chemistry
in new zealand
OCTOBER 1985 VOL: 49 NO: 6

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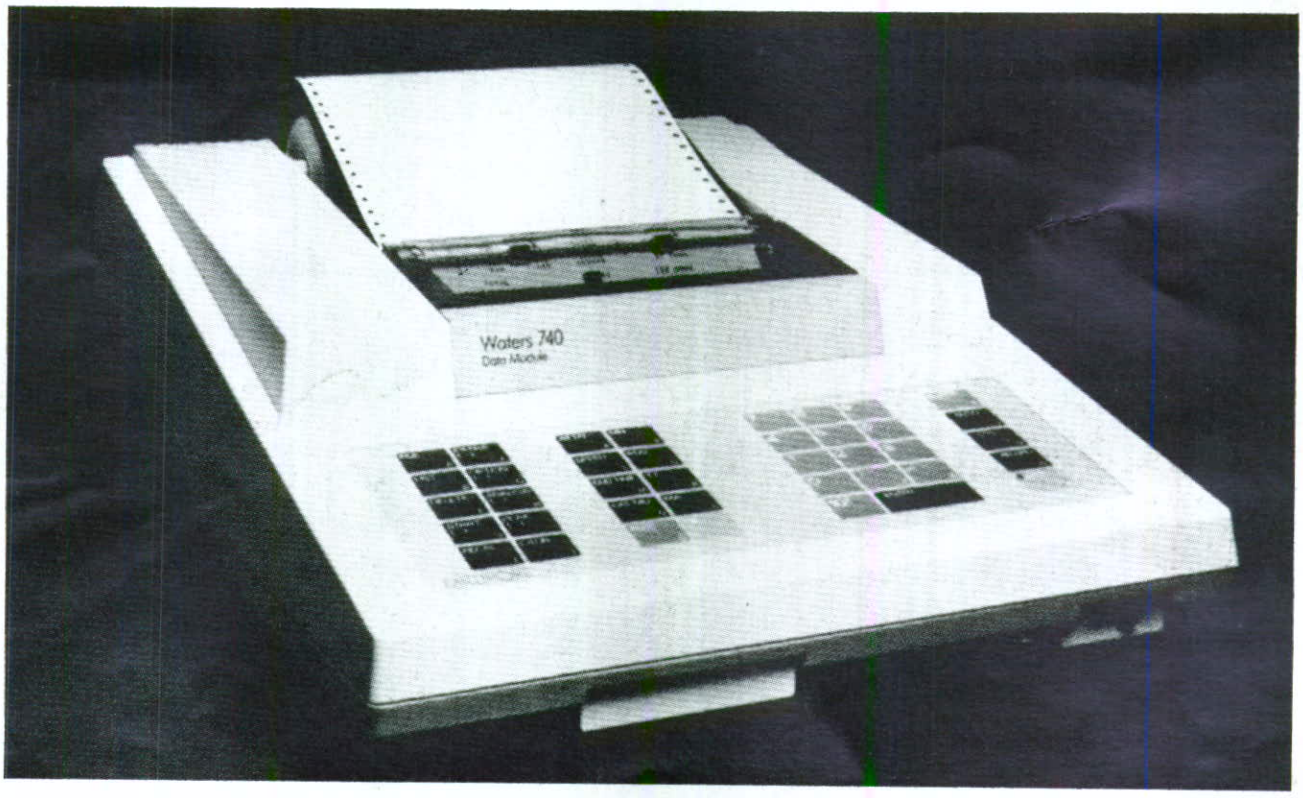

OCTOBER 1985
VOL: 49 NO: 6

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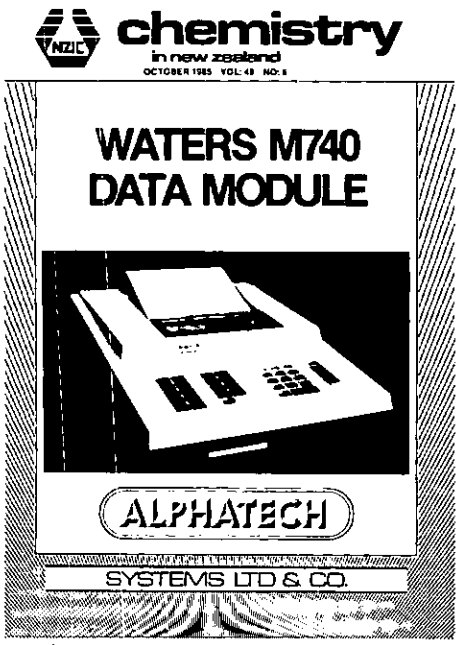

Cover Story **144**

Chemistry in new zealand

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Outline of the Institute

The New Zealand Institute of Chemistry is the primary professional and learned society for chemists, biochemists, chemical engineers, and chemistry technicians in New Zealand. Membership is open to all with appropriate tertiary qualifications in chemistry, biochemistry, or chemical engineering. There is also a student grade of membership, while those persons with a general interest in chemistry, but without the necessary qualifications, may be local members.

Institute activities are many and varied. At the local level, regular Branch meetings, lectures, and social functions provide opportunities for members to meet informally with their colleagues, as well as to keep abreast of developments within the professsion. Branches are also active in promoting chemistry in schools with various competitions and participation in science fairs. The Annual Conference of the Institute is held at a different venue each year. The programme includes invited plenary lectures, specialist lecture sessions and workshops for the presentation of current research findings, trade displays, and social activities. In the public arena the Institute has a number of committees to present members' views on chemical hazards, the environment, chemical education, and public affairs generally. The Institute also has representatives on bodies such as SANZ, AAVA, and the Royal Society of New Zealand.

To assist its members in their profession, the Institute surveys salaries periodically and publishes a Code of Ethics, and Guidelines to Professional Employment. The professional achievements of individual members are recognised each year by the awarding of a number of Institute prizes.

The NZIC has links with the Royal Society of Chemistry, the American Chemical Society, the Royal Australian Chemical Institute, the Federation of Asian Chemical Societies, and the International Union of Pure and Applied Chemistry. Members may therefore have the opportunity of participating in their activities and meeting chemists who visit this country under the auspices of the Institute. In particular, a visiting speaker scheme is currently operated with the RACI.

Application for membership of the Institute is made on a form available from the Registrar (PO Box 29-183, Christchurch). Current (1985) subscriptions for the main membership grades, including the cost of this Journal, are:

Fellows and Members (less $5 if paid before 31 Aug.)	$60
Associates (less $5 if paid before 31 Aug.)	$50
Graduates and Technicians (less $5 if paid before 1 Aug.)	$35
Students	$10

EDITORIAL

POST-CONFERENCE DEPRESSION?

Over the last four weeks I have had the pleasure, or otherwise, of attending three professional meetings, each quite different from the other two and with some interesting contrasts in quality and content.

The first was a workshop on graphic design and typography organised by the publishing "arm" of DSIR in conjunction with staff of the Government Printing Office. As a relative amateur in this area I found the course highly informative and educational. The material presented was mainly technical in nature, given in a competent and professional manner to achieve a specific purpose. The one major shortcoming was a lack of overall organisation, with the result that not all of the intended subject areas were covered.

The second meeting was the NZIC Annual Conference. The organisation here was highly efficient, much was made of the special theme of computers in chemistry, but other than that it could have been any other NZIC Annual conference, any other year, any other town. More on that later.

The third meeting was a study organised by the Ministry of Civil Defence on "the transition between emergency and disaster in a situation involving hazardous substances". In other words, the management and control of emergencies involving hazardous chemicals and the like. On this occasion the organisation was handled quite competently and the meeting had a clearly defined aim. In my opinion however, the meeting was an outright flop. Many of the participants either had no concept of what might be involved in a "chemical" emergency, or else their thoughts were directed at Bhopal or Mexico City. In either case the meeting did nothing to change this situation, mainly because the organisers were equally as lacking in "chemical" awareness as the participants.

I would like to think there is a message in all of the above for the NZIC. Quite clearly we can do a good job of organising conferences, and chemistry conferences are what we should do best. But what, if anything, are we trying to achieve? For most of our members I would suggest that the present form of Annual Conferences neither informs nor educates in other than a very limited way. As a means of presenting chemistry to the general public it is a non-starter, and the same applies for most non-chemical, technical or professional groups. What then is the Annual Conference for? Perhaps the answer lies with the 80% of members who don't attend?

Bruce Graham

2, 4, 5-T IN NEW ZEALAND

THE USE OF 2, 4, 5-T IN NEW ZEALAND SUBMISSIONS BY THE ENVIRONMENTAL AND HAZARDOUS CHEMICALS COMMITTEE TO THE WORKING PARTY OF THE ENVIRONMENTAL COUNCIL.

1. It is stressed that the Environmental and Hazardous Chemicals Committees of the New Zealand Institute of Chemistry considered only the use of 2,4,5-T in New Zealand. There is a very considerable body of literature concerning the use of 2,4,5-T in other countries but we know of nothing in this literature that would cause us to modify our conclusions concerning its use in this country.

2. Concerning its use and economic and productive benefits, no submission is made as this is felt to be outside our principal areas of expertise.

3. Regarding alternatives to 2,4,5-T, chemical alternatives were considered but no firm conclusions could be reached. The use of other herbicides, e.g. glyphosate (Round-Up), is possible, but relative cost, efficacy and spectrum of activity could not be quantified. It should be stressed that the data base for the safety and efficacy of other herbicides is by far inferior to that available for 2,4,5-T. We feel that no recommendation of an alternative chemical herbicide could be made until much more data were available. Considerable research into the effects and toxicity of these newer agents would be required.

4. Concerning health effects and other environmental impacts, there was considerable public debate during the late 70's on this topic, which culminated in an "Assessment of Toxic Hazards of the Herbicide 2,4,5-T in New Zealand" published by the Royal Society of New Zealand. This concluded that "there are few grounds for regarding 2,4,5-T itself as having any important health hazards" and "the possible hazard represented by the contaminant dioxin appears negligible". Nothing that has been said or published since then would seem to affect these conclusions in any significant way. Thus it is our considered conclusion that there have been no substantive (or substantiated) instances of health effects or other environmental impacts arising from the correct use of 2,4,5-T. Any problems associated with wastes from the earlier manufacture of herbicides must be considered as historical, in that they illustrate the need for the improved policies currently being implemented for the disposal of hazardous chemicals.

5. Since the 1980 Royal Society summary, the New Zealand situation has continued to be studied. The Health Department has continued to monitor workers involved in the manufacture of herbicides. The health of herbicide applicators has also been studied. It was shown that appreciable amounts of 2,4,5-T can be absorbed through the skin and subsequently excreted in the urine (Ferry et al, 1982). Even so, no evidence for any adverse effects on the health of herbicide applicators could be shown (Smith et al, 1981, 1982, 1983). There has been a report of a correlation between the incidence of small-intestinal adeno-carcinomas (SIA) in sheep and the use of pesticides (Newell et al, 1984). However this single report has yet to be substantiated and its relevance to human toxicity established. Obviously more research into the incidence of SIA in sheep, e.g. in countries where pesticide use is low, is needed. This topic is currently under study by a working party convened by the Director-General of Health.

6. The public concern over herbicide use stems largely from the publicity given by many otherwise reputable information sources to the dioxin content of 2,4,5-T preparations. While dioxin is undoubtedly a very toxic compound, its very low concentrations in New Zealand preparations of 2,4,5-T make it very unlikely it could have significant biological effects (Ferry et al, 1982; McQueen, 1984). The highly emotive reporting of unsubstantiated and anecdotal histories of possible herbicide toxicity causes excessive and unnecessary public concern and illustrates dramatically an unfortunate fact of science that it is far easier to suggest toxicity than it is to prove safety. To quote the American Council on Science and Health: "Claims (that dioxin causes birth defects and cancer) have been based largely on medically unvalidated and statistically unrepresentative anecdotal reports lacking the sound data base necessary to establish a cause-and-effect relationship."

7. It would be very unfortunate if an economically necessary herbicide were withdrawn from use due to public pressure based on emotions rather than established facts. However, much more could be done to allay public suspicions and alarms. Better public education and more balanced media presentations would help. Long-term monitoring of pesticides in the environment is being carried out only to a minor degree; this should be increased in scale and the results made more freely available. Of greatest importance is the use of existing legislation to reduce harmful effects of herbicide by controlling spillages or spray-drift onto adjoining properties, increasing the emphasis on safe handling and storage of herbicides, and implementation of appropriate control measures in cases of emergency such as major spills or fires. These avenues are all currently open, but more emphasis on them is necessary to defuse public concern and allow rational safe use of a valuable chemical.

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On behalf of the N.Z. Institute of Chemistry Environmental and Hazardous Chemicals Committees.

Professor R. Laverty
Dr W. A. Temple
Professor A. D. Campbell
Dr G. F. Laws
Dr R. A. Smith
Mr I. Rowland (corresponding)

NZIC PRESIDENT — 1985/86

The newly-elected President of the NZIC is **Professor George Peterson** of the Biochemistry Department, Otago University. George was born in Palmerston North and received his undergraduate training in chemistry and biochemistry at the University of Otago. After completing doctorate studies at Oxford University in 1956 he embarked on his research career centred on the determination of structures of nucleic acids. After a period on the staff of the DSIR Applied Biochemistry Division in Palmerston North he was appointed Professor of Biochemistry and Head of Department at the University of Otago, positions which he holds at the present time. In recent years he has spent time at the Laboratory of Molecular Biology at Cambridge University working with Dr F. Sanger, the distinguished double Nobel Laureate, and work on DNA sequencing in New Zealand has undoubtedly benefited greatly from this close working association.

George has received a number of distinctions and awards during his career, the most recent being election to Fellowship of the Royal Society of New Zealand. He has also served as a member of the Medical Research Council and is Chairman of the New Zealand Government Advisory Committee on Novel Genetic Techniques.

NZIC AWARDS

Dr J. M. Coxon, University of Canterbury, was awarded the ICI Prize for excellence in research for his work in organic chemistry and Mr R. G. Stewart, Dr C. T. Page and Dr A. J. McKinnon of the Wool Research Organisation of New Zealand were awarded the Shell Industrial Chemistry Prize for a metabisulphite process for the setting of twist in carpet wool.

Mr R. M. Hartshorn, a student of the University of Canterbury, was awarded the Essay Prize for his account of "Oscillating Chemical Reactions". At the Conference dinner, Miss V. Sumpter of the Biochemistry Department, University of Otago, was presented with the prize for her presentation of "A Model for Peptide Bond Formation and Release of the Completed Polypeptide during Protein Synthesis", judged as the best student paper of the Conference competition. Both these prizes were increased from $50 to $100 by Council.

Ronald Hicks Memorial Award

The New Zealand Water Supply & Disposal Association made its first Ronald Hicks Memorial Award at its Annual Conference at Lincoln College in August. The recipient was Dr Bob Wilcock, scientist at the Ministry of Works & Development Water Quality Centre in Hamilton and was made for his research into the use of methyl chloride as a gas tracer for measuring stream reaeration coefficients. Bob's work is of fundamental importance for future determinations in New Zealand of the capacity of streams to assimilate wastes which may be discharged to them. This research fulfilled the Award requirement of a "paper which may lead to a better understanding of the problem of sewage treatment or water pollution in N.Z.". Ronald Hicks, who died in 1983, was a pioneer of N.Z. sewage and trade wastes treatment and was Chief Chemist and Superintendent of the Manukau Sewage Purification Works in Auckland for some 20 years, after similarly distinguished work in the U.K. and U.S.A.

COUNCIL NEWS

Mr A. W. Mackney presided over a meeting of Council in Christchurch on Sunday 25 August. Council congratulated Mr Mackney on receiving the first award of the Thomson Medal by the Royal Society of New Zealand. This body had also elected Professor G. B. Petersen as a Fellow, awarded the Hector Medal to Professor de la Mare, and a Young Scientist's Award to Miss S. J. Davenport.

Honorary Fellowships. Professor P. B. D. de la Mare and Professor A. L. Odell of the University of Auckland and Professor J. Vaughan of the University of Canterbury, all of whom are now retired, were elected as Honorary Fellows. Professors de la Mare and Vaughan were presented with their certificates at the conclusion of the Vaughan Symposium at the Conference on 28 August.

Election of Officers. From 1 September 1985 Professor G. B. Petersen was elected President, Dr B. Halton First Vice-President and Mr T. R. Hitchens Second Vice-President. Dr J. Rogers was re-elected Honorary General Secretary.

Fellowship — Royal Society of New Zealand. Nominations of NZIC members for Fellowship of the Royal Society of New Zealand should be forwarded before 15 November 1985. Twelve copies are required of the nominee's curriculum vitae and full biography. Further information is available from the Executive Officer, RSNZ, Private Bag, Wellington.

Annual Conference. Council expresses its appreciation of the arrangements made by the Conference Committee (Chairman, Bill Swallow and Secretary, Peter Harland) for the 1985 Joint Conference of the NZIC, NZ Biochemical Society and NZ Association of Clinical Biochemists, held in Christchurch at the University of Canterbury 26-30 August.

The theme of the Conference "Chemistry becomes Computerised" was illustrated in many of the papers presented as well as at the computer workshops supported by companies represented at the trade display.

Poster sessions, the Easterfield address by Dr Tom Brittain, a symposium to mark the retirement of Professor Vaughan and a seminar on the changing role of forensic science organised by the NZ Forensic Science Society were other features of this meeting, which attracted over 300 registrants.

Council received a brochure prepared by the 1986 Conference Committee. "Applications of Modern Instrumentation" is the theme of the combined annual Conferences of the NZIC and NZBS to be held at the University of Otago, 24/28 August 1986.

The meeting will be preceded by an International Symposium at Hanmer Springs on "Genetic Manipulation: Its Application and Potential", 19/22 August 1986. Also our 1986 Conference in Dunedin will be held in association with "Scicon '86", arranged by the New Zealand Science Teachers' Association and the 10th Conference of the New Zealand Society for Mass Spectrometry. Enquiries should be directed to the Conference Secretary, Dr John Cutfield, Department of Biochemistry, University of Otago.

Environmental and Hazardous Chemicals Committees. Council resolved to forward the submission prepared by these committees for the Working Party set up by the Environmental Council to look at the use of 2,4,5-T in New Zealand. (See elsewhere in this issue).

The Environmental Committee in its Annual Report to Council asked for more significant and rapid input from Council and NZIC Branches, more active support from the Public Affairs and Science Policy Committee and from the Editor in publishing its concerns in "Chemistry in New Zealand".

In response Council has authorised the Chairmen of the Environmental (Professor Laverty) and of the Hazardous Chemicals (Dr Temple) Committees to make statements to the media after consultation with the President.

Dr Graham noted that our bimonthly Journal and the need for rewriting Committee submissions prior to publication in "Chemistry in New Zealand" caused delays.

The President reported receiving a letter from a Fellow drawing attention to the problem of factual and accurate reporting of matters involving chemicals. The letter was referred to Branches to consider the value of establishing in each of the main centres a list of NZIC members to whom questions might be put or by whom statements could be checked.

Chemical Education. The Waikato Branch has arranged to help Mr Mark Perkins of Cambridge High School with the processing of the 1,500 entries expected in 1985 for the "NZIC Chem 13 News Exams" which he organised in 1983 and 1984. Council approved a grant of $310 for this project.

Council draws the attention of student members to their Branch fund for assisting attendance at approved conferences. Applications should be made to Branch Secretaries.

The Chemical Education Committee (Convenor Mr G. Valpy) is now the title of Council's Wellington based committee responsible for advising the Department of Education and other bodies there on matters generally related to Chemical Education. A Chemistry Syllabus Committee is to be located in the same Branch as the chemistry subject convenor for the Uni-

COUNCIL NEWS CONTD

versity Entrance Board — currently Waikato (Dr M. Carr).

Council discussed liaison between these two committees, its representatives on AAVA, the Chemical Education Specialist Group and the Publication Chem NZ. Walter Freitag was confirmed as Council's representative on the Science Course Committee of AAVA.

His report to Council stated the demand for people holding NZCS currently exceeded supply. He recommended that NZIC, through its Branches, liaise with employers, Technical Institutes and students to identify needs and opportunities. NZIC is asked to nominate writers and moderators for inorganic, organic and physical chemistry papers at all levels. There is a need to encourage and publicise the opportunities for diploma studies in chemistry.

Council congratulated the Auckland Branch on the programme for a Chemical Fire Hazards Symposium (Convenor Graham Ryburn) to be held at the Waipuna Lodge on 22 October.

Neil Edmonds and Rodney Norris of the Polymer Chemistry Specialist Group have arranged in association with the adhesives industry 12 lectures on the theory, selection, and application of adhesives. These are to be presented on six Friday afternoons in October and November at the Epsom Teachers' Training College, Auckland, beginning 11 October.

Council expresses its appreciation of and support for these activities, which provide opportunities for further education for our members in industry.

A grant of $3,000 for the Prince and Princess of Wales Science Awards Scheme of the Royal Society of New Zealand was included in the budget approved for 1985/86. A similar sum is budgeted for 1986/87.

Membership. Noting that Dr H. J. K. Powell's term as a member of the Membership Committee ends on 31.12.85, Council expressed its appreciation of his service and appointed Dr G. J. Wright of the University of Canterbury as his successor for a period ending 31.12.88.

The revised Code of Ethics, Rules and Commentary are to be printed in the 1985 Yearbook, including the List of Members, which is expected to be published September/October. Copies of the Yearbook and the August issue of "Chemistry in New Zealand" will be sent to Life Members who have not yet forwarded the $12 to cover the cost of "Chemistry in New Zealand" for 1985/86.

At Council's invitation Alan Mackney has agreed to continue to assist with the development of proposals for Company Membership.

Dr Cretney on behalf of the Publications Committee reported that the recruitment packages for final year University/Technical Institute students and for qualified chemists had been distributed to Branches in July. The June 1986 issue of "Chemistry in New Zealand" is to be distributed in July 1986 with a similar package.

The Department of Labour is arranging distribution to all secondary schools of two copies of the NZIC colour poster designed by John Pitcairn. This emphasises the importance of studying chemistry at school for participation in a variety of occupations requiring chemistry.

MEMBERSHIP: THE FOLLOWING APPLICATIONS AND CHANGES IN STATUS WERE APPROVED:

Honorary Fellowship:

De La Mare, Peter Bernard David; Odell, Allan Lloyd; Vaughan, John.

Fellowship:

Hutchinson, Ewan George, MSc (Auck) PhD(ANU). Auckland Regional Authority. (Head Scientist, Drainage).

Laing, Kerry Richard, PhD (Auck). NZ Fert. Manuf. Res. Assn., Auckland. (Chief Chemist)

Langdon, Alan George, MSc PhD (Well). Chemistry Dept, University of Waikato. (Senior Lecturer)

Rickard, Clifton Edward Frank, PhD (Auck). Chemistry Dept, University of Auckland. (Senior Lecturer)

Seakins, John Medgley, MSc PhD (Auck). Dairy Laboratory, M.A.F., Auckland. (Scientist)

Smart, Deane William, BSc. Fletcher Woodpanels Ltd., Auckland. (Market Development Manager)

White, Malcolm Stuart, MSc (NZ) PhD (Tas). FERNZ Corpn. Ltd., Auckland. (Devel. Manager, Fertilisers)

Winchester, Robert Victor, MSc PhD (Auck). Chemistry Divn, DSIR, Auckland. (Scientist)

Membership:

Briggs, Mrs Lynnette Ruth, BSc MPhil (Waikato). Chemistry Dept, University of Waikato, Hamilton. (Technician)

Harding, David Roger Kay, MSc (Cantuar) PhD (West Ont). Dept of Chem/Biochem, Massey University, P.N. (Snr. Res. Fellow)

Holden, John Wayne, MSc (Waikato). Tauranga Boys' College, Tauranga. (Teacher)

Khan, Humaid Raza, MSc (Karachi) PhD (NSW). Chemistry Dept, University of Waikato, Hamilton. (Post-Doctoral Fellow)

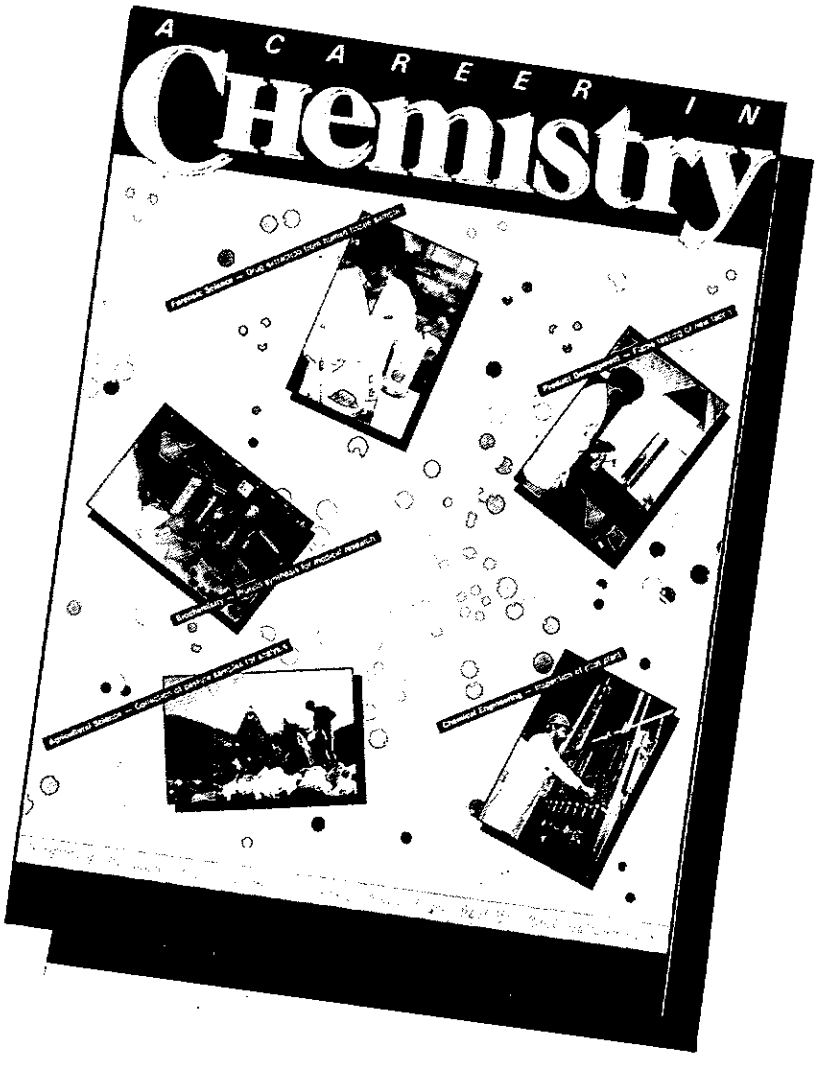
Judd, Maurice Charles, BSc (Hons) (Massey). Chemistry Dept, University of Canterbury (MSc Student)

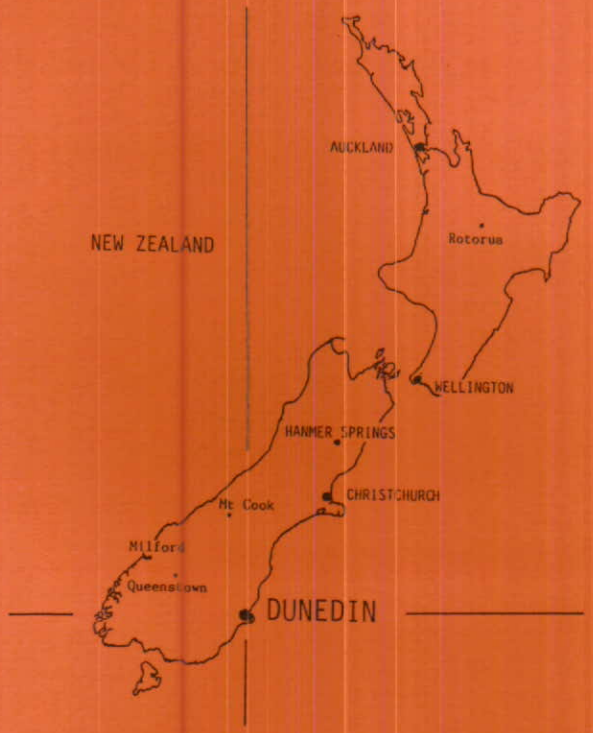
Metson, James Bernard, BSc (Hons) PhD (Well). Chemistry Dept, University of Auckland. (Lecturer)

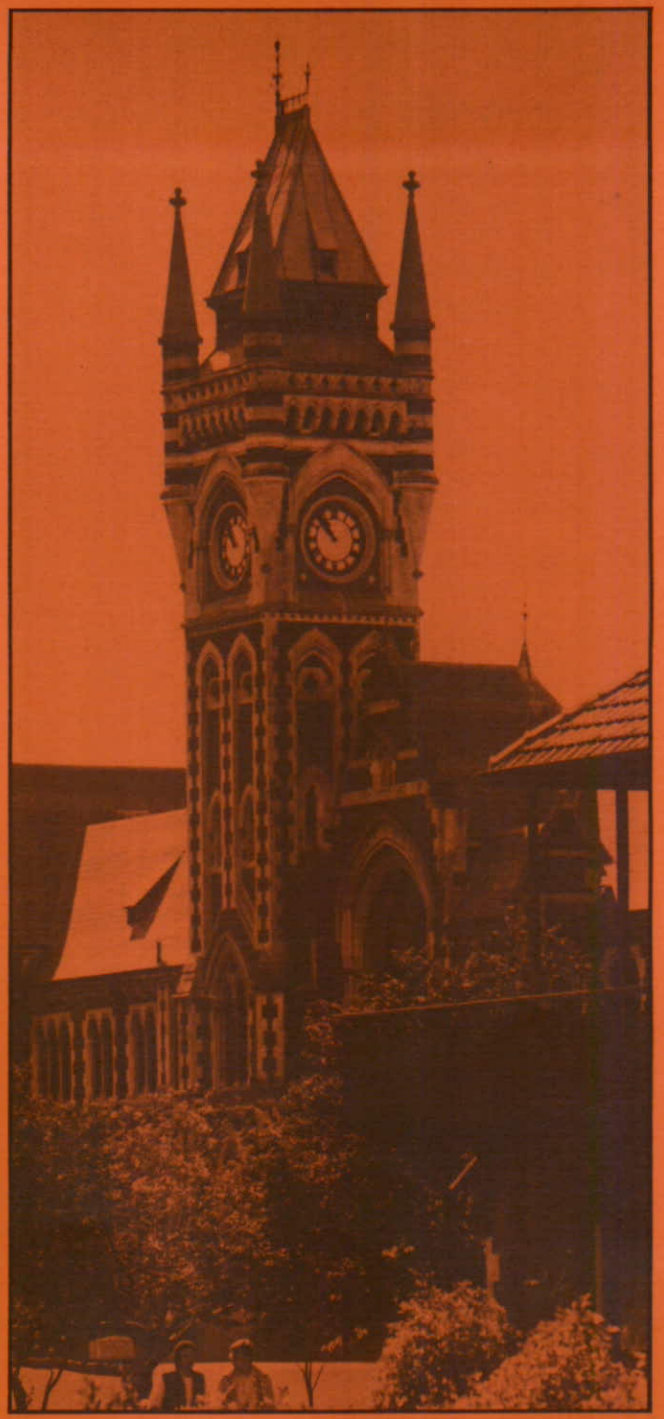
PROMOTING CHEMISTRY

The Publications committee of NZIC has recently printed a poster which aims to alert students, particularly sixth form entry students, to the benefits of studying chemistry at school. Through the Department of Labour, two copies have been forwarded to all New Zealand secondary schools — one for the Careers Advisor, and one for the Head of Science to display appropriately. Copies are also being distributed via Branches, to universities, polytechnics, and government laboratories/research institutions in each region. The poster, in colour, measures 41 cm x 57 cm.

Should you be interested in additional copies contact the Registrar, NZIC, P.O. Box 29183, Christchurch, enclosing $3 per copy.







Clock Tower
University of Otago
Dunedin, New Zealand

FIRST CIRCULAR

The New Zealand Institute of Chemistry

1986 ANNUAL CONFERENCES

The New Zealand Biochemical Society

DUNEDIN NEW ZEALAND

24-28 AUGUST 1986

GENERAL INFORMATION

The Combined **Annual Conferences**
of the
New Zealand Institute of Chemistry
and
New Zealand Biochemical Society

will be held on
24-28 August 1986

at the **University of Otago**
Dunedin

Conference Theme
"Applications of Modern Instrumentation"

Conference Programme
24 August—(Sunday evening)
Registration, Pre-Conference mixer
25 August—Symposium
"Applications of N.M.R. Spectroscopy"
26 August—Scientific Sessions
27 August—Combined Symposium
"Applications of Mass Spectrometry"
held in conjunction with The Australian and New Zealand Society for Mass Spectrometry.
28 August—Scientific Sessions

Associated Meetings
The Annual Conference of the New Zealand Institute of Chemistry and the New Zealand Biochemical Society has been planned to integrate with:

19-22 August at Hanmer Springs
"Genetic Manipulation: Its Application and Potential"
25-29 August at University of Otago
"Scicon '86"—New Zealand Science Teachers Association Conference
26-29 August at University of Otago
Tenth Conference of the Australian and New Zealand Society for Mass Spectrometry

Plenary Speakers
The following plenary lecturers have been invited:

NMR Spectroscopy,
Dr Peter E. Wright, Scripps Clinic, California.
Biochemistry,
Dr Greg Winter, M.R.C. Laboratory, Cambridge.
Professor Tom Caskey, Baylor College, Houston.
Mass Spectrometry,
Professor Maurice M. Bursey, University of North Carolina.
Professor Peter J. Derrick, University of New South Wales.
Professor Ben Freiser, Purdue University.
Professor James A. McCloskey, University of Utah.
Mr Ron Self, Food Research Institute, Norwich.

Contributed Papers
Contributed papers to the Scientific Programme will be largely in the format of POSTER SESSIONS. A limited number of papers will be accepted for ORAL presentations.
A request for ABSTRACTS will be made in the Second Circular.

Schedule

Second Circular:	February 1986
Acceptance of Papers and Abstracts:	May 1986
Registration and Accommodation Bookings:	May 1986

Accommodation
University Halls of Residence, on Campus.
Hotels and Motels—These are available within easy walking distance of the Conference, early bookings will be necessary for hotels and motels.

Correspondence:
All correspondence and enquiries should be sent to the Conference Secretary:

Dr John Cutfield
Department of Biochemistry
University of Otago
P.O. Box 56
DUNEDIN

COMBINED ANNUAL CONFERENCE
of the
NEW ZEALAND INSTITUTE OF CHEMISTRY
and
NEW ZEALAND BIOCHEMICAL SOCIETY

Provisional Application form and request for Second Circular.

Mail to: Conference Secretary,
Dr John Cutfield,
Department of Biochemistry,
University of Otago
P.O. Box 56
DUNEDIN.

Please use block letters or type

Surname: .....

Initials: .....

Title: .....

Preferred first name: .....

Mailing Address: .....

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Preferred Accommodation

Halls of Residence ☐ single ☐ shared

Hotel ☐ Motel ☐

Papers

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- Mounts directly in line — simple to install
- Stainless steel flow tube — suitable for C.I.P.
- Wide range of flow rates — from 0.05kg/min to 10 tonnes/min
- Large choice of process connections — including sanitary fittings
- Wide temperature and pressure tolerances — ideal for industrial requirements
- Hermetically sealed flow senser — for rugged industrial environments
- Interfaces with standard control hardware — systems compatibility

RATE CONTROL : INVENTORY : RATIO BLENDING : BATCH CONTROL : TRUCK METERING

4 WIDE RANGE OF APPLICATIONS

Asphalt
Acids
Adhesives
Ammonia
Animal fats & oils
Bromine
Beer/Beer foam
Bread dough
Bunker C oil
Clay slurries
Coal slurries
CNG
Carbon dioxide
Cryogenic fluids
Cream
Coffee
Chocolate
Cottage cheese
De-ionised water
Dyestuffs
Diesel fuel
Ethylene
Ethylene oxide
Egg slurries
Freon
Fruit juices
Flavourings
Fibreglass
Glycerol
Gypsum slurries
Gasoline
Hamburger meat
Hopps extract & whort
Ice Cream
Jet fuel
Live organisms
Lime slurries
Latex
L.P.G.
Liquid sugar
Magnetic tape coatings
Milk
Margarine
Molasses
Nitrogen
Oxygen
Olefins
Pet food
Peanut butter
Pie fillings
Paint
Phosphate slurries
Plutonium waste
Polymers
Polypropylene
Polymer alcohol
Salt slurry
Soup
Sulphur dioxide
Soaps
Silica Gel.
Tar sands
Titanium dioxide
Tea
Tomato paste
Urethane
Vitamins
Vegetable oils
Yeast
Yoghurt

. . . and many others

This system has intrinsically safe approvals from U.L. B.V.S and C.S.A.

MICRO MOTION

COUNCIL NEWS CONTD

Nielson, Alastair James, MSc PhD (Auck). Chemistry Dept, University of Auckland. (Temporary Lecturer)

Wilson, Russell Douglas, MSc (Massey). NZ Dairy Research Institute, P.N. (Research Officer)

Graduate Membership:

Barris, Glen Clifton, BSc. Chemistry Dept, University of Waikato, Hamilton. (MSc Student)

Baxter, Jennifer Anne, BSc. W. Grayson & Associates Ltd., Auckland. (Chemist)

Campbell, Stuart James BSc. Chemistry Dept, University of Auckland. (MSc Student)

Crawford, Karl Francis Michael, BSc DipSci (Otago). Dept Food Technology, Massey University, P.N. (Lab. Technician)

Cruickshank, Denise Susan, BSc (Hons) (Massey). Synthetic Fuels Corpn., New Plymouth. (Lab. Technician)

Haaima, Gerald, BSc (Hons) (Otago). Chemistry Dept, University of Otago, Dunedin. (PhD Student)

Hall, Simon Berners, BSc. Chemistry Dept, University of Auckland. (MSc Student)

Haverkamp, Richard Gerard, BSc (Hons) (Well). Fletcher Challenge Corpn. Ltd., Wellington. (Research Officer)

Leonard, Margaret Mary, MSc (Otago). Otago Catchment Board, Dunedin. (Lab. Technician)

Leung, Kin-Fai, BSc Chem. Dept, University of Waikato. (MSc Student)

Luca, Vittorio, BSc (Hons) (Well). Chemistry Dept, Victoria University of Wgtn. (Teaching Assistant)

McNeil, Steven James, BSc (Hons) (Cantuar). Dept of Chemical & Materials Eng., University of Canterbury. (M Eng Student)

* Meder, Albert Roger, BSc Post-Grad. Dip.Sci (Otago). Chemistry Dept, University of Otago, Dunedin. (PhD Student)

Patchett, Mark Langton, MSc (Waikato). 197 Silverdale Rd, Hamilton.

Rate, Andrew Milliam, BSc. Chemistry Dept, University of Canterbury. (MSc Student)

Stewart, Carol, BSc (Hons) (Cantuar). Chemistry Dept, University of Canterbury. (PhD Student)

Tempest, Geoffrey Royce, BTech (Food) MNZIFST. Northern Roller Milling Co Ltd, Auckland. (Chemist)

Trainor, Timothy Robert, BSc (Hons) (Otago). Wellcome Medical Research Institute, Med School, University of Otago, Dunedin. (MSc Research Student)

Watson, Andrew Augustus, BSc (Hons) (Cantuar). Chemistry Dept, University of Canterbury. (PhD Student)

Whittaker, Jan Maree, BSc. Chemistry Dept, University of Waikato, Hamilton. (MSc Student)

* from Student.

Graduate Member to Membership:

Cruickshank, Murray Leslie, BSc. J. R. Courtney Ltd., Auckland. (General Manager)

Jacques, Phillip Richard, BSc. Lion Breweries Ltd, Hamilton. (Asst. Brewer)

Kear, Martin John, BSc. Ruakura Agric. Res. Centre. P. B. Hamilton. (Technician)

Siddiqui, Ovais, MPharm (Otago). Rutger's College of Pharmacy, N.J. U.S.A. (Post-Doctoral Fellow from Sept.)

Technician Membership:

Burton, Neil Harvey, NZCS. NZ Synthetic Fuels Corpn., New Plymouth. (Lab. Technician)

Life Membership:

G. J. Halliburton (Canty); J. S. Hungerford (Manawatu); S. W. White (Manawatu); O. K. Sewell (Manawatu); R. L. Thompson (Auck).

Deaths:

W. L. Barr Hon. Fellow (O/S); J. I. Graham (O/S).

Resignations:

K. F. Davey, Mrs J. M. Jackson, Mrs A. C. Kistemaker (Auckland), E. A. Mooney (Auckland), K. E. McCarthy (Waikato), C. R. Henwood (Wgtn), G. M. Bryant, J. A. Peters (Canty), M. Vickers (Otago), H. Dengate (O/S), W. H. M. Saunders (Wo).

Reinstated as Member:

Mrs Lin Sew Hoy, Chch.

Finance. The inaugural meeting of the Finance Committee established by Council at its February meeting was held during Conference. Since 1975, the most recent year expenditure exceeded income, regular small increases in subscriptions have raised NZIC reserves almost five fold to $40,000. Despite inflation, economies also have allowed development of the Journal and some initiatives like grants to Branches for students to attend conferences, the NZIC-RACI Visiting Speaker Award and annual publication of a List of Members and Yearbook as an issue of "Chemistry in New Zealand".

Employment of a full time executive secretary, rental and equipment of an office and a monthly edition of "Chemistry in New Zealand" are targets for NZIC development requiring planning for their financing. Sharing the cost of secretarial service and office facilities with other professional bodies, possibly through the Royal Society of New Zealand, of which some are also member bodies, is to be explored. Inland Revenue Department rulings on NZIC liabilities under GST are to be sought.

International Chemistry. From NZIC and RACI Branches five nominations of NZIC members are to be forwarded to the RACI Council which is expected to announce the winner of the 1986 NZIC-RACI Visiting Speaker Award in October.

From the Overseas Visitors' Fund Council agreed to provide up to $400 for Dr D. H. Napper of the University of Sydney to visit Branches after the Annual Conference in Christchurch. Similar support is to be provided for Dr A. F. Thomas, an organic chemist from Firmenich, Geneva, who will be in New Zealand February/March 1986.

Council agreed to sponsor with the RACI a Joint Conference to mark Australia's bicentenary in 1988, to be held in Hobart, 19/25 January. The Canterbury Branch was asked to appoint a liaison secretary to correspond with the organising committee in Hobart.

The General Secretary reported on his contacts with the Royal Society of Chemistry, the German Chemical Society and UNIDO during his visit to the UK and Europe.

Meetings. A telephone meeting of Standing Committee is planned for 5 November and Council will meet in Wellington 11/12 February 1986.

J. Rogers Honorary General Secretary

14 September 1985.

NOTICES

CHEMISTRY
in a young country

ed. P. P. Williams

Copies of this NZIC publication are still available through branch secretaries. An interesting Xmas present for a budding young chemist?

E. R. Cooper Memorial Award 1986

The Royal Society of New Zealand has recently issued a call for applications for the above award, closing 31 December, 1985. The award commemorates Dr E. R. Cooper, who was the first Director of the Dominion Physical Laboratory from 1939 to 1950. He subsequently held the position of Assistant Secretary (Physics and Engineering) of the Department of Scientific and Industrial Research until his untimely death in 1952.

The award is to be made to the person or persons who in the opinion of the Selection Committee have published the best **single** piece of original research work carried out by them in New Zealand in physics or engineering. Preference shall be given to contributions to the development of the natural resources of New Zealand, treated in the widest sense. Contributions published within the four years preceding December 31 of the year preceding the year of an award shall be considered. Applicants who submit a paper under joint authorship must indicate what percentage of the work and what ideas are their own.

Full details of the award are available from the Executive Officer, RSNZ, Private Bag, Wellington.

IUPAC Membership Scheme

In January 1986 IUPAC is to introduce an Affiliate Membership Scheme, which will enable chemists throughout the world to become individual members of the Union. The Scheme will be administered in New Zealand by NZIC, and the Registrar will be circulating full details to members in the near future. The benefits of Affiliate Membership will include a free subscription to Chemistry International, the IUPAC news magazine, and discounts on other IUPAC publications and on the registration fees for IUPAC — sponsored symposia, congresses, etc.

IUPAC Documents

Comments have been invited on a number of IUPAC draft documents. Brief summaries of these are held by the Editor, and have also been published in recent issues of Chemistry International. Full copies of the documents are available from the IUPAC regional representative in Singapore. The documents are:

A Classification of Linear Single-Strand Polymers, Nomenclature for Automated and Mechanised Analysis, Recommendations for the Presentation of Thermodynamic and Related Data in Biology, Elements, Atoms and Groups of Atoms (Red Book Revision: Summary of Chapter 1-3), **Ions, Radicals and Salts** (Revision of Red Book: Chapter 1-8), **Synopsis on IUPAC, Recommendations on "Electrochemical Corrosion Nomenclature".**

SAFETY
SPECIAL

"CONFESSIONS OF A UNIVERSITY SAFETY OFFICER" ACCIDENT AND INCIDENT REPORTING

W. A. Temple

Wayne Temple is Scientific Director of the New Zealand National Poisons and Hazardous Chemicals Information Centre in Dunedin. He is also Chairman of the NZIC's Hazardous Chemicals Committee and Safety Officer for the University of Otago. It is perhaps not surprising that with such an intensive involvement in safety matters at work, Wayne's leisure-time pursuits include such hazardous activities as squash, hunting, raising a young family, and more than a passing interest in the social phenomena associated with the imbibation of certain toxic brown liquids. — Ed.

Five years ago at Otago University it was decided to establish an Accident and Incident Reporting System as part of an overall Safety Programme. Such information can be used for many purposes including:

- ★ identifying and controlling potential accidents or exposures;
- ★ indicating where changes, substitutions, or elimination of materials, methods, processes, or operations should be made;
- ★ identifying campus-wide trends in the severity of injuries, types of injuries, volume of property damage, location of accidents, causes of accidents, etc.;
- ★ providing safety performance information to departments enabling them to compare their present performance with their own past performance;
- ★ providing information for ACC claims.

Departments at the University were issued with report books and departmental safety officers or designated officials were asked to complete a report for every accident or incident, minor or major, involving personal injury or damage to University equipment or property. The following information was asked to be included in the report:

1. Name of Department.
2. Date of accident/incident.
3. Time of accident/incident.
4. Place where accident/incident occurred.
5. Description of accident/incident.
6. Injuries sustained or damage involved.
7. First aid administered or immediate action taken and/or comments.
8. Name of safety officer or person filing report.
9. Date.

A copy of each of these reports was forwarded to the University Safety Officer and entered onto a microprocessor for further analysis using appropriate software (IBM PFS file, PFS report).

Each report was categorised according to the cause of accident/incident and the following table shows the numbers of accidents reported during the period 1980-1984.

Cause of Accident	1981	1982	1983	1984
Animals	3	1	4	—
Explosions	—	6	4	1
Falls on level	3	6	4	4
Falls from height	1	3	2	1
Fires	—	3	5	5
Handling	17	14	11	1
Handling glass/sharps	18	23	32	15
Machinery	—	1	1	—
Spillages/releases	4	10	7	3
Striking against object	3	4	3	—
Other	4	3	13	2
	53	73	86	32

(Although Otago University employs some 2,000 staff and has 7,200 students, the data above applies mainly to staff and students in the Faculties of Science and Medicine.)

Some examples of accidents (with particular emphasis on incidents of a chemical nature when these have occurred) are given below for each of the categories listed in the above table.

(a) **Animals**

The possibility of injury to laboratory personnel resulting from the aggressive nature of certain laboratory animals is usually the first hazard to be recognised by individuals working with animals. Bites and scratches can be painful and sometimes more or less incapacitating. Fortunately most of the reports received involved only minor animals bites. However, in one report a worker suffered torn trousers and rather nasty puncture wounds to the knee whilst trying to break up a dog fight. The most serious aspect of these injuries is the possibility of secondary infections.

Contraction of infectious diseases is another hazard associated with laboratory animals such that it was not surprising to note that two reports revealed individuals who had contracted ringworm from animals that they had been handling.

(b) **Explosions**

This type of incident has the potential for causing severe injury or damage, especially from explosions under conditions of confinement when instantaneous pressures several times that of normal atmosphere may be produced.

A tetrahydrofuran still (left unattended) with a glass stopper which was supposed to act as a pressure relief failed to activate and resulted in an explosion and subsequent fire which activated the building's automatic fire detection system. Fortunately no one was injured during this incident.

An acetone purification still "took off" and sprayed the surrounding area (contained acetone, potassium permanganate and manganese dioxide). The report noted that this type of incident is said to happen periodically.

A technician washing a winchester labelled 'ether' (with a white powder covering the top rim which the technician initially took to be calcium chloride) fortunately felt uneasy and decided to make a hasty retreat. As he reached the door the bottle exploded scattering splinters of glass over 150 sq. ft. Four pieces of lump sodium metal (about 10mm diameter) were discovered amongst the debris.

Two separate violent explosions of unknown chemicals in glass containers were reported to have scattered glass for 5-10 metres from the site of explosion. The causes of these explosions were unknown.

Fortunately in most reports involving explosions mainly only property damage occurred but the potential for serious injury was present in every event and highlights the need for special care when working with chemicals or systems that may explode if not managed safely.

(c) **Falls (on level/from height)**

Many reports featured individuals who fell from stools or other similar objects whilst trying to reach apparatus or chemicals stored on overhead shelving.

A particularly unfortunate injury occurred to a secretary who fell down a stairway and through an exterior plate glass window. Fortunately she did not fall completely through the window but suffered bad cuts to her legs in addition to extensive bruising.

On a lighter vein, a worker at the Marine Laboratory, whilst stepping from a runabout to the wharf, slipped on a piece of old fish and received a ducking in the sea.

(d) **Fires**

A potential risk arises from the presence of combustible solids, liquids or gases in conjunction with ignition sources. One or more class is generally found in most chemical laboratories.

A toluene distillation apparatus boiled over and toluene was ignited by a bunsen burner on a bench about a metre away.

A small fire in a rubbish tin occurred after a student had discarded some Raney nickel into it.

A small electrical fire in a printing machine was due to a leakage of ink onto a fuse holder.

Antibumping granules dropped into a conical flask containing an ethanolic solution which was being heated over a bunsen burner caused the flask to boil over and ignite.

A flashback which occurred in the crossfires of a small glassblowing lathe began to burn back into the gas supply lines but was promptly arrested by turning off the gas supply.

Toxic or irritating decomposition products in fire situations can present an additional hazard to the fire and are aptly demonstrated by one report which featured a winchester of dimethyl sulphoxide. This bottle had been placed on an electric hotplate to melt (m.p. 18°C) but was left unattended for several minutes during which time it cracked open thus exposing the DMSO to the hotplate. DMSO decomposes upon heating above 100°C, forming toxic vapours (including sulphur dioxide) and may form explosive vapour-air mixtures above 95°C. The unpleasant odour of the decomposition products in this incident quickly spread throughout the building and stopped work in all areas for several hours. Fortunately only minor property damage was sustained at the site of the incident.

(e) **Handling**

Most accidents which are likely to occur with chemicals will fall into one of the following categories:

★ Splashes of the skin (including chemical burns);
★ Splashes of the eyes;
★ Burns;
★ Inhalation of gases or dust;
★ Ingestion of chemicals.

1. **Splashes of the skin and eyes.**

Several cases featured chromic acid splashes to either skin or eyes, as a result of dropping glassware into chromic acid cleaning baths.

Whilst examining crystals in a test tube containing aniline solution a student flicked some into his unprotected eyes.

In one instance a student who spilt concentrated sulphuric acid on her hand whilst pouring it from a measuring cylinder, failed to do anything about it until it became very painful. This resulted in a nasty chemical burn to the hand.

Apart from corrosive injuries the danger of percutaneous absorption is often not widely appreciated. However, many common chemicals may be readily absorbed through the skin. Gloves and eye protection should be worn whenever the potential for skin or eye damage is apparent.

2. **Inhalation of Gases or Dust.**

Of the routes by which toxic chemicals can enter the body, inhalation is the most dangerous and rapidly acting. Fortunately most toxic gases are either acutely irritating to the tissues or the respiratory tract or possess a warning odour which is detectable at concentrations well below the danger level. This last property, however, is an unreliable indicator of the presence since the nose quickly becomes insensitive to a smell and a serious casualty may result if the initial warning is ignored.

A somewhat classical case of metal fume fever poisoning occurred when two technicians attempted to distil a mercury gold amalgam in the middle of a poorly ventilated laboratory. Both suffered the fortunately transient effects of this episode.

A case of polymer fume fever occurred when a technician was drilling small holes in a block of PVC. Many polymeric materials decompose at elevated temperatures evolving toxic decomposition products which may result in 'flu-like symptoms for individuals who may have inhaled these vapours.

3. **Ingestion.**

This route of entry presents a less practical hazard since it is unlikely that any significant quantity of harmful liquid or solid will be swallowed without deliberate intent. However, accidents do occur and two pipetting incidents highlight this type of accident. In one incident a student sucked an acidic solution of vanadium into his mouth from a pipette. In a second instance another student was pipetting a metaphosphoric/acetic acid mixture and sucked approximately 2 mls of the mixture into his mouth. Fortunately there were no adverse sequelae in these cases.

4. Other handling accidents included damage to an individual's hand which he managed to catch between a post and a gas cylinder, and in another instance a student caught his fingers in the sliding sash of a fume cupboard. Several reports of burns from hot water, hotplates or hot glassware were also recorded.

(f) **Handling Glass/Sharps**

Cuts from glass or sharp objects is the most frequent cause of accidents that were recorded. Breaking glass ampoules caused many cuts to hands.

A rather classical injury from inserting glass tubing into rubber stoppers resulted in one individual receiving several stitches into a hand.

A cleaner suffered cuts to the hand from glass tubing which had been discarded in a waste rubbish bin.

A particularly bad cut occurred to the hand of an individual who was attempting to remove a ground glass stopper which had jammed, whereupon it broke and was driven deep into this person's hand.

Scalpel cuts were reported from Medical School departments. Here the danger of secondary infection is of concern.

(g) **Machinery**

Of the two cases reported both were due to the careless operation of drill presses and resulted in penetration injuries.

(h) **Spillages/Releases**

These types of accidents may occur for a variety of reasons, as evidenced by the following reports.

A storeman was preparing to transfer glacial acetic acid from a drum to a winchester bottle using an electrically operated pump. He plugged the pump into the power outlet without being aware that the pump was already switched on on the device. As a result, the nozzle of the pump moved in an uncontrolled manner, spraying acid about the room.

In one instance a considerable amount of force was applied to open an over-tightened valve on an ammonia cylinder resulting in an uncontrolled release of ammonia into the laboratory. The operators left immediately to obtain breathing apparatus and raise the alarm.

A student who emptied about 100 ml of sodium hypochlorite solution into a sink which apparently contained some residue of previously discarded acid was met with choking chlorine gas evolving from the sink when these chemicals interacted. This type of incident quite often occurs in household contexts when chlorine bleaches and acid toilet bowl cleaners come into contact. In one such instance an elderly lady was found in an unconscious state after having cleaned a bath with these mixtures and succumbed to the effects of inhaling chlorine gas.

A technician, after having dropped a winchester of chloroform onto the floor, decided that the best way to treat the spillage was to immediately dilute it with a bucket of water. This resulted in several square metres of floor tiling having to be replaced. A bucket of sand placed in laboratory areas may serve as a dual function to absorb spillages of this nature and may also be useful in certain fire situations.

(i) **Striking Against Objects**

Incidents in this category include a cleaner who damaged her foot with a floor polisher when her foot was caught between the polisher and the wall; a worker who collided with a heater whilst carrying a large object; and a rather unusual case of an 85-year-old reader in a library who was unable to find the light switch and struck her head on a fitting.

(j) **Other**

University departments often employ the use of motor vehicles or boats during the course of the year's work, such that it is not surprising that the following two accidents were reported.

A field technician, whilst returning from a field collection trip in a university vehicle, skidded on a greasy patch of road and lost control of the vehicle. Taking evasive action from an on-coming vehicle he ran into a concrete post.

Whilst taking water samples for the Marine Laboratory in the harbour, a large wave came over the bow of a 5-metre boat causing it to roll upside down and dump three occupants in the water. It was approximately 30 minutes until they were rescued.

THE INDUSTRY/UNIVERSITY INTERFACE

A. W. Mackney
Immediate Past-President, NZIC

The following formed part of the Presidential Address given by Mr Mackney to the NZIC Annual Conference in August.

Over a period of six years of association with National Research Advisory Council I have seen increasing efforts being made to utilise the science and technology resources of New Zealand. This has come about partly from a realisation that the country is indeed lagging behind its world competitors in the extent of its science and technology effort, but also simply because of lack of funds.

One effect of the sinking lid and zero growth in government funded research establishments was that a very thorough appraisal was made of the scientific effort of the country and it is fair to say that, on the whole, research managers have very effectively undertaken an examination of their work, sorting out the less important projects, changing direction where necessary and undertaking regular reviews. There has gradually developed a much healthier relationship between the main doers of R&D in Government departments and the users of R&D throughout the community. We find a positive commitment of DSIR to undertaking research contracts for industry. We find great emphasis by MAF on extension work so that these results can be used. We find the FRI making a survey of industry as it develops its five year plan for R&D.

All of this means that science and technology resources are being, and will be, better used and hopefully this trend will be fostered by the NRAC Science and Technology Plan. Unfortunately the one big gap appears to be in the very much under-utilised resources within the Universities. Having said this, one must immediately record that in many cases there are obviously strong enthusiasms to involve the university in the community and this is particularly marked in the case of the engineering schools. A very cursory study of the contracts undertaken through the Applied Research Office of the University of Auckland shows the extent of this work, though it is fair to say that little of it goes to the Department of Chemistry.

A brief study of reports from overseas shows that amongst the industrial nations the university/industry interface is currently receiving a great deal of consideration. The principal stimulus for this attention undoubtedly stems from the need for the universities to find a substitute for declining state or federal funding. However, there is also evidence of a realisation by industry that the universities have valuable research resources which, given the recognition of some of the specific university problems, could provide an opportunity for the economic advancement of industries. It is also noteworthy that the more economically progressive governments are fostering closer relationships by a variety of incentives involving tax savings, provision of venture capital, science parks and so on.

There is, of course, one major obstacle to the greater use of university resources by industry. That is the fact that the University is established "for the advancement of knowledge and the dissemination and maintenance thereof by teaching and research". (The University of Auckland Act 1961). Clearly the belief that the universities' prime objective is to teach is wrong. However, it is also clear that too much involvement in direct industrial research might lead to neglect of basic research and problems with publication of results.

The constitutions of universities call for the free dissemination of knowledge by discussion and by publication of papers. It must be agreed that this is a fundamental condition for the advancement of the frontiers of knowledge. Furthermore, preeminence for the academic is usually obtained by the publication of learned papers and this appears very often the principal reward for academic labours.

By contrast it will be self-evident that industrial research interests in the university normally involving the science, engineering and bio-medical fields almost certainly impose some limitation on the release of information. Further, it is fair to say that the senior executives of most industries have little or no realisation of what the universities can do for them.

From all of this it will surely be evident that the real need is for a change of attitudes and a better understanding of the possibilities of R&D. On the one hand we have the academic who is reluctant to "tout for business', who prefers either to go his own way or await enquiries from those seeking help and is concerned only with the ideal of pushing forward the frontiers of knowledge. On the other hand we have the industrialist who is either unable to formulate the nature of his problem, or, if he can, doesn't know where to go for help.

Clearly there is no possibility of a sudden, dramatic or revolutionary change. The solution must surely come through education and communication and this almost certainly must originate within the universities. It seems that an approach from one or more universities to the Manufacturers' Federation might lead to a better understanding of the real part which the universities can play in national economic development. The provision of some effective incentives would no doubt make such an approach more attractive.

NRAC has carried out an examination of this problem mainly in connection with the engineering schools and has made recommendations for the setting up of small groups of dedicated and enthusiastic people to bring manufacturing and university groups closer together. It has also given some attention to the possibility of setting up an Industrial Research Council to fund research programmes and projects of importance to New Zealand's industrial development.

As we examine this problem it is worthwhile examining the comments made in two recent editorials presented in the Journal of the RACI. The first of these presents the views of an industrialist and is by the Research Manager of ICI Australia.

I would suggest that a great deal of work being carried out in universities nowadays is not only irrelevant to society's and industry's needs; it is also of doubtful quality. I believe this is, at least partly, the result of the "democratisation" of our universities, with excessive emphasis on equality, and a person's potential (the "give him/her a chance" syndrome), and not enough on excellence and actual performance. There is little room for democracy where excellence is the only promise of success. In practical terms, research groups should be formed around outstanding scientists to a greater extent than is currently the case. The Government has recognised the desirability of this in its recent creation of "centres of excellence" in Australian universities. The principle of excellence is more highly developed in Germany and in some American and English universities. It is not surprising that in these countries academics have a significant influence on industrial R&D. Sometimes they even sit on the Boards of companies, particularly in Germany and in Japan.

Industry needs the universities, and vice versa. It is unfortunate, however, that so little worthwhile industrial R&D is carried out in this country because it means that the Australian industry has barely the facilites and capacity to tap and interact productively with academic research.

Interaction can be improved in various ways. Industry can make better use of academics as consultants. It can place research contracts with the universities to a greater extent than is currently the case or it can make financial contributions

towards projects that are, or may be, of interest. Industry could also be much more active in talking about its work and problems to university staff.

Universities can help promote collaboration by facilitating interchange of staff, by inviting lecturers from industry and by reorienting more of their research programmes towards areas of greater relevance to this country, as indicated above. Academics should actively seek involvement from industry in research programmes of potential interest, and should be flexible enough to take on research projects from industry without making too much fuss about it, provided that the fundamental nature of the research is maintained.
*(Chemistry in Australia, **50**, 33, (1983)*

This comment is really very relevant in the New Zealand context. One feels there is very good reason to examine our overall activities. It is very evident that there is a reluctance to designate "centres of excellence" while individual universities want to have a little bit of everything even though little of it may be of value.

The second of these editorials is by a professor located at the University of Florida and outlines the effort which has gone into developing some rewarding contacts with industry.

Everyone pays lip-service to the value of industrial-academic collaboration in chemistry. It is a truism that universities/colleges and industry are mutually interdependent, but while it is easy to write down how such links should work in the ideal world, it is much more difficult to put this into practice.

In 1962, I was appointed as Foundation Professor of Chemistry at the not-yet-founded University of East Anglia, UK, and one of my major aims was the establishment of such links . In 1980, I transferred to the University of Florida, USA, and we are now consolidating industrial contacts there. In the hope that some of my experiences in two continents will be relevant to the Australian scene, I comment on some of the types of industrial contact that I have found rewarding.

***Refresher Courses.** Since 1970, a one-week 'Short Course in Organic Chemistry' has been offered annually at UEA, and since 1981, a similar course is being run at UF. These courses are designed with senior industrial chemists in mind who have worked at least 10 years in industry since their last degree. They offer an overall refresher, designed to stimulate as much as to inform. Essential ingredients for success are (i) up-to-date and relevant course material, well prepared and enthusiastically delivered, (ii) meticulous attention to detailed organisation, (iii) a good social programme allowing for real contact between the participants themselves as well as with their teachers. What are the benefits for the college? They include a sense of 'togetherness' in putting on a joint operation, the stimulation in teaching experienced and mature chemists who do not hesitate to criticise any fault, and the insight gained into the 'real world'.*

***Visiting Faculty.** UEA appoints individual chemists and 'Visiting Faculty'. Because of the distance of Norwich from industrial areas of Britain, they are seconded (at full salary) by their companies for one complete week a year. UEA pays travel and living expenses. There are some 15 VF in appointment at any one time: while at UEA each has 12 to 15 hours contact in the week in the form of graduate and undergraduate lectures and seminars. An undergraduate course on 'Chemistry and Society' is mainly taught by VF. The VF also take part in informal research discussions and give advice to leaving students on career opportunities. In any scheme of this type, it is essential that the industrialist, who is giving up valuable time, should be made to feel that he is doing something that only he could do, that he is appreciated, and that his period is organised so that his time is well utilised. Again, the importance of good organisation is pertinent. The UEA VF have found their experience as stimulating and worthwhile from their own personal and from their companies' point of view.*
*(Chemistry in Australia, **49**, 371 (1982)*

In the current state of scientific ignorance which exists among much top level management in this country the ball is very much in the court of those who have the knowledge. Perhaps here, just as it is occurring in countries such as the UK and USA economic pressures will provide the stimulus to bring our academics out into the commercial field.

INTEGRATORS FOR CHROMATOGRAPHY

P. G. Robinson

Peter Robinson is a lecturer at Waikato Technical Institute, where he teaches biochemistry, pharmacology, organic and analytical chemistry. This diversity of interests has been developed from a PhD in chemistry from the University of Auckland (1972), followed by a variety of research positions, in the School of Medicine. He has a particular research interest in the problem of cystic fibrosis and from 1979 to 1981 was UK Cystic Fibrosis Research Trust Senior Research Fellow.

Peter has had an involvement in chromatography throughout his career, and coupled with an interest in computers, both professionally and as a hobby, he is ideally suited to write this article — Ed.

An integrator is an instrument which assists in qualitative and quantitative chromatography by determining retention times and integrated detector response for each compound eluting from the chromatographic system.

Most forms of chromatography which rely on elution of compounds from a column (eg gas chromatography, high performance liquid chromatography) use a chart recorder output to measure detector response with "peaks" being drawn on the chart to produce a chromatogram. The size of the peak is proportional to the detector response and the time taken for the peak maximum to appear is the retention (or elution) time.

For simple separations involving only a few compounds it is relatively easy to determine retention times from the chromatogram using a ruler and to calculate peak areas by triangulation. This method allows for the analyst to do a certain amount of "interpreting" of the chromatogram by determining where the baseline should be drawn. It also forces the analyst to LOOK at the chromatogram so that if anything has gone wrong it will be immediately obvious (different to electronic integration where it is the figures and not the chromatogram which are often inspected!)

Historically, the first integrators were mechanical devices driven off the servo mechanism of the chart recorder. These 'Disc Integrators' allowed determination of peak areas, provided the peaks were on-scale on the chart recorder, but gave no measure of retention time. A fair amount of manual work was still required to fully process a chromatogram.

The advent of fully electronic integrators was a considerable step forward in labour saving in the analytical laboratory. Early integrators provided a printout of retention time, area and an indication of whether the peak stayed within the range of the electronics of the instrument. Coupled with the appearance of programmable calculators this reduced the amount of time required for analysing a chromatogram by over 75%.

The next generation of integrators included functions for the calculation of area %, internal and external standards (with the use of response factors if needed.) The recorder output was taken off the integrator and could have marks indicating the start and stop of integration superimposed on the trace. This was useful for setting up parameters on which the integrator worked for detection and rejection of peaks. One disadvantage was that the whole analysis had to be repeated to see the result of changing one of the parameters.

Soon after, integrators with a built in printer-plotter appeared. The advantage of these was that the whole of the chromatogram and report were printed on the same piece of paper. Peaks were numbered (or their retention time printed) as they were plotted and these figures could easily be matched with the final report. This can be a problem with capillary traces when the printed numbers often overlap and become unreadable — overcome by speeding up the chart but that does use up a lot of paper! Sophisticated report generation and calculation facilities are available.

There are two disadvantages of these instruments. Firstly, the paper used is expensive (it can be the major consumables expense of the whole chromatographic system) and method development can use up a lot of paper. Being able to suppress part of a report (eg parameter listings) can be a big help here. Secondly, and this is perhaps more of a disadvantage in a research, rather than a routine, setting is that there is no continuous trace of detector response. While the report is being printed other peaks may be eluting from the column and these will be lost. A continuous trace is very useful for troubleshooting eg rising or falling baselines due to leaks or column bleed.

The latest generation of integrators overcomes some of these difficulties by including visual display units (VDUs) which are used when setting up parameters, etc, and can sometimes be used to display chromatograms.

The use of microcomputers as integrators is also gaining in popularity, especially among laboratories that do not require a dedicated integrator. With good software a computer offers all that the best integrator can do with the added flexibility of being able to use it for other things such as interfacing with other instruments, wordprocessing, keeping track of laboratory stores, statistics calculations, accounts, etc, when not integrating.

A number of special features are available on some modern integrators and these may include; the ability to store the whole of a chromatogram and reprocess it without having to rerun the analysis; the ability to store methods, chromatograms and reports on disc for later manipulation; being able to control instrumentation, from simple column switching to complete control of temperatures, flows, gradients, autosamplers, etc, (very useful for round-the-clock routine analyses); the capacity to integrate several channels of data at once, although often only one channel can be plotted at a time; the capability of being programmed in a computer language such as BASIC; and the ability to communicate with computers.

The division between integrators that can be programmed like computers and computers that can act as integrators is rapidly closing. The major differences are that the former have their integration programmes stored permanently in read-only memory (ROM), have suitable control hardware built-in and the VDU, disc storage and BASIC programming often come as optional extras, while the latter have VDU and discs as standard, the integration programme must be loaded in from disc

storage, a programming language is usually (but not always) included in the price, and some special interfacing hardware to the chromatograph may have to be supplied (or built!)

BUYING AN INTEGRATOR

Before looking at available integration systems the following questions should be considered.

What is the average daily use of the integrator over the next five years likely to be?

Do you need to control any instrumentation?

How many different people will use the system?

What proportion of work will be on research or method development compared to routine analyses?

Are you using capillary and/or packed column GC? Microbore or normal HPLC?

What sort of reports do you require?

THE INTEGRATOR PARAMETERS

An integrator should offer the facility to vary all of the following:

Sensitivity selection (peak slope)

This allows alteration of the sensitivity of the integrator to the detection of peaks. It is the most important parameter and it is ESSENTIAL that its use can be easily understood. You must be able to visualise what changes to this will cause in terms of peak integration.

Minimum peak area (and width)

Useful for rejection of small peaks, baseline noise and spikes. The width parameter is probably not necessary.

Integration delay

For ignoring solvent peaks. Should be coupled with a "tangent skim" (automatic or selectable) to allow detection of peaks on the solvent tail.

Integration stop (separate from run stop)

This allows for integration to be stopped while the column temperature is programmed up to remove rubbish, or a solvent wash in HPLC occurs, while still plotting the chromatogram.

Baseline control

Some control over how the integrator determines its baseline is useful. An understanding of how the integrator copes with drifting baselines is important.

For many analyses these are all the parameters which will be needed. Other options which may be offered include;

Sampling frequency — for capillary columns a sample rate of 5-10 times a second is needed. This value may not be variable so, if you want to use capillaries, check that the sample rate is fast enough and that the memory capacity is sufficient to handle the analyses eg 300 peaks, 120 minutes might be typical.

Timed events — for either changing integration parameters or output attenuation or for operation of external backflush or column switching valves, etc.

Storage of methods — this can be a big time-saver.

Reports

Check that the integrator will handle the analysis in the way YOU want to do it. Does it allow for identification of peaks? Can it handle response factors? Can you suppress part of a report to save paper when doing routine analyses? Can you extract other information such as peak heights or shapes if you need them?

USE!

Is the integrator "USER FRIENDLY". Can you, at your first use of the instrument, run an analysis and get a satisfactory answer without wading through a 5cm thick manual? This is a real test of good integrator design!

Integrators use all sorts of algorithms for separating overlapping peaks, determining baselines, etc, but remember that your answers will only be as good as your separations. There is too much tendency to 'believe' the numbers produced without understanding how they were arrived at!

THERE IS NO SUBSTITUTE FOR GOOD CHROMATOGRAPHY!

BRANCH NEWS

Auckland

The NZIC 7th Form Scholar of the Year competition was held at the University of Auckland Chemistry Department on 21 August. As usual this prestigious award was strongly contested, with 46 entrants from 16 schools. The morning session consisted of two laboratory exercises followed by a multi-choice examination after lunch. Lunch was provided by NZ Forest Products. The best four scholars went on to a mastermind quiz answering questions on chemistry, with the final result: 1st, David Hirst (Auckland Grammar); 2nd, Robert Hamilton (Auckland Grammar); 3rd, Wendy Hawke (Epsom Girls Grammar); 4th, Tom Davis (Birkdale college).

Waikato

Dr Peter Robinson of the Waikato Technical Institute, Hamilton, was guest speaker at the July branch meeting. He demonstrated the use of microcomputers in chemical education, including slide preparation, the marking and analysis of multi-choice tests, the simulation of titrations and thin-layer chromatography, and interfacing with instruments.

An Analytical Chemistry competition for 7th formers in the Waikato area was run by the local branch of the institute. There was a good response, especially from the country schools. In the chemistry option, which involved the determination of iron in a ferrous salt, the winners were **Paul Reid** and **Scott Meredith** of Morrinsville College, with second place going to **Reece Robinson** and **Derek van der Hulst** of St. John's College, Hamilton. In the biochemistry option, which involved an assay for proteinase in kiwifruit, St. John's College provided the winning entry, with Opotiki College and Orewa College joint runners-up. The high standard of entry for both options indicated that chemistry is being taught well in the Waikato regional schools.

Manawatu

On 10 June, **Professor Roy Daniel** of the Thermophile Research Group at the University of the Waikato visited research organisations in Palmerston North to discuss aspects of biotechnology. In his address to an evening meeting of the Branch entitled "The Science and Technology of Extreme Thermophiles", Professor Daniel described the organisation of his research group and the location of volcanic hot pools containing thermophilic bacteria. He discussed characteristics of these life-forms and properties and potential uses of enzymes isolated from them. According to Professor Daniel, the answer to the question, "What is the upper temperature limit for life?", is probably determined by the stability of small molecules, such as glutamine and NAD, rather than that of macromolecules.

The NZIC-RACI visiting speaker, **Dr Charles Barnes,** titled his address to a meeting of the Branch on 20 June, "Chemical Adventures in Biotechnology". His address included an introduction to the work of Biotechnology Australia Pty Ltd, with descriptions of work on genetic engineering of a vaccine for neonatal diarrhoea in pigs, structural investigations of antibiotics and gene peptide synthesis.

The 8 July meeting was addressed by **Mr G. K. Connell** (Public Affairs Manager, N.Z. Synthetic Fuels Corp.) on the "Conversion of Natural Gas to Petrol". In his most entertaining and infomative presentation, Mr Connell described the development of the Synfuel Plant on a landscaped site a few kilometres north of Waitara in Taranaki. This industrial development, one of the largest in New Zealand, will supply a third of the country's petrol requirement from next year. Topics discussed by Mr Connell included the design of the plant, the process of converting natural gas to petrol, cooling water requirements and the products from the reactions.

The Branch awarded two special prizes to entrants in the Manawatu Science Fair who illustrated aspects of chemistry in their exhibits. The Fair was held at the Convention Centre during 21-25 June. In the Intermediate Section the winners were **Gavin Snowsill** and **Sasha Low** for their exhibit entitled "Coca Cola Isn't It?", a study of the acidity of soft-drinks. A study of the effect of salt in cooking potatoes earned **Richard O'Driscoll** a prize for his entry entitled "Added Hazard" in the Senior Section. Richard, a third form student at Palmerston North Boys' High School, also won the secondary physical science section prize. His entry was adjudged the best exhibit at the Fair (Royal Society Award) so that he will represent the Manawatu at the National Science Fair in Auckland in November.

Chris Hollingshead, an American Field Scholar at Gisborne Boys' High School, was awarded a prize from the Branch for his exhibit, "Have you had enough?", at the recent Gisborne Science Fair. This exhibit was the result of a study of the effects of lead on the body. A second award went to Belinda Davis for her entry, "Dyeing Wool". Although there were fewer exhibits in the Fair this year, their standard of presentation was higher than that for previous years, according to Mr Murray Ferris, the Fair's convenor.

Wellington

During July the Wellington Branch Chairman's address entitled "Some Interesting Industrial Uses for Carbon Dioxide" was delivered by Mr P. G. Best.

Approximately 200,000 tonnes of carbon dioxide are produced in New Zealand each year. The industrial uses include manufacturing (e.g. Urea); aerosol propellant; water treatment and pH control; hardening of foundary moulds; shielding gas for welding; lasers; storage of food — including refrigeration and controlled atmospheres. Carbon dioxide is also used as a humane killer and has applications as a solvent.

The predictions made by NZIG for the production of CO_2 over the last decade have all underestimated the present day industrial requirements for this very versatile compound.

The August branch meeting heard **Professor E. G. McQueen** from Dunedin on the topic "Poisoning Private and Public — Chemical Hazards Real and Imaginary". This described the functions of the National Poisons Information Centre, and the National Hazardous Chemicals Information Centre.

The National Poisons Information Centre was established in 1964 in response to the need for information on new chemical products coming onto the New Zealand market.

The National Hazardous Chemicals Information Centre was set up following recommendations from the Commission of Enquiry into the Parnell emergency. It exists to provide information to assist emergency services in dealing with toxic substances and the immediate treatment of people affected by toxic materials. A less urgent, but equally important function is to assess potential hazards to help prevent emergencies involving toxic materials.

There have been two large scale emergencies in New Zealand. Parnell was toxicologically a non-event, and the ICI fire had the potential for a serious emergency. Both these incidents achieved notoriety from ill-informed media speculation.

However, the potential for a real disaster does exist and the need for full information about chemicals and their intermediates and proper attention to potential hazards was tragically illustrated by the Bhopal disaster.

Canterbury

In July, the branch was addressed by **Dr Peter Robertson** of the Dairy Research Institute, Palmerston North. He gave an interesting talk on the diversification of the dairy industry and DRI's role in that, sprinkling his presentation with samples of typical products.

Otago

Dr C. S. Barnes, Head of Chemistry for Biotechnology Australia Pty. Ltd. and NZIC-RACI Visiting Speaker for 1985, lectured to the Branch in June. In his lecture, which he entitled "Chemical Adventures in Biotechnology", he explored past and present incidences of the exploitation of biochemical and microbiological knowledge on an industrial scale, then tried to foreshadow new ways in which biotechnology would be exploited commercially in the foreseeable future.

The meeting in July was addressed by **Dr J. F. Cutfield** of the Biochemistry Department, Otago University. His topic was also biochemical, being entitled "Insulin: Ancient and Modern". He summarised chemical, biochemical and biological developments to date, and impressed the chemists present by exhibiting some surprisingly well-formed crystals of insulin.

Dr P. E. Nelson, Government Analyst with Chemistry Division, DSIR, and graduate of Otago's Chemistry Department, addressed a combined meeting of the Branch and the University's Chemistry Department in August. His talk was concerned with forensic work including analytical methodology on the illicit drugs scene.

The Otago Science Fair (Convenor:- **Ms Kaye Wilson** for the Otago Science Teacher's Association) was held in early August and attracted 268 entries from intermediate and secondary schools. While there were many entries in junior and intermediate sections, the lack of entries (particularly chemical ones) in the senior experimental sections was of some concern. From among the winners, **Louis Tapper** (intermediate) with his entry "Why are my plants dying?", and **Janet and Heather Stewart** (juniors) with their display "Identical twins — Are they really identical?", will go on now to represent Otago with their exhibits at the National Science Fair.

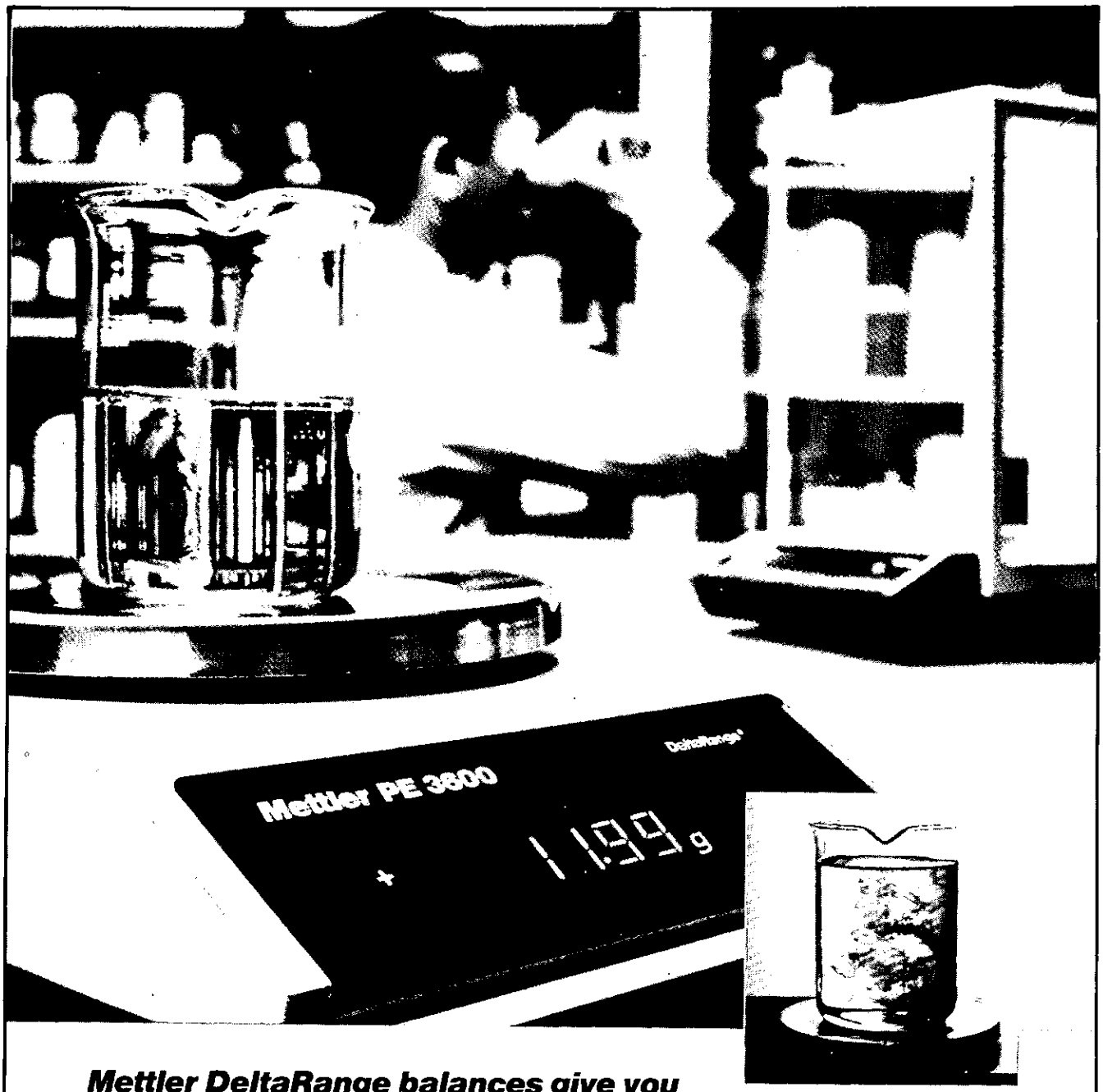
RSNZ AWARDS

The Royal Society of New Zealand has announced a fourth series of awards to seven New Zealand scientists and technicians under its Prince and Princess of Wales Science Awards Scheme. Awards to the successful applicants totalled $23,500.

THE NEW ZEALAND BANKERS ASSOCIATION AWARD went to **Miss C. A. Wham,** Paediatric Dietitian of Auckland Hospital.

THE CLEMENGER (NZ) LTD AWARD went to **Mr P. C. Glucina,** Scientist, Horticultural and Processing Division, DSIR, Auckland.

Other awards were made to: **Dr G. S. Hardy,** Curator of Fishes, Dominion Museum; **Mr C. J. Munn,** Applied Scientist, NZ Concrete Research Association; **Mr N. E. O'Brien,** Technician, Physics Department, University of Otago; **Dr M. Reyners** of the Geophysics Division, DSIR, Wellington and; **Mr C. W. Thomas,** a metallurgist of the Industrial Processing Division, DSIR, Petone.



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INDUSTRIAL NEWS

Taubmans (NZ) Ltd

Mr Michael Hawes has recently been promoted from Technical Manager to Industrial Marketing Manager.

Mr Andrew Provan joined the company as Technical Manager.

Other new staff at Taubmans include **Mr Lawrence Copestake** appointed as Industrial Product Manager and **Rod Crawford** the new Stock Control Manager.

Bostik NZ Ltd

Mrs Angela Brown recently resigned to take up a position with the New Zealand Dairy Board. **Mr Robert Leadbetter**, a recent graduate from Victoria University of Wellington has joined the staff as a development chemist.

Lion Breweries Ltd

During 1985 the central laboratory of Lion Breweries was relocated from Wellington to Auckland.

The company continued its successes internationally with awards to Steinlager as the best lager in its class and also the best lager of all strengths in the competition held by the Allied and Brewing Trade at Burton-on-Trent England during June 1985.

Shell Manufacturing Limited

Mr G. R. (Geoff) Wright has resigned from Shell. His new position is South Island Sales Engineer for Philips (NZ) Limited.

Blackmores Laboratories Ltd

Mr P. A. Ellis has been appointed to the position of Production Manager, after moving from Middows Taylor Ltd in February of this year. He is now responsible for quality control and production of a large range of cosmetics and vitamin and mineral products.

3M (NZ) Ltd

Mr G. E. Ruffell has taken up the position of control Engineer and Quality Control Supervisor with 3M (NZ) Ltd. Formerly he was with Aerosol Products as Q/A Manager.

Swift New Zealand

Harvey Winter has been appointed as Product manager, scientific and medical equipment. Harvey was previously with Anatech, and is also currently on the Auckland Branch committee.

Chemical Service Laboratories Ltd, Wellington

The first of April 1985 saw a major change at Chemical Service Laboratories, with the retirement, after 28 years of service, of the Managing Director, **Mr Jack Futter.** During this period Mr Futter was largely responsible for the development and growth of the laboratory's racehorse drug testing facility and has accumulated an enormous knowledge in this field as well as other areas of chemical analysis. Fortunately this experience will not be lost as Mr Futter will remain as a consultant for the laboratory.

As a result of Mr Futter's retirement, Chemical Service Laboratories have merged with Technical Resources Ltd to form the new company Chemical Service Laboratories (1985) Ltd.

Mr Futter's partner, **Mr Norman Holden,** has been joined in this new company by **Dr Geoff Beresford** and **Mr Murray Friar** formerly of Technical Resources. The merger has added HPLC to the wide range of analytical instrumentation operated by the company.

Scientific Service Laboratories, Napier

A pilot plant for diluting sulphuric acid from 98% to 72% has been developed by **Godfrey Husheer** in his laboratory at Onekawa, Napier. Mr Husheer said that he is able to supply the diluted acid in 12 to 200 litre containers for clients in the Hawkes Bay and East Coast area. A full-scale production plant will be in operation within 12 months. He can also supply similar container-sized quantities of fertiliser grade phosphoric acid. This acid (52% P_2O_5), imported by the East Coast Fertiliser Co. Ltd. of Napier for the manufacture of partially acidulated reactive phosphate rock, is also available for sale in limited quantites by the Company.

Governor General's Award to New Zealand Pharmaceuticals Ltd.

New Zealand Pharmaceuticals Limited

New Zealand Pharmaceuticals Ltd. of Linton recently received the Governor General's Award for Exporting. The award was presented by Sir David Beattie. Accepting the award, N.Z. Pharmaceuticals' chairman, **Mr L. W. N. Fitch,** noted that the company had increased exports ten-fold since receiving its Export Award in 1979. Five years ago the company was exporting to a dozen countries, bringing in export receipts of $1 million. Last year, it exported products worth $10.4 million in export receipts, to more than 15 countries. N.Z. Pharmaceuticals is commercially unique in New Zealand, in that it has no domestic sales base. The bulk of its work is in extracting biologically active substances from animal wastes and by-products and turning these components into 20 different products for export. Recent products from the company include the anti-coagulant drug heparin and the amino acid taurine.

The company has also recently announced a grant for research into areas of biochemical processing technology with significant potential for increased earnings from New Zealand's primary sectors. Applications for the first $10,000 post graduate research grant will be called for towards the end of the current academic year and will be available for 1986. The company wishes to encourage people with skills and ideas to contribute to producing greater added value from New Zealand's primary industry.

Mr Brian Service, general manager of N.Z. Pharmaceuticals Ltd. since 1972 was recently appointed chief executive designate of the Dairy Board's subsidiary operations in the United States. He became president and chief executive officer designate of New Zealand Milk products Inc., in Petaluma, California, on October 1. Mr Service will take full charge from June 1 next year when the current president, **Mr Neville Owen-Jones,** retires.

Presentation of the Governor General's Award for Exporting to New Zealand Pharmaceuticals Ltd., Linton. (from l to r) Mr L.W.N. Fitch (chairman), Mr. B. Service (general manager) and His Excellency Sir David Beattie.

UNIVERSITY NEWS

Waikato

Chris Adams, a doctorate research student, has been awarded the William Georgetti Scholarship this year, thus joining **Chris Miles** who received the award in 1983.

Prof Roy Daniel returned from a four week visit to the U.S.A. in April, during which time he delivered a paper at the UCLA Symposium in Colorado and also visited a number of Science Laboratories and Universities throughout the States.

Dr Humaid Khan took up his appointment as Post-Doctoral Fellow in May. His research work will cover synthesis of biologically active 2-amino-oxazoles and bis (2-amino-oxazoles); reaction mechanism of these reactions with dienophiles aldehydes and isothiocyanates. Trapping and characterisation of purgable organic compounds in natural and industrial water, and the investigation of the chemistry of clay-organic reactions.

Dr Malcolm Carr has been appointed Director of the Science Education Research Unit. This appointment is due to the tragic death in a motor accident, in June, of the previous Director, **Dr Roger Osborne.**

Dr Derek Smith left on study leave in mid July for eight months. He will be involved in further research at the University Chemical Laboratory in Cambridge, England.

Massey

Dr Bill Hancock, a Reader in the Department of Chemistry and Biochemistry, will spend the next five years on secondment with Genetech Co., in South San Francisco. Genetech Co. is the only company to have a genetically engineered product, namely insulin, on the market. They have developed synthetic Factor VII (the blood clotting agent), interferon and several new drugs for cancer and heart disease and soon expect to add growth hormone to their range. At Genetech Dr Hancock will head a very active group purifying high molecular weight synthetic protein-based pharmaceuticals, a challenging problem because of the size and complexity of these compounds. Dr Hancock is well known for his research in the synthesis of fragments of lipoproteins and the analysis of proteins by high performance liquid chromatography.

An all-day seminar, organised by **Professor David Parry** (Department of Physics and Biophysics), was held at the N.Z. Dairy Research Institute on 17 June in order to assess the interest of research workers in the Palmerston North area in the technique of "Image Analysis". A large response was achieved with many representatives from the University, DSIR, DRI, Leather and Shoe Research Association, Ministry of Works and Development, Ministry of Agriculture and Fisheries and the Palmerston North Hospital. From outside the city, **Mr Beech** (Auckland Industrial Research Division, DSIR), **Dr Garden** (University of Canterbury) and **Professor Williams** (University of Sheffield) participated and each presented his or her own experiