate members, as do voing righs at Annual and Ordinary General Meetings and in any postal ballots that may arise from these meetings.

JOHN POLLARD

GRANTS FOR AUSTRALIAN POLYMER SYMPOSIUM

The Polymer Group of NZIC has been notified by the Polymer Division of the Royal Australian Chemical Institute that the Australian Polymer Symposium will be held at Terigal, N.S.W., from November 11th-14th, 1975. Prominent polymer chemists, Professor F. W. Billmeyer (USA), Professor A. M. North (UK) and Professor K. Takemoto (Japan) will be guest speakers.

The Polymer Division has generously offered two grants of $100 each to New Zealand polymer scientists if this would facilitate their attendance which would not otherwise be possible.

Applications should be made to the Secretary, Polymer Group.

N. R. EDMONDS,
c/- Auckland Technical Institute,
Private Bag,
Auckland, 1.

CONFERENCE 1975

Massey University situated in attractive grounds only 2½ miles from the centre of Palmerston is the venue for the 1975 Institute Conference. The Conference will be officially opened on Wednesday, 20 August, but Tuesday, 19 August, will be used for specialist sections. Accommodation is available on the campus as well as in a limited number of motels in the city. Registration for the Conference closes on July 18.

Programme

Professor H. N. Parton and Professor F. G. Soper have been invited to give Review Lectures and will be attending with their wives as guests of the Conference. Both men are Honorary Fellows of the Institute and have had distinguished careers in the field of Chemistry. Members of the Institute, especially those with an association with the University of Auckland, will have been saddened by the death of Professor L. H. Briggs. Professor R. C. Cambie, a previous research student of Professor Briggs' will deliver the L. H. Briggs Memorial Lecture to the Conference. Mrs Briggs will be attending the Conference as a guest. The Biochemistry Guest Lecturer is Professor B. A. Stone from La Trobe University, Victoria, Australia, and in Chemistry the Plenary Lecture will be concerned with the field of Chemical Education. The President of the Institute, Dr L. Davey will deliver his Presidential Address after the Opening Ceremony on Wednesday, August 20.

As well as the Research Papers the Specialist Section will contain a number of Review Lectures. Dr D. M. Adams from the University of Leicester will address the Inorganic and Physical Sections on Vibrational Spectroscopy. Other Review Lecturers are Professor R. D. Batt, Massey University, Professor G. B. Petersen, Otago University and Dr P. A. Sullivan, Otago University, who will all address the Biochemistry Section. Dr E. Wong, DSIR, Palmerston North, will deliver a lecture to the Organic Chemistry Section and Dr B. H. Robinson, Otago University will address the Inorganic Section.

For those not attending Conference abstracts of papers given at Conference will be available for $1.50 from:

Conference Secretary,
Dr M. J. Hardman,
Chemistry, Biochemistry and Biophysics Dept.,
Massey University.

The Social programme includes the Conference Dinner with Mr R. Henwood as After Dinner Speaker, the Vice-Chancellor's Buffet and a visit to Centrepoint Theatre.

Biological Role of Metal Ions

A one day symposium concerned with the Biological Role of Metal Ions is to be held on Monday, August 18, 1975, at Massey University. As well as Review lectures by Dr E. W. Ainscough, Massey University, Professor J. F. Duncan, Victoria University and Dr G. A. Rodley, University of Canterbury, the symposium will contain a variety of research papers. These will be concerned with the applied aspects of the role metal ions play in biological systems, the interaction of biological molecules with metal ions and the use of physical and analytical techniques to study metal ions in such systems. Registration for this symposium also closes on July 18, 1975.

GUEST LECTURERS

Dr. L. H. Davey

Lester Davey, the Institute's President, is the Deputy-Director of the Meat Industry Research Institute in Hamilton, and Head of its Biosciences Division. He studied Chemistry at Otago University where he gained an M.Sc. in 1953. He was awarded a Defence Scientific Scholarship and spent three years at Cambridge University where he undertook studies into aspects of muscle biochemistry for his Ph.D. He was elected to membership of the Institute in 1962 and to a Fellowship in 1973. He has been Chairman of the Waikato branch.

Dr Davey's research interests are in the fields of muscle structure and function, the biochemistry and physiology of rigor mortis, and the relationship between muscle properties and meat quality.

Professor H. N. Parton

Professor Parton was born in New Zealand and was educated at Christchurch Boys High School. He graduated from the then Canterbury College with an M.Sc.(N.Z.) and has a Ph.D from the University of London. He also has been awarded an Honorary Doctor of Science degree from the University of Canterbury and is an Honorary Fellow of the New Zealand Institute of Chemistry. In 1930 he began his academic career at the University of Canterbury being appointed to the position of assistant lecturer in the Chemistry Department. While at Canterbury he was promoted to lecturer, senior lecturer and associate professor and in 1954 was appointed to the Chair of Chemistry at the University of Otago, a position he held until his retirement in 1972.

Professor Parton has been Dean of Science both at Otago and Canterbury, and Pro-Vice Chancellor from 1968-72 at the University of Otago. He has served on the New Zealand University Grants Committee (1960-67) and is currently on the University of the South Pacific Grants Committee and the Research Committee of the N.Z. University Grants Committee.

His research has been concerned with the thermodynamic behaviour of electrolyte solutions, and as well as being the author of a number of papers in scientific journals he has published a book of addresses and essays—"Science is Human" (1972).

Professor Parton has been a member of the New Zealand Institute of Chemistry since 1931 and has been Chairman of the Otago and Canterbury branches. Between 1940-48 he was editor of the Journal and in 1961 held the office of President of the Institute.

Professor F. G. Soper

Professor Soper was educated at the University College of N. Wales, Bangor, his University career being interrupted by war service in the artillery from 1916. Returning in 1919, he graduated in 1920 with First Class Honours in Chemistry and was appointed to the Chemistry staff. While at Bangor he was invited as guest lecturer to the University Colleges of Aberwystwyth and Swansea. He holds the degrees of Ph.D and D.Sc. of the University of Wales.

Appointed to the Chair of Chemistry at the University of Otago in 1936, he was also appointed in the following year as part-time Director of the newly established Wool Manufacturers' Research Association. He was President of the N.Z. Institute of Chemistry in 1947, and during the war, coupled his responsibilities to the University of Otago with work in the D.S.I.R. as Deputy Director of Scientific Development (Chemical) and as a member of the Defence Science Advisory Committee. He was awarded the C.B.E. in the New Year Honours of 1950. In 1953, until his retirement in 1963, he was Vice-Chancellor of the University of Otago.

His research interests have been mainly in the mechanisms of reactions. He has had several outside interests and responsibilities, attending a Unesco Conference in Paris in 1951, Chairman of the N.Z. Nuffield Advisory Committee from 1959 to 1973, President of the Dunedin Public Art Gallery Council for 3 years from 1963 and after his retirement becoming a member of the Executive of the Wool Research Organisation and also of the University Grants Research Committee.

On his retirement as Vice-Chancellor, he was appointed Emeritus Professor and in 1967 awarded the honorary degree of D.Sc. by the University of Otago.

Professor B. A. Stone

Professor Stone, the Biochemistry Guest Lecturer for 1975, obtained his PhD from University College, London, in 1954. He was a Postdoctoral Fellow in the Division of Applied Biology, National Research Council, Ottawa in 1955 and I.C.I. Research Fellow at London University between 1956 and 1958. In 1958 he was appointed to the staff of the Russell Grimwade School of Biochemistry, Melbourne, and became a Reader in Agricultural Biochemistry. Professor Stone is now the Chairman of the Department of Biochemistry at La Trobe University, Victoria, a position he has held since 1972. He is Foundation Professor of Biochemistry.

Professor Stone's research interests have centred on the biochemistry of structural and storage polysaccharides from higher plants and micro-organisms; the delineation of the action patterns of polysaccharide hydrolases and the use of these enzymes as an aid to the elucidation of the fine structure of polysaccharides; the structure and organisation of plant cell walls with particular reference to those in the endosperm of cereal species; the structure and role of proteoglycans in plant cells and cell walls; the use of plant tissue cultures in the study of the biosynthesis of plant cell wall polymers.

T. R. Hitchings

Mr T. R. Hitchings, M.Sc., Dip.Ed., F.N.Z.I.C., headmaster of Riccarton High School, Christchurch, is Chemistry Guest Lecturer for 1975 and will be addressing the Conference in the Feld of Chemical Education.

Mr Hitchings is one of New Zealand's leaders in science education. He was one of the first of the teaching fellows seconded from schools to University Departments, and spent a year in the Chemistry Department at Canterbury University. He is a member of the three-man Reed Publishing Science Group which is promoting the writing of some excellent science text-books by New Zealand editors. He himself is editor and co-author of one of these books entitled "Readings in Fifth Form Chemistry."

Mr Hitchings is an active member of the Canterbury Branch of the N.Z.I.C., and is also the New Zealand Correspondent in Chemistry for I.U.P.A.C.

L. H. BRIGGS MEMORIAL LECTURE

Professor R. C. Cambie

Professor Cambie will b egiving the L. H. Briggs Memorial Lecture to the Conference.

Professor Cambie is a previous research student of the late Professor Briggs, whose association with him spans a period of over 20 years. After his appointment to the staff of the Chemistry Department of Auckland University, Professor Cambie continued to collaborate with Professor Briggs on many research projects in what Professor Cambie describes as a very happy working relationship. He succeeded his colleague to the Chair of Organic Chemistry when the latted retired in 1970. Like his teacher, Professor Cambie has been awarded the I.C.I. Medal from the N.Z.I.C. (1964) and the Hector Medal from the Royal Society of New Zealand (1967) for his researches on the chemistry of New Zealand Natural Products.

A History for the Jubilee of Manawatu Branch and Conference 1975 by two past Presidents of NZIC.

CHEMISTRY IN THE MANAWATU

THE EARLY DAYS

C. R. Barnicoat

I was pleasantly surprised when invited to write about the prehistoric days of chemistry in the Manawatu. This has been an interesting undertaking for me, since I have had to rely largely on memories prompted by notes kept from 1931 in diaries which have not yet been destroyed through sheer inertia on my part.

Massey Agricultural College and The Dairy Research Institute (N.Z.) got under way in 1928, and shared the old Massey main building, so I thought this would be a suitable date to begin; but in point of fact it was an Englishman, W. R. Mummery, FIC[1], who became the first dairy scientist in this district, having been appointed Chemist to the Glaxo Company (a subsidiary of Joseph Nathan and Company) at Bunnythorpe in 1918.

While members of the agricultural faculties played a major part in the early development of the newly-formed residential college, the early scientists contributed much to its reputation as an academic and research institution.

The need for a Dairy Research Institute resulted from introduction of large-scale dairy manufacturing methods demanded by increased production for the markets of the United Kingdom. Cheese was particularly subject to undesirable variations in quality and texture. Danish and "Home Made" butters manufactured from ripened cream were preferred to the New Zealand product, which was salted and of mild flavour.

The new high-yielding pastures required for increased milkfat production were introducing taints from weeds such as land cress, which were found difficult to eradicate. Transporting cheese and butter and holding them under refrigeration also introduced problems of development of off-flavours. When the demand for butter fell, ghee was made and tested on the Indian market, but the results proved discouraging. The New Zealand dairy companies wisely decided not to compete with overseas producers, but to improve the quality of their own particular types of export products.

Most of the chemists working in the College in its earliest stages were on the staff of The Dairy Research Institute (N.Z.), Professor W. Riddet, Director of the Institute and Professor of Dairying at the College, gifted with great ability and enthusiasm, already had a sound practical knowledge of dairy science. He had been brought up on a dairy farm in Scotland before qualifying with a Degree in Agriculture and associated Diplomas at the University of Glasgow, followed by a teaching post at the Hannah Dairy Research Institute. He soon came to grips with dairying problems in this country, many of which were basically chemical in nature.

Dr H. R. Whitehead, DSc(Leeds), Deputy Director and Chief Bacteriologist, had specialized in organic chemistry and then worked with the Medical Research Council on biochemical problems before taking up his position at the Institute. He soon became interested in cheesemaking in this country. Dr F. H. McDowall, the foundation Chief Chemist, took his MSc at Otago University, continuing to London University to qualify for a DSc in organic chemistry. He initially studied milk composition in relation to its products. In the laboratory these chemists were assisted by L. A. Whelan and G. A. Cox, both chemists holding New Zealand Masterate Degrees; G. M. Valentine, a Senior Dairy Produce Grader of the Department of Agriculture, assisted by S. Clayton, was in charge of the College experimental factory. Another chemist, J. D. Sargent, was initially laboratory chemist at the Massey College dairy factory, and latterly became Senior Lecturer in Microbiology at Massey College.

Formidable problems confronted the Institute at its inception. Since some of the problems were long-standing and already under investigation, deciding where to start must have been difficult. Close liaison with other technical people in the industry was quickly recognized as an important ingredient for the success of the Institute, and early in 1929 a meeting was called at Massey College in order to form a New Zealand Dairy Science Section of the New Zealand Society of Dairy Science and Technology, still acts as an invaluable link between the dairy industry and the scientists. Of the 19 foundation members present at the inaugural meeting, 12 were chemists. This was probably the earliest meeting of a professional group of this type to be held in this country, and seems well worth recording

[1]FIC (now Fellow of the Royal Institute of Chemistry) is a professional course in Chemistry established by Charter, and still of high standing.

here. Foundation members of the Association were: from Government, R. L. Andrew, FIC, Wellington, and K. M. Griffin, MSc, FIC, Auckland, Government Analysts; G. V. Morgan, BSc(Wales), Bacteriologist, Dairy Division, Wallaceville; F. T. Leighton, Chemist, Department of Agriculture, Wellington; E. Marsden, Secretary, DSIR: from Industry, E. W. Hughes, FIC, and W. H. Udy, BSc, Laboratory, Co-operative Dairy Company, Hamilton; N. Ratcliffe, FIC, and W. R. Mummery, FIC, Laboratory, Joseph Nathan and Company, Palmerston North, and E. F. Farmer: from Massey Agricultural College and The Dairy Research Institute (N.Z.), W. Riddet, BSc (Glasgow) NDA NDD, Professor of Dairying and Director DRI(NZ); H. R. Whitehead, DSc(Leeds), Deputy Director and Chief Bacteriologist; F. H. McDowall, MSc(NZ), DSc(London), Chief Chemist; L. H. Briggs, MSc (Research Fellow); G. M. Valentine, Manager, Experimental Factory; S. Clayton, factory technician; R. Waters, Head of Microbiology Department Another chemist who was an early and keen member of the Association, and incidentally an authority on tramping among the mountains and lakes of the South Island, was Dr G. M. Moir, who was Head of the Wallaceville Dairy Laboratory, Dairy Division, Department of Agriculture. His main duties were concerned with hygiene in the dairy industry, and these increased considerably during the years.

In preparing this article, I was asked to include an account of personalities of early chemists in the Manawatu. and will confine these to some members of the Massey College and Institute staffs who were associated with the area long enough to develop their own scientific and personal idiosyncrasies.

Professor Riddet retained his absorbing interest in dairy farming and manufacturing, developments, improvements and their teaching, particularly with regard to Dairy Diploma courses which he arranged with great care. His childhood on a small farm before World War I had not been an easy one; hard and frugal, it had implanted an earnest purpose to life, which like his pronounced Ayrshire accent, never left him. He was kindly and helpful, ready to discuss and advise, and latterly found time to participate in civic interests and leisure for reading more widely on a number of subjects on which he could talk entertainingly. His appointment in New Zealand came at a most valuable time for the welfare of this country.

Hugh Whitehead became a recognized authority on cheesemaking, particularly the part played by the all-important action of lactic streptococci in the "starter" which really controlled the process. The interesting techniques he developed in his laboratory were ingenious and elegant, and seemed to require rather simple technique. This logical Yorkshireman, plain-spoken, liberal in politics, read widely and enjoyed cheerful argument and conversation. He was generous and sociable too.

F. H. McDowall hailed from Southland. Remaining true to chemical studies, he investigated the quality of raw and pasteurized milk in relation to that of its manufactured products. He wrote a voluminous and authoritative "Buttermaker's Manual", and being a stickler for using good English, thoroughly enjoyed doing so. His tastes were aesthetic; he became an expert gardener and developed a keen interest in music which he introduced into our homes by gramophone evenings. Palmerston North should remember him gratefully for establishing musical appreciation by arranging concerts by the British Musical Society and professional visiting musicians at an early date, thereby contributing greatly to the musical culture of this city.

Richard Dolby had wide interests in rheology and was a clever and helpful gadgeteer. As befits a physical chemist, he was of serious mien, but had a good sense of fun backed by sociable interests. A. K. R. McDowell was a capable all-round analyst in the Chemistry Department at the Institute, and G. A. Cox (originally a chemist) worked on bacteriological problems and helped with their teaching. They both contributed considerably to the investigations of the Institute, as shown by their names appearing among authors of many of its publications.

I was "on loan" to the Institute from DSIR until joining the College in 1940. Revelling in its academic life, I derived my interest from research on meat and dairy products held under refrigeration. I was reputed to have a deadpan sense of humour!

The original conditions of appointment of The Dairy Research Institute (NZ) staff required them to teach chemistry and bacteriology, but this was found to be impractical. They were replaced temporarily by William C. Neil, the first graduate in the Dairy Science option of the Masterate of Agricultural Science from Massey College in 1932. He was followed by W. G. Sutton, MSc in Chemistry from Otago University, who was already working on the chemistry of wool at the College early in 1929. He resigned from the College in 1939 to become first Director of the Empire Bureau of Dairying (now Commonwealth Bureau of Dairy Science and Technology) at the University of Reading. He subsequently returned to New Zealand, and is now retired after farming in South Canterbury.

A valuable influx of chemists occurred in the mid to late 1930s. C. V. Fife, MSc(Canty) joined the College as Lecturer in Soils, and carried out valuable investigations on soil phosphates. Members of the newly-formed Plant Chemistry Laboratory, DSIR, directed by Dr James Melville, with Drs B. W. Doak (formerly of the Cawthron Institute, Nelson), W. J. Lyttelton, I. Reifer (from Poland), and G. W. Butler, N. O. Bathurst and R. M. Greenwood (all MSc graduates) joined the local fraternity of chemists, proving to be most experienced biochemists, congenial and co-operative. Dr Melville was appointed Director, Waite Institute, University of Adelaide, in 1956. Since retiring from this position, he has been on a number of important Australian University and agricultural committees. W. A.

McGillivray joined the Massey Biochemistry Department in 1946, and soon participated in teaching at different levels of our various courses, in which animal nutrition now played an increasing part. For his research on carotene and vitamin A he was awarded a Doctorate of Philosophy in 1950, the first to be awarded by Massey Agricultural College. He subsequently received the first Doctorate of Science Degree (1963) to be awarded by Massey as a full University. C. V. Fife was awarded a Doctorate of Philosophy for work on soil phosphates.

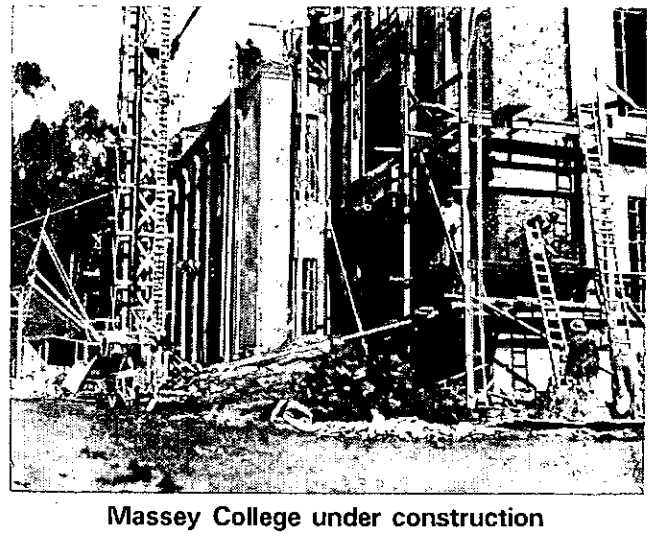
Things were beginning to look up at last — lecturers joined us, laboratory assistants appeared, equipment such as we had not had for years could be procured, and laboratories were enlarged to accommodate the students who steadily grew in number.

Until about 1950 the majority of College students were studying for diplomas in dairy manufacturing or agricultural options—the equivalents of two or three terms teaching, with in-between practical work carried out in dairy factories or on farms—rather similar to some polytechnic courses of the present day. For University Degrees, the first year's teaching was carried out at "intermediate" level at one of the four "main" colleges. In its attempt to establish a Degree in Agricultural Biochemistry Massey was well headed off from teaching "pure" science subjects by the four "main" colleges, except for Otago, where we were supported by the Biochemistry Department. We introduced the subject successfully at the second year stage in 1942; and a number of associated pure and applied science subjects, such as biology, had also been taught at higher levels.

By 1945 or thereabouts, although only four students were studying dairy chemistry at different stages, it was possible to fit them into one class—a Brahman, a Hindu of the merchant class, a jolly Parsee (who seems never to have completed), and a serious New Zealander—all working harmoniously together—what an example to science and to the United Nations Organization too!

That the Manawatu had not formed a Branch of the Institute until 1950 must not be taken as lack of interest on our part, for some of us had belonged to one or both Institutes of Chemistry since early days, and had attended conferences and occupied various responsible positions. In 1933 the Massey group formed a "Chemistry Colloquium," which quickly got off to a successful start and, subsequently renamed the "Chemical Group," provided a useful forum for keeping chemists abreast with developments in the area and further afield.

Meetings of the Colloquium took place after work in the Massey College main building — now so difficult to trace amongst the other building developments on the campus — the first on 27 June 1933 being a general discussion on our work. Eleven attended, mostly chemists. Monthly meetings were arranged, and the first papers were: Determination of Fats by C. R. Barnicoat; Colloidal Chemistry of Proteins by R. M. Dolby; Vitamins by W. G. Sutton; Factors Influencing Production of the Dairy Cow by C. P. McMeekan; Buffer Capacity of Milk and Whey by R. M. Dolby; The Reorganization of the British Dairy Industry and its Possible Effect on the New Zealand Dairy Export Industry by W. Riddet; and Theories of Churning by F. H. McDowall.



Massey College under construction

The Colloquium met fairly irregularly in a sociable way until 1940, when the Manawatu Branch of the Royal Society (with which it had been closely associated) went into abeyance until 1965. The Chemical Group also suffered in attendance, but formed again in 1945 in its original social way and continued for some years.

These Colloquium discussions seemed to have temporarily satisfied the thirst for scientific knowledge, but during the next few winters a small group occasionally met to discuss similar matters in one another's houses while sitting cosily, and sometimes sleepily, around fires and enjoying supper and a pleasant chat. Many chemists, some from overseas, visited the scientific institutions stationed around the Massey "campus," as it was then rather derisively coming to be known, so "Work Seminars" were organized during the day, especially at the Plant Chemistry Laboratory. In 1949 there were four Work Seminars and three meetings of the Chemical Group, and in 1950 at least five Work Seminars up to 29 May, when my diary contains the important statement: "Evening: First Meeting Chemical Society at College—supper etc. 20 there —"Mac" (Dr McGillivray) spoke and very successful." Following the discussions at that meeting, the necessary steps were taken to formally establish a Branch of the Institute of Chemistry in the Manawatu.

The Past 25 years

W. A. McGillivray

If, as C. R. Barnicoat's undestroyed diary indeed records, I was the speaker at the first formal meeting of chemists in the Manawatu when the decision was made to form a Branch of the Institute of Chemistry, it is perhaps appropriate that I have been asked to record something of the development which has taken place over the past quarter century. It does not, however, seem anything like 25 years since our small group met and took, what was at that time, a fairly bold decision to establish a Branch. Nor indeed does it seem anything like 20 years since I last delved back into Institute of Chemistry records to attempt, a few years after the Manawatu Branch had been formed, to produce a booklet commemorating the first 25 years of the Institute of Chemistry as a whole.

The decision to form the Branch of the Institute in the Manawatu was not without misgivings. No one at that time could envisage the rapid increase which would occur in the number of chemists employed in the area over the next decade or so, nor the longer-term planning which would bring ever-increasing numbers, particularly to the Massey campus and the adjoining research groups.

Consequently there were serious doubts as to the ability of 25 or so chemists from the then Massey Agricultural College, The Dairy Research Institute, the Grasslands Division and the Plant Chemistry Laboratory of DSIR, and Glaxo Laboratories (our only major industrial employer of chemists scattered throughout the proposed Manawatu Branch district in meat works, secondary school teaching, etc.) to support full Branch activities. The misgivings, in some minds at least, were also tinged with nostalgic regrets that the pleasant, relaxed, home discussion evenings which had so long been a feature of chemistry in the area would give place to formal meetings with committees, minutes, annual meetings and all the other trappings of a fully-constituted Branch of the Institute. Nevertheless the decision was made, Council approval obtained, and the inaugural meeting of the Manawatu Branch of the New Zealand Institute of Chemistry was held at Massey College on the evening of Monday 2 October 1950. C. R. Barnicoat, who had long played a major part in organizing informal meetings of chemists in the area, was elected the first Chairman, with A. T. Johns, now Director General of Agriculture and Fisheries, as Secretary-Treasurer. The inaugural meeting was attended by only 12 chemists from the area, and indeed over the next 15 or so years, despite a considerable amount of Branch activity and a wide variety of speakers, attendance at ordinary Branch meetings generally ranged from only about 14 to 20 members.

By the mid-1960s the impact of increasing staffs at most of the academic institutions in the area and the growth of industry was being felt, and attendances increased fairly sharply to around double the earlier numbers. Despite this it was apparent that interest in Branch activities was not parallelling the growth of the scientific community in the area, so around the late 1960s some experimentation took place in the format and timing of Branch meetings. These had little effect on interest or attendance at Branch meetings until the present format of a relaxed social hour and meal followed by the formal business and address was adopted. Meetings of this type, which perhaps in a sense represents a reversion to the more pleasant informal gatherings of pre-Branch days, revived the interest of many Institute members in Branch activities and have maintained attendance at Branch meetings at a satisfactorily high level.

As indicated above the past 25 years have seen substantial changes in the scientific community of the Manawatu. Most significant of these, as far as the Manawatu Branch of the Institute was concerned, was no doubt the expansion of science teaching at Massey Agricultural College in the late 1950s, leading to the achievement of full university status by the College as Massey University in 1963. and the establishment around the same time or shortly afterwards of Faculties or Departments of Chemistry and Biochemistry, Food Science and Biotechnology, Veterinary Science and Soil Science. These developments were not without their growing pains, but from the firm foundations laid in the earlier days of Massey Agricultural College, strong scientific groups have now built up and are contributing in many ways to the further development of chemistry and chemically-based sciences in New Zealand, and to the application of scientific findings, particularly to our pastoral industries. When the Manawatu Branch was established in 1950, there were seven chemists on the staff of Massey Agricultural College; today Massey University employs over 60 chemists, biochemists and chemical engineers. Student numbers continue to increase in many of the faculties with which chemists are associated, so that further increases in staff numbers may be anticipated.

The Dairy Research Institute was from its inception housed in the main science building at Massey Agricultural College, but by the early 1960s expansion at the College and within the Institute made it clear that additional space would be required; in 1966 the Institute, now renamed the New Zealand Dairy Research Institute, moved into new laboratory buildings opposite the University and adjacent to

the Grasslands, Plant Chemistry and Plant Physiology Divisions of DSIR. The Institute now employs about 40 chemists and chemical engineers, compared with nine in 1950. The Institute's well-appointed staff cafeteria has been the venue for Branch meetings and social gatherings over recent years.

Significant changes have also occurred in the DSIR Divisions in the area, particularly, as far as chemistry is concerned, in what was originally the Plant Chemistry Laboratory (subsequently Division). The staff and scope of work of this Division steadily increased from 1950 and in particular formed the nucleus of the very strong biochemical emphasis which has developed in the area. In 1969 the changing emphasis of the work of the Division was recognized by the transfer of the Food Chemistry Division of DSIR from Wellington to Palmerston North, and its amalgamation with the Plant Chemistry Division to form the Applied Biochemistry Division. The chemists and biochemists employed in the DSIR Divisions in the area, primarly the Applied Biochemistry Division, now total about 40 compared with about 10 in 1950.

Developments outside the Massey campus have been perhaps less spectacular, but nevertheless still significant, in that they have provided a balance for the more or less academic emphasis in the groups referred to above. Palmerston North and the area served by the Manawatu Branch is however still light on industry, and most of the industry members are associated directly or indirectly with the agricultural sector. There is thus a very close community of interest between University, Government, Research Association and Industry chemists. A further development of interest over the last few years has been the shift of the Leather and Shoe Research Association from Wellington to Palmerston North, and this organization is now established in its own new building adjacent to the DSIR complex.

The total chemist population of the Manawatu Branch area (including chemists, biochemists and chemical engineers) has increased from around 40 in 1950 to about 170 today. Of these 19 are Fellows of the Institute, 114 are Members, five are Graduate Members, and eight are Local Members.

Despite their initial small numbers chemists from the Manawatu have participated fully in Institute activities, both before and after the formation of the Branch, and have taken their share in arranging conferences and providing officers for the Institute. The first conference in the area was held in Palmerston North in 1945. This was an important occasion for the Institute, since it represented a re-introduction of annual conferences after a break due to war conditions. The 1945 Palmerston North conference was attended by 130 members. Although it presented some organizing difficulties, it proved to be a great success. Subsequent conferences have been held in 1955, 1963 and 1970, culminating in this 1975 conference in the jubilee year of the Branch.

Dr J. Melville, then Director of the Plant Chemistry Laboratory, was President of the Institute of Chemistry in 1950 when the Branch was formed. Other chemists from this area who have served as President are: 1958, Dr C. R. Barnicoat; 1966, Dr A. T. Johns; 1971, Dr W. A. McGillivray; and, if events follow their normal course, Professor G. N. Malcolm, who is now second Vice President, will be President in 1977.

Browsing through the minutes of 25 years of Branch and committee meetings can be a fascinating if, perhaps viewed coldly, somewhat pointless activity; names of associates, some remembered, some forgotten; memories revived of stimulating lectures by visiting chemists who, in those early days, all too infrequently passed through New Zealand; votes of thanks for services well and truly rendered to the Branch or to the Institute; farewells to associates retiring or moving from the area; discussions and arguments, sometimes heated, on issues now long passed into oblivion. However, in a country with a recorded history as short as New Zealand, even 25 years is still a significant period, and for the Manawatu Branch it has been associated with change and development on a more rapid scale than possibly has taken place elsewhere in New Zealand in a comparable period of time, or is likely to occur again. The next 25 years will probably be a period of consolidation, but this is as important as growth, and those of use who have been associated with the Manawatu Branch can only hope that the structures we have helped to build will prove to be as good as the foundations we inherited.

Proposed L. H. Briggs Memorial Prize:
Appeal for Contributions

The Council of the University of Auckland has approved the establishment of a prize, to be called "The L. H. Briggs Memorial Prize", to be awarded each year to the most distinguished research student in the Chemistry Department. Those who knew Bob Briggs or his work, and who would like to support this memorial to him are invited to send donations to:

The Registrar,
University of Auckland,
Private Bag, Auckland.
New Zealand.

Cheques should be made out to the University of Auckland L. H. Briggs Memorial Appeal. Official receipts will be sent to contributors; amounts of two dollars or more qualify as charitable donations for New Zealand Income Tax purposes.

LETTER TO THE EDITOR

The Press release issued by the President under the title "The Law and Scientific Evidence," and published in Chemistry in New Zealand, April 1975, was of particular interest to me.

I was one of the participants who shared in the "harrowing experience" of the Thomas Court Appeal hearing, and I was therefore surprised that the suggestion proposed by the President was partly based upon that hearing. This was unwise, because the confident assertion made by the petitioner, and referred by the Governor-General to the Court of Appeal, was not a complex scientific question, although it was one to which scientific method could be applied. A careful reading of the Court transcripts, and of the evidence presented, would convince any scientist on this point although reading the newspapers may have given a different impression.

The suggestion that "a formally recognised specialist group outside the Court could assess the significance of conflicting technical evidence" may appear to be entirely reasonable, and should be seriously discussed, provided the present judicial system can be shown to be inappropriate. In my opinion the present system enables the Court to effectively determine the sincerity, probity, and knowledge, of the various witnesses and I suggest that the procedures cope well with technical evidence, be it medical or scientific. For example, I recall that shortly after the introduction of the blood alcohol sampling under the Transport Act, when my officers were commonly cross-examined for up to 6 hours, the case often concluded by a simple question from the Magistrate, "Mr X are you quite certain that this blood sample contained an alcohol proportion exceeding 100 mg per 100 ml?" A simple "yes" to this question far outweighed the technical jargon that may have preceded it, when attempting to describe abstruse concepts such as the separation of ethanol upon a gas-liquid column.

One major difficulty in all forensic investigations is the obvious fact that the experiment cannot be repeated, and only the participants really know what actually happened. Thus, no forensic investigation can ever be said to be entirely conclusive, and there is always some extra feature, no matter how insignificant, that can be discovered and emphasised. The apparent disagreement between technical witnesses often concentrates entirely upon these unprovable details that may be quite irrelevant to the main conduct of the case. I am sure much Court time can be wasted in this manner but I am not aware of any instance in which the Court has been misled.

I entirely agree with the President that such trivial technical wrangling is unseemly, but the defence raises these points, not the prosecution. I would not like to leave the impression with readers that I am entirely satisfied with the present Court procedures, and for many months I have been urging that the laws of evidence should be changed to permit the introduction of certificates as was done in English Law in 1967. This will not prevent opposing scientific evidence, where there is a real scientific doubt, but should eliminate many unnecessary Court appearances.

I am quite satisfied that any scientific evidence presented by officers of Chemistry Division is impartial and objective and I resent any suggestion that this is not the case.

Yours faithfully,

I. R. C. McDONALD,

Dominion Analyst.

AND REPLY

Dr McDonald, as Dominion Analyst, is undoubtedly qualified more than most to appreciate the subtle interplay of Science and the Law. I entirely respect his position and his views on this matter.

My press statement given in full in the April issue of the Journal did not pretend to judge the quality of scientific evidence in Law, from whatever source. It also did not presume to pass comments on aspects of the Thomas trial. If this impression was gained I sincerely regret the unintended obscurity or ambiguity.

The Adversary system is the basis of our legal process. It is well that we retain the spirit to assess it occasionally in the light of changing social and technical circumstances.

The significance to society of the rapid advances being made in science, and especially forensic science, are profound. Implicit in such advances is the threat they pose to our age-old concepts of individual liberty. Not to be prepared to prod our institutions is a symptom of social malaise. It is the right and responsibility of us all to feel the freedom to do so.

Yours faithfully,

C. L. DAVEY.

THE NEW ZEALAND INSTITUTE OF CHEMISTRY (INC.)

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 30th APRIL, 1975

1974 $			
	EXPENDITURE:		
	Administration Expenses		
2167	Printing, Stationery, Postages, Tolls, etc.	2,798.67	
1250	Salary, Registrar	1,406.00	
1398	Travelling Expenses	1,560.76	
688	Honoraria (Less Proportion Charged to Journal)	3,159.74	
540	Branch Expenses Allowances	900.00	
165	Audit Fees	345.00	
474	Conference Costs paid by Institute	350.36	
70	Donation — S.A.N.Z.	70.00	
20	Royal Society of N.Z. Membership Fee	20.00	
300	Publicity	—	
10	Depreciation	8.00	
—	Donation	26.64	
75	Prizes	75.00	
(7157)			10,720.17
	PUBLICATIONS:		
—	Environment in Industry	67.86	
7668	Cost of Journal (6 issues)	9,126.92	
—	Education in Chemistry	72.38	
1447	List of Members	—	
—	Chemistry	16.98	
94	Rules	380.00	
—	Salary Survey	117.25	
—	Sundry	13.30	
(9209)		9,794.69	
—4914	Less Revenue from Advertising	3,122.87	
(4295)			6,671.82
$11452			$17,391.99

1974 $			
	INCOME:		
7571	Subscriptions — Annual		14,154.71
	Interest Received:		
265	Bank of New Zealand	300.49	
192	Local Body Stock	196.26	
(457)			496.75
353	Net Proceeds — Sundry Publications—Monographs		2.10
3071	Excess of Expenditure over Income for Year		2,738.43
$11452			$17,391.99

OVERSEAS VISITORS TRAVELLING FUND

1974 $			1974 $			
340	Travelling Expenses Paid During Year	825.60	374	Balance 30.4.74		688.05
688	Balance 30.4.75	675.39	654	Conference Surplus	912.94	
				Less Advance	100.00	
						812.94
$1028		$1,500.99	$1028			$1,500.99

EASTERFIELD FUND

Expenses—Powell	129.34	Balance 30.4.74	400.00
Balance 30.4.75	270.66		
	$400.00		$400.00

THE NEW ZEALAND INSTITUTE OF CHEMISTRY (INC.)

BALANCE SHEET AS AT 30th APRIL, 1975

1974 $			
	CURRENT LIABILITIES		
2249	Bank of New Zealand	1,830.40	
541	Sundry Creditors	175.00	
213	Subscriptions Received in advance	—	
(3003)	**TOTAL CURRENT LIABILITIES**		2,005.40
	SPECIAL FUNDS:		
140	Education Fund (School Bulletin)	140.00	
688	Overseas Visitors Travelling Fund	675.39	
400	Easterfield Fund	270.66	
(1228)	**TOTAL SPECIAL FUNDS**		1,086.05
	TRUST FUNDS:		
2596	Balance 30.4.74	2,598.50	
3	Plus interest credited	2.94	
(2599)			2,601.44
	ACCUMULATED FUNDS:		
8761	Balance 30.4.74	5,690.38	
3071	Excess of Expenditure over Income for Year	2,738.43	
(5690)	**BALANCE 30.4.75**		2,915.95
$12520			$8,644.84

1974 $			
	CURRENT ASSETS:		
10	Petty Cash Funds	—	
862	Subscription in Arrears	2,006.00	
1194	Sundry Debtors	651.22	
1810	Publications on Hand	349.18	
(3876)	**TOTAL CURENT ASSETS**		3,006.40
	TRUST FUND INVESTMENTS (at Cost):		
99	Post Office Savings Bank	101.44	
1000	Hutt County Council, Redemption Loan	—	
1500	Lyttelton Harbour Board Loan	1,500.00	
(2599)			1,601.44
	GENERAL FUND INVESTMENT:		
1000	North Canterbury Hospital Board Stock	1,000.00	
5000	Bank of New Zealand Ltd. Term Loan	3,000.00	
(6000)			4,000.00
	FIXED ASSETS (at Cost):		
	Office Equipment 317.80		
	Less Depreciation 282.80		
43		35.00	
	Addressograph Plates 62.35		
	Less Depreciation 60.35		
2		2.00	
(45)	**TOTAL FIXED ASSETS**		37.00
$12520			$8,644.84

We have audited the books of The New Zealand Institute of Chemistry (Inc.) for the year ended 30th April 1975, and have received all the information and explanations we have required. In our opinion, according to the best of our information and the explanations given to us as shown by the books of account, the Balance Sheet, Income and Expenditure Account, and Trust Fund Account are properly drawn up so as to give a true and fair view of the state of the Institute's affairs as at 30th April, 1975.

SHANAHAN AND WINDER,

Chartered Accountants.

M. P. Winder.

NOTICE OF A.G.M.

The Annual General Meeting of the New Zealand Institute of Chemistry will be held at Massey University of the Manawatu, Palmerston North, on Thursday, 21 August, 1975, at 5.15 p.m.

JOHN WESTCOTE LYTTELTON (1919-1975)
M.Sc. (N.Z.) Ph.D. (Lond.)

Dr J. W. Lyttelton, a scientist of international standing who was also prominent in musical circles, died suddenly in Palmerston North on May 30.

Dr Lyttelton was leader of the cell biology group in the Applied Biochemistry Division of the DSIR, and was noted for his work on the chemistry of biosynthesis in plants. He was a Fellow of both the Royal Society of New Zealand and the New Zealand Institute of Chemistry.

He was for eight years President of the Manawatu Chamber Music Society and a member of the national executive of the New Zealand Chamber Music Society and a member of the national executive of the New Zealand Chamber Music Federation. Since February of this year he was Chairman of the Palmerston North Arts Council.

Dr Lyttelton was born in Christchurch and educated at Silverstream College. After graduating MSc in chemistry at Auckland University in 1940, he joined the Acoustics Division of the DSIR in wartime work on undersea acoustics for anti-submarine purposes.

On a Beit Memorial Fellowship he worked in the Lister Institute, University of London, from 1947 to 1951, completing his Ph.D. there with a thesis on the physical chemistry of some anti-clotting proteins in human blood.

Back in New Zealand he joined the Plant Chemistry Laboratory from which the present Applied Biochemistry Division has grown. He used the then novel techniques of electrophoresis and ultracentrifugation in studies of leaf proteins of pasture plants.

Dr Lyttelton went overseas several times. In 1956 a Commonwealth Fund Fellowship took him to the California Institute of Technology for a year working on the localisation of specific proteins in leaf cells; in 1973 he spent six months in the Plant Industries Division of the C.S.I.R.O. at Canberra studying chloroplasts, the particles in leaf cells that are responsible for photosynthesis. He was a delegate to several overseas conferences, the largest being the 7th International Congress of Biochemistry in Tokyo in 1967.

John Lyttelton was active in the Institute of Chemistry serving as Chairman, Secretary/Treasurer and as a committee member for the Manawatu Branch. He was also on recent Manawatu Conference Committees and was heavily involved in programme organisation for the 1975 conference. He will be missed from the local scene, as much for his sound commonsense, and gentle approach, as for his undoubted scientific ability.

Dr Lyttelton is survived by his wife, three daughters and one son.

Clifford Valmont Fife (1909-1975)
MSc(NZ), PhD(Well)

The death of Dr C. V. Fife from a stroke some weeks after an operation came as a shock to his friends and former colleagues.

He was born in Christchurch in 1909 and attended Christchurch Boys' High School and Canterbury University, where he graduated with MSc(Hons) in Chemistry in 1933. In the same year he was appointed to the staff of the Soil Science Department at Massey Agricultural College of the University of New Zealand. At that stage all chemistry teaching was the responsibility of the Soil Science Department.

Dr Fife became the Head of the Department of Soil Science in 1961, a position that he held until his retirement in 1972.

He served on a wide range of committees within the University, including the Professorial Board and the University Council (1961-3). He joined the Institute of Chemistry as an associate (member) in 1933 and in 1963 he was made a Fellow of the NZIC. He played an important part in the establishment of a Branch in the Manawatu, and his keen judgment was of great value.

His research on phosphate fixation in soils was of great importance and won him international recognition.

Dr Fife was also an accomplished musician, and was organist for St Andrew's (Presbyterian) Church in Palmerston North. He collected an impressive library of recorded music, and this reflected his special appreciation of the works of Bach.

He is survived by his wife and two daughters and by a sister in Christchurch.

BRANCH NEWS

Auckland

In March and April five functions were held. On 13 March a combined meeting of all the specialist and associated groups (ten in all) held a joint meeting. From this meeting a desire of all groups to be under one roof in a Science House with educational, secretarial and social facilities was expressed. Discussions with other interested bodies are taking place.

Mr LLloyd Brown, Chairman of the National Research Advisory Council, addressed a luncheon meeting on "The Chemical Industry and NRAC".

Two joint meetings were held with the Auckland University Chemistry Department. Professor Peter Gray, Leeds University, lectured on "Spontaneous Ignition and Thermal Explosions" and Professor J. W. Robinson, of Louisiana State University, lectured on "Analytical Chemistry and the Environment."

On 23 April a highly successful symposium, "Hazards with Chemicals" at the University of Auckland School of Engineering was attended by over 200 delegates.

On the evening preceding University of Auckland Graduation, the Branch is holding a social function for BSc graduates in biochemistry and chemistry.

Auckland Technical Institute.

The prize given by the Auckland Branch of NZIC to the top chemistry student at ATI was awarded to Mr Stephen A. Beckett.

Despite a change in night tutoring hours this year, the number of students for NZCS (Chemistry) has continued to increase, over sixty having embarked on the course this year.

A course in Applied Chemistry and Management, designed to widen students' knowledge of many fields of applied chemistry together with a basic understanding of management and financial principles is being offered this year. This is in addition to the very successful Management for Chemists course.

University

As a consequence of the new BSc structure introduced two years ago, changes to the MSc course structure have come into effect this year. Students must choose six 20 lecture courses from ten offered, one of which must be from each of the branches physical, inorganic and organic. Each course is examined by a two hour paper. Student choice resulted in a very even distribution between all papers. In addition they still take three "specials" course of 10 lectures, sixteen courses being offered. The size of the class this year is twenty-six.

The experiment of offering an accelerated Stage 1 course to be taken together with the physical and analytical Stage 2 course to well prepared first-year students, started in 1973, has proved very successful and thirty students have enrolled this year. It is beneficial not only to students majoring in chemistry, but also to those of other subjects allowing them a much better ancillary course structure.

In addition to the lecture mentioned above, Professor Peter Gray lectured on "Oscillatory Reactions", our current visitor Dr N. S. Isaacs, gave a colloquium on "Two plus two cyclo-additions", and Professor J. A. Ibers, Northwestern University, lectured on "Inorganic Models for Biological Molecules."

Two further visitors arrived in May and stay until December; Dr N. Adams, Reader in Physical Chemical at the University of Leicester, will be working with Dr M. J. Taylor, and Dr Harris from University of Sussex with Associate Professor W. R. Roper.

Dr L. R. B. Mann of the Biochemistray Department has been seconded to the Department of Continuing Education for three years.

Dr P. Willcox is spending a year as a post-doctoral fellow in the Biochemistry Department working with Professor Renwick. A graduate of the University of London, he spent the last 2½ years at the Hospital for Sick Children in London.

General

The New Zealand Society of Cosmetic Chemists is now firmly established with a membership of over 70. The President is Miss J. Strange, MNZIC of Con-stan Industries.

Waikato

J. E. Allan Memorial Prize in Chemistry

This prize, awarded annually by the Branch in memory of the late Mr J. E. Allan, is given to the best student in the previous year's part II Chemistry courses at the University of Waikato. This year the prize has been awarded to Miss Lee Moroney whose success in the Part II courses was achieved in her first year at university. Miss Moroney attended the May meeting of the Branch to be congratulated by the members and to be presented with her prize.

Waikato Technical Institute Prize in Chemistry

This prize is awarded annually by the Branch to the best student takiig the New Zealand Certificate of Science in Chemistry at the Waikato Technical Institute. This year the prize has been awarded to Mr Peter Dobbie, a technician employed at the Ruakura Agricultural Research Centre.

Branch Meeting

At the April branch meeting Dr R. R. Brooks from Massey University spoke on "Biogeochemistry in Mineral Exploration".

At the May meeting Dr P. Lester, from Melville High School, Hamilton, gave a talk entitled: "Too Clever by Half — a Critical Review of School Chemistry." This meeting was unusually well attended, with some members involved in chemistry teaching travelling considerable distances to be there.

Dr Lester spoke about his concern that the high school chemistry syllabus is far too sophisticated for the age groups for which it is prescribed, and that it does not provide a suitable education in chemistry for the vast majority of the pupils, those who do not go on to study chemistry at university.

An interesting and spirited discussion followed the talk, and it was clearly apparent that the views expressed by Dr Lester were shared by all who were present at the meeting. The opinion of the university lecturers present was that the coverage of many topics in the 6th and 7th form left students unreceptive to these topics at university; yet by covering these topics at such an early stage in their education the students do not have a proper understanding of them. The hope was expressed by many members that the N.Z.I.C. would be able to improve the situation.

The June meeting of the Branch took the form of a visit to Cooks New Zealand Wines Ltd, at Te Kauwhata. Dr D. E. G. Sheat of the Ruakura Agricultural Research Centre gave a talk on modern wine-making processes, then the manager of Cooks, Mr K. Hitchcock, conducted the party around the premises. Members were pleased to have the opportunity to sample the wines produced by Cooks, and their enjoyment of the visit was expressed on the bus journey home.

University of Waikato

A refresher course for chemistry teachers, organised by Dr M. D. Carr, was put on by members of the Chemistry Department during the May vacation. This course was well attended and prove to be very successful : it is expected that another course of this type will be put on next year.

Dr R. M. Daniel joined the staff as Lecturer in Biochemistry in June. He has been working for the last 4 years in the Department of Cell Biology at the University of Glasgow, and for 2 years prior to that at C.S.I.R.O., Canberra, on microbial electron transport, nitrogen fixation and nitrate and nitrite reductases.

Dr A. G. Langdon has returned from study leave spent in the Department of Chemistry, Imperial College, where he was working in association with Professor R. M. Barrer on the encapsulation and reactions of anions in porous crystals.

The university has purchased a Micromass 602C isotopic ratio mass spectrometer which has now been installed.

Professor A. T. Wilson commenced 12 months sabbatical leave in May. He is going to the University of Arizona at Tucson to work on isotope ratios in various compounds in the wood of bristlecone pine. The University of Arizona has tree rings accurately dated back 9,000 years. It is hoped to get the temperature course over this period from this. Work in Hamilton on *Pinus radiata* has shown that the isotope ratio can be used as a "biochemical thermometer".

Meat Industry Research Institute of New Zealand Inc.

The Meat Industry Research Institute has made a substantial contribution to the meat industry of New Zealand with the development of a novel process to hasten rigor mortis setting of meat by high voltage electrical stimulation. This development is the result of several years of basic biochemical and physiological studies on muscle. Further studies into the mechanism of the process are underway with the acquisition of a Beckman L5-75 preparative ultracentrifuge to investigate the involvement of a subcellular components of muscle.

Manawatu

Massey University

Dr G. R. Hedwig has been appointed to the position of Lecturer in the Department of Chemistry, Biochemistry and Biophysics. Dr Hedwig, a graduate of the University of Canterbury, has been a post-doctoral fellow in the department working on microcalorimetry of metal ion interactions with biological molecules.

Dr A. M. Brodie attended the Sixth Conference of the Division of Co-ordination and Metal Organic Chemistry (Royal Australian Institute) held at Adelaide, Australia.

Dr R. R. Brooks and Dr R. D. Reeves visited New Caledonia to carry out field work in co-operation with the Overseas Appointments Committee of Scientific and Technical Research.

Dr G. R. Marshall is currently spending sabbatical leave in the Department. He is professor at the Department of Biophysics at the Washington University School of Medicine, St Louis, Missouri, and his research interests are centered on the small peptide, angiotensin.

Dr I. D. Watson, Department of Chemistry, Biochemistry and Biophysics, is spending a year working with Professor Wilkie in the Physiology Department, University College, London.

Professor E. L. Richards, Food Technology Department, has been in Malaysia acting as Senior Course Advisor in Food Technology in the Faculty of Agriculture at the University Pertanian.

Visitors to the Department have included Dr N. Brunden, Swedish Geological Survey and one of the founders of the biogeochemical method of prospecting, Professor E. A. Daves, British Chemical Society visitor to Australia and New Zealand, Professor of Biochemistry at University of Hull, Professor J. A. Ibers, Department of Chemistry, Northwestern University, Illinois; Professor P. Gray, Physical Chemistry Department, Leeds University; Professor J. W. Robinson, Department of Chemistry, Louisiana State University; and Professor R. N. Grimes, Department of Chemistry, University of Virginia.

DSIR

Dr J. P. Kerry has been appointed Director of the Plant Physiology Department.

Dr D. R. Briggs has come from the Division of Plant Industries, CSIRO, Canberra, to join the staff of the Applied Biochemistry Division at Palmerston North. He has been concerned with the mechanism of induction of post-infectional anti-fungal isoflavonoid compounds (phytoalexins). He will work with Dr E. Wong on the enzymology of flavonoid biosynthesis.

Mr J. Birch, who recently graduated BSc(Hons) in Biochemistry from Massey University, joined the staff of the Applied Biochemistry Division and will be assisting Dr E. Wong on problems associated with tannin metabolism.

Mr P. D. Pearce of the Applied Biochemistry Division has been awarded an NRAC fellowship to study for a PhD degree under Professor Elliot at the University of Adelaide.

Dairy Research Institute

Dr T. D. Thomas recently visited Australia to attend the Australian Biochemical Society annual conference in Melbourne, and to visit Research Institutions of interest.

Dr B. C. Richardson was granted a PhD degree from Massey for a thesis on 'A comparative study of the casein micelles of caprine, ovine and bovine milks'. He has been awarded a bursary by the French Government to work for a year in the Protein Research Laboratory of the CNRZ (Centre National de Recherches Zootechniques) in Jouy-en-Josas, France. He left to work with Dr B. Ribadeau-Dumas on aspects of the primary structures of casein components towards the end of May.

Dr P. S. Robertson has recently left on an overseas trip concerned with the mechanization of dairy processes. He will include visits to the U.K. and North America and is due back early in August.

Dr W. A. McGillivray will soon leave on a trip to the USA for discussions on the use of the system of cheese starter handling that has been developed at the New Zealand Dairy Research Institute. He will also attend the American Dairy Science Association meetings in Manhattan, Kansas.

Other

New Zealand Pharmaceuticals Limited have recently commissioned a plant for the extraction and purification of bile acids from animal gall. The company is exporting the pure cholic and deoxycholic acid to France where they are used by Roussel-UCLAF as starting materials in the manufacture of corticosteroid drugs.

The process was developed by New Zealand Pharmaceuticals' chemist, Dr R. P. Garland, in collaboration with Dr R. Chong of the Biotechnology Department at Massey University.

Wellington

Department of Scientific and Industrial Research—Chemistry Division

Mr J. A. Ritchie, who has worked for the D.S.I.R. since 1949 recently retired. His main interests in the Geochemistry Section were in the fields of mineral and general inorganic analysis, especially in the area of determining low levels of constituents in water.

Dr L. J. Porter, of the Organic Section is spending a year at the University of Sheffield in Great Britain on a Nuffield Foundation Travelling Fellowship.

Mr R. J. Hooper, of the Chemical Engineering Section recently left for Australia, where he will study for a PhD at the University of Melbourne.

Dr I. J. Miller is spending 2 months visiting the Soviet Union, Europe and the United States studying different methods of energy production from waste materials.

D. G. McGavin has returned to the Spectroscopy section after 3 years study for a Ph.D. at Monash University in Melbourne.

Dr B. W. L. Graham has joined the Chemical Engineering section. After completing a Ph.D. at the University of Waikato. Dr Graham spent a year on a post doctoral fellowship with Professor M. Lappert at the University of Sussex.

Recent additions to the staff at Chemistry Division include:

Dr G. J. Sutherland has returned to New Zealand from the Wellcome Foundation Laboratories in Berkhamsted, England. He is working in the Forensic Section on drug analyses.

Mrs H. E. Harvey has rejoined the staff at Chemistry Division in the Pharmaceuticals Section. She was recently employed in the Biochemistry Department at Victoria University.

Dr A. D. Woolhouse has joined the Organic Section after eighteen months post-doctoral research at Liverpool University.

Dr D. R. Crump has also joined the Organic Section after post-doctoral work in Cambridge, London, Worcester, Massachusetts and New York.

Dr Margaret E. Eastwood, who recently finished a PhD in X-Ray crystallography at London University, has joined the Forensic Section where she is developing methods of examining iso-enzymes in bloodstains.

Mr D. F. Grant-Taylor is now working in the Geochemistry Section after a year in the laboratory at Unilevers in Petone.

Mr R. L. Howard has joined the Metallury Section after working for a foundry in England.

Institute of Nuclear Sciences

A deputation from the Australian Atomic Energy Commission visited the Institute in November to discuss nuclear matters of common interest.

Dr G. Lyon has taen up a post-doctoral felowship at the University of Calgary for a year to further his geochemical studies based on the use of stable isotopes.

Dr J. Hulston, who is the New Zealand representative of the Australian and New Zealand Society for Mass Spectrometry, atended the 3rd conference of this Society at Canberra in January. The next conference on this topic and its applications will be held in New Zealand in January 1976.

Geochemical studies at INS will benefit greatly from the recent installation of a solid source mass spectrometer. Initially this will be used mainly for rubidium-strontium dating of specimens more than 50 million years of age.

Dr N. Whitehead is at present visiting several laboratories overseas in connection with his work on analytical applications of proton-induced X-ray fluorescence.

Visiting scientists to the Institute have included Dr R. Wilkins of the CSIRO, Division of Mineralogy who made use of the Institute's mass spectrometry equipment to study mineral inclusions in rocks.

Victoria University of Wellington—Chemistry Department

Professor J. W. Tomlinson delivered an invited address entitled "High Temperature Electrolytes—The Future" at an Electrochemistry Conference "The Past 30 Years and the Next 30 Years," marking the contribution of J. O'M. Bockris. The Conference was held at Imperial College, London, and was attended by over a hundred of Professor Bockris's colleagues and former students.

The lectures and discussion will be published by Plenum Press.

Sir Ian Wark arrived in Wellington on April 1st, where he lectured on the applications of Science in Industry.

Professor J. F. Duncan and a group of his students had a half-hour telephone discussion with Professor T. C. Barker, Professor of Economic History at the University of Kent, U.K. on the Exploitation of Technology.

Professor J. F. Duncan has been appointed Chairman of a Committee to lead the development of SATIS (Scientific and Technological Information Service) for the Trustees of the National Library.

Professor N. F. Curtis has been elected a Fellow of the Royal Society of New Zealand.

Dr M. L. Smith, affiliated to the Auckland Centre for Continuing Education, a member of the British U.K. Atomic Enery Commission to Tehran for many years, visits the Department on 9 July and 13 August to teach on "Exploitation of Research Results by Industry" and "Development in New Discovery."

Professor J. F. Duncan visits Australia in July. He has been invited to lecture on "Resonance, Mossbauer and X-Ray Methods" at the Department of Inorganic Chemistry, University of Melbourne. He will also lecture to the chemical fraternity at La Trobe University on "Technological Innovation and the Future."

The Science Faculty Mass Spectrometry Service has commenced.

Canterbury

Branch Activities

The President of the Institute, Dr C. L. Davey, dined with members of the branch committee before attending the meeting on 21 April, at which he gave a report on NZIC affairs and an address on "The Molecular Structure of Muscle and Mechanics of Muscular Contraction".

The Teachers' Evening was held on 28 April. The subject for the evening was "Practical Chemistry—What's the Point?" A panel of speakers discussed the role of practical work at all levels in school chemistry.

The 1975 Chemistry in Action evening for senior school pupils was held on 11 April. Drs P. J. McElroy, D. H. Glass and E. E. Graham from the Department of Chemical Engineering, University of Canterbury spoke on "Polystyrene—from Beakers to Buckets to Beads and Boats".

At the Branch meeting on June 16 a large attendance of undergraduates and members of the Junior Chemical Society were present when the topic of "The Chemist and the Community" was discussed. Mr J. R. Sharman from Christchurch Hospital spoke about Hospital Toxicology and Dr G. R. Scott from the Chemistry Division of D.S.I.R. spoke on Forensic Chemistry.

On July 21 the Branch met at a dinner meeting after which John Pollard spoke on the subject of "Travellers Tales from Darkest Industrys."

Barry Kerr who is Head of the Science Department at Burnside High School has been appointed Principal of Fielding Agricultural High School.

Dr J. B. Richardson of the Auckland Regional Authority has been appointed Chief Chemist for the Christchurch Drainage Board.

University of Canterbury

Visitors to the Chemistry Department hav included Professor P. Gray from Leeds, who gave a talk on "Combustion", and Professor Ibers from Northwestern University, who talked on Structural Studies on Molecules of Biological Interest".

Dr D. House and Professor B. Penfold have attended a conference in Adelaide run by the Co-ordination and Organo-Metallic Division of RACI.

Professor B. R. Penfold has been elected to the University Council. He is currently on leave for eight months and will be visiting the U.K. in September and October to study computer aided learning of chemistry at Leeds University.

Dr G. A. Rodley has been elected Dean of the Faculty of Science.

A former member of the Chemistry Department, Professor A. Fisher has been appointed Dean of the Faculty of Arts and Sciences at the University of Victoria in British Columbia.

Dr M. R. Brennan has been appointed to an assistant lectureship for the remainder of 1976.

Dr W. T. Robinson is on a months leave. He will be attending the 10th International Congress of Crytallography in Amsterdam and the International Summer School in Crystallographic Computing in Prague.

Dr F. C. Marsh has returned to the Department to work for one year under a Medical Research Council grant on the reversible binding of dioxygen to metal systems.

Mr R. H. Hickford is currently housed in the Department. He is seconded to the curriculum development unit of the Education Department. He is engaged in writing a Form 6 and 7 practical guide in Chemistry.

Dr Roger Brown from Monash will be spending several weeks in the Department.

Recent visitors have included Dr Niel Isaacs from Reading University and Professor J. Ibers from Northwestern University.

Clinical School

Dr Arcus, who was formerly located at Princess Margaret Hospital, has moved to the Medical Centre Building at the Christchurch Clinical School.

Dr S. O. Brennan, who recently obtained his PhD from Massey University, has joined the Protein Unit of the Department of Clinical Biochemistry. While at Massey he worked on the sequence of phosphofructokinase. His work will involve the development of improved techniques for the identification of abnormal haemoglobins.

Dr Claude M. Andre has returned as senior registrar in Clinical Biochemistry. His research interest is in the metabolism of adrenal steroids in women.

On June 9 a joint meeting was held of the Association of Clinical Biochemists and the Canterbury Branch of the New Zealand Biochemistry Society. After sherry and a buffet dinner Professor J. G. Sneed from the Clinical Biochemistry Department of the University of Otago Medical School spoke about "the Role of Adrenalin in Adipose Tissue."

Otago

Branch Activities

The Chairman, Dr G. W. Emerson, opened this year's programme by addressing the March meeting on the topic "Methylglyoxal and the glycolytic pathway."

Professor P. Gray from Leeds University gave a lecture at a special meeting late in March on the subject "Total Combustion and Explosion; possibly combustion and biology."

A buffet dinner was held in April during which members had the opportunity to meet the NZIC President Dr C. L. Davey and hear him speak on the topic "The molecular structure of muscle and mechanisms of muscular contractions."

Chemistry Department

Professor W. D. Loomis from Oregon State University, visited the department in March and lectured on "The Biosynthesis of mono- and sequiterprenes."

Professor J. W. Robinson, from Louisiana State University, Baton Rouge, also visited the department in March as a guest of Professor A. D. Campbell. He delivered a very well attended lecture on "Environmental Pollution Control."

Biochemistry Department

At the beginning of the current academic year the Biochemistry Department occupied four new laboratories on the first floor of the adjoining Microbiology Building. These laboratories were designed to permit the introduction of a new concept in the operation of biochemical practical classes. Each laboratory provides not only the traditional bench facilities but is also furnished with chairs, tables and blackboards for group discussion of the laboratory objectives. Practicals are designed so that there is ample time to process the data and discuss the significance of the results.

Dr G. W. Clayton, from Environment Canada Freshwater Institute, Winnipeg, is visiting the Department of Biochemistry for a year of study leave. Dr Clayton's interests are in the area of genetics of isoenzymes in freshwater fish.

Dr W. P. Tate joined the Department of Biochemistry in April. Dr Tate graduated PhD from Otago in 1972, and has spent the last three years at the Baylor College of Medicine, Houston, Texas, working with Professor C. T. Caskey on aspects of chain termination in protein synthesis.

Dr G. W. Emerson has returned from sabbatical leave in the Biochemistry Department, Leicester University.

Dr M. G. Smith has left for a sabbatical year with Professor R. M. Smellie, Institute of Biochemistry, University of Glasgow. He was awarded a Commonwealth Medical Fellowship.

Pharmacology Department

A Combined Societies Meeting was held in the Medical School from May 12-16. Contributing societies included Australian Society of Clinical and Experimental Pharmacologists, Physiological Society of NZ, Nutrition Society of NZ, NZ Dietetic Association, and the NZ Society of Endocrinology. A wide range of papers covering these fields were presented to a large number of participants at this meeting.

Correction of news in last issue:

Dr M. G. Shepherd has been awarded a Nuffield Fellowship for study with Professor J. Mandelstam, Department of Chemical Microbiology, Oxford University. He will be leaving in early August.

IUPAC NEWS

ANALYTICAL METHODS FOR USE IN OCCUPATIONAL HYGIENE

A further supplement to *Analytical Methods for Use in Occupational Hygiene* has now been published in the IUPAC journal *Pure and Applied Chemistry, Vol. 40,* No. 3 (1974). It comprises eight methods prepared by the IUPAC Section on Air Quality: Determination of airborne particulates vanadium (by spectrophotometry); Lead, cadmium and vanadium (by atomic absorption spectrophotometry); Benzo (a) pyrene and benzo (k) fluoranthene (by chromatography and optical fluorescence); Performance standards for detector tubes; Particulate lead in air; Hydrogen chloride vapour in air.

The first material in this series was published in 1959 under the title *Methods for the Determination of Toxic Substances in Air* for inclusion in a loose-leaf binder. First and Second Replacement-Additions were issued in 1962 and 1969, respectively. In 1969, the title was revised to *Analytical Methods for Use in Occupational Hygiene* to enlarge the scope. The original publication and the two Replacement-Additions (supplements), which did not appear in *Pure and Applied Chemistry,* are available from Butterworths, Borough Green, Sevenoaks, Kent TN15 8PH, UK.

The present supplement (Third Replacement-Addition) is available from the IUPAC Secretariat as a reprint (approx. 60 pages) from *Pure and Applied Chemistry* and is suitable after punching, for insertion in a loose-leaf binder or may be used as such. Price US$4.00 (£1.33) surface post or US$5.25 (£1.75) airmail.

BASIC DEFINITIONS OF TERMS RELATING TO POLYMERS

Two broad sets of definitions presented in this document have been compiled by the IUPAC Commission on Macromolecular Nomenclature. One of these is based on the structure of polymer molecules and the other on the processes by which polymeric substances come into being. The first type of definition is termed "structure-based" and the second "process-based". This document updates and supersedes the reports issued by IUPAC on the subject in 1952, 1962, 1965, 1966 and 1968 as wel as Tentative Nomenclature Appendix No. 13 (February 1971) to the *Information Bulletin.*

Published in *Pure and Applied Chemistry, Vol. 40,* No. 3 (1974) and available as a reprint (approx. 16 pages) from the IUPAC Secretariat, price US$1.50 (£0.50) surface post or US$2.25 (£0.75) airmail.

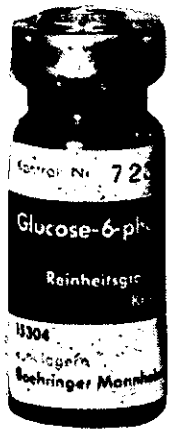
RECOMMENDED REFERENCE MATERIALS FOR THE REALISATION OF PHYSICOCHEMICAL PROPERTIES

There are many measuring systems and instruments in use today which yield results whose uncertainty of measurement and limits of error cannot be established without the employment of materials with known properties. Materials used for this purpose are called reference materials. In 1972 the IUPAC Commission on Physicochemical Measurements and Standards published a "Catalogue of Physicochemical Standard Substances" in *Pure and Applied Chemistry Vol. 29,* No. 4, pp. 597-616).

However it was realised that a more comprehensive compilation was needed, and a Sub-Commission on Calibration and Test Materials was set up to prepare recommendations on the selection and specification of reference materials for use in various types of physicochemical measurement. The first batch of the Sub-Commission's recommendations have now been issued in sections dealing with General Introduction (to the whole series), Enthalpy, Optical Rotation, and Surface Tension. Further sections will be published as more recommendations become available.

Published in *Pure and Applied Chemistry, Vol. 40,* No. 3 (1974) and available as a reprint (approx. 84 pages) from IUPAC Secretariat, price US$6.00 (£2.00) surface post or US$8.00 (£2.66) airmail.

analytical bio chemistry



For the solution of a variety of considerably complex questions, many analytical methods are employed by the biochemist. An almost classical method of analytical biochemistry came into existence from biochemistry itself, viz. the enzymatic analysis.

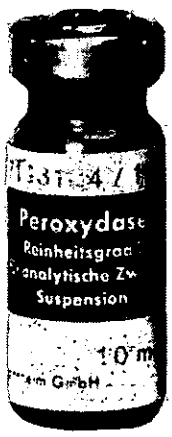
Enzymatic analysis means determination of metabolite concentration with the aid of enzymes, measurement of activities and study of the characteristics of enzymes in vivo and in vitro, and analysis of the control and regulatory functions within the cell and in organ metabolism.

molecular biology

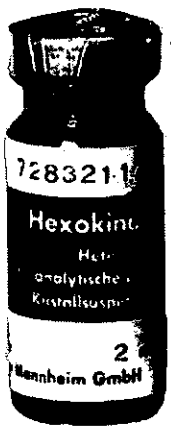
The research fields of protein and nucleic acid biosynthesis are nowadays lumped together – unfortunately – under the term "molecular biology." In our program we offer enzymes, substrates, templates, primer, inhibitors and auxiliary reagents, all of which are indispensable for the study of molecular action mechanisms.

enzymology

Enzymologic research revolutionizes biology not only because of the mushrooming number of newly-discovered enzymes. To the extent to which the biologist advances into cellular regions, he will become an enzymologist; to the extent to which the enzymologist interprets biological functions of cell components enzymatically, he will become a biologist. Thus, enzymology has become one of the main pillars of all biological disciplines.



clinical chemistry



This program is noted for its search for ever more specific and predictable test methods for medical research and routine diagnosis while adhering to the rising requirements for precision and accuracy of laboratory data. On the other hand, such a program must also take into consideration the requirements for simplification and rationalization. The ideal requirement is reached when simplification of actual labour allows, at the same time, for an increase in precision.

Our program for clinical chemistry offers numerous examples of this ideal.

food analysis

The first knowledge of biochemical processes, of the role enzymes play in them and the first experiences with enzymatic analytical methods were gained with foods. Analyses with the aid of enzymes have many advantages in food analysis: enzymatic methods are fast, safe and reproducible. The measurement of enzyme activities as a criterion of the condition of foods is supplemented more and more by enzymatic analysis of the components of foods.

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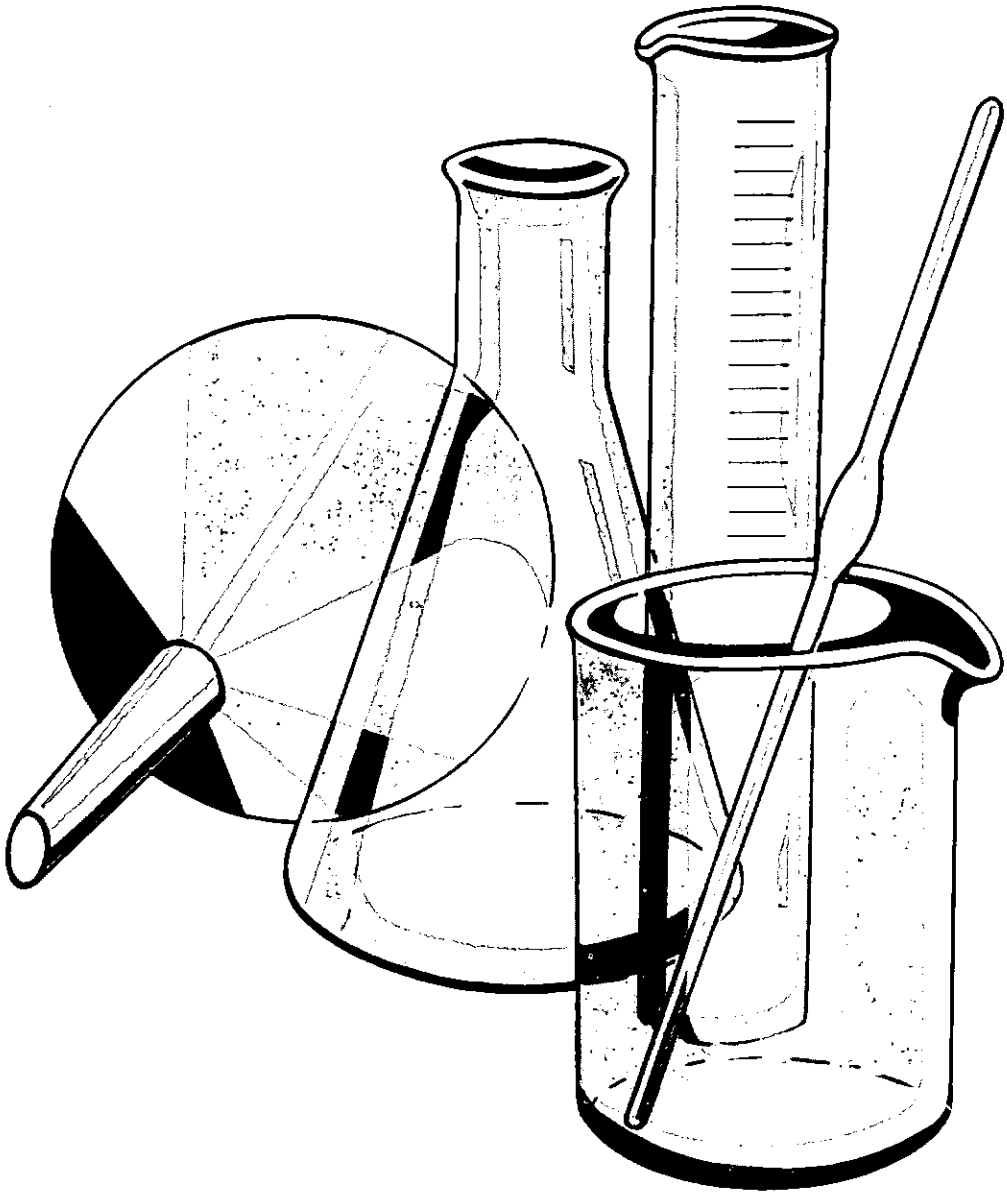

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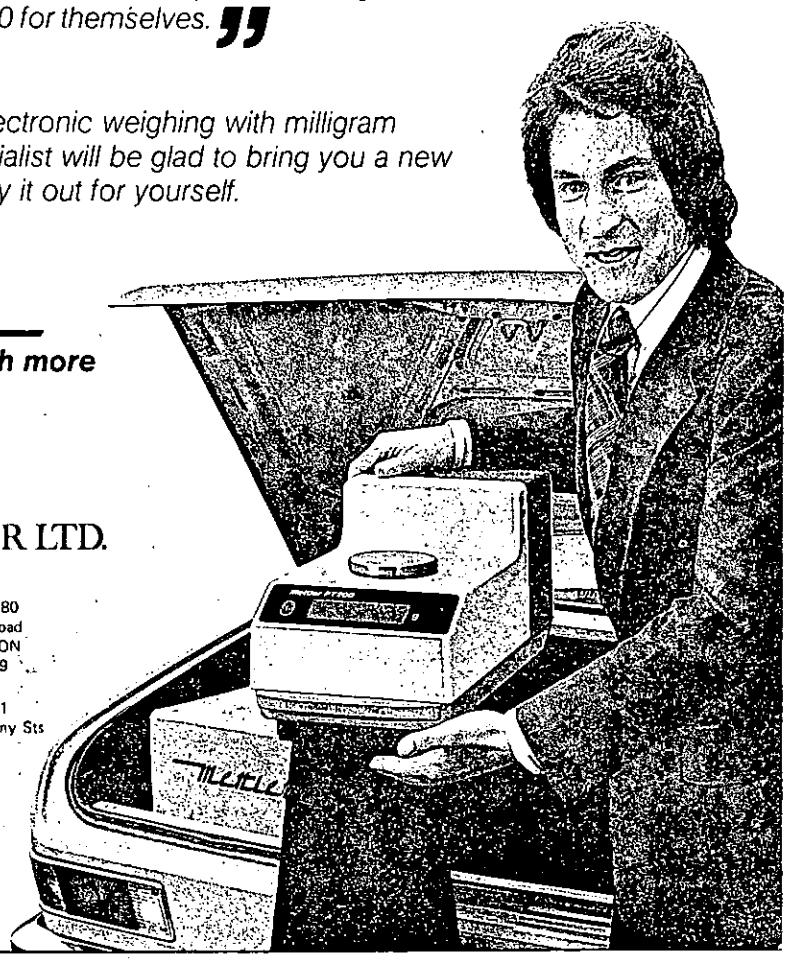

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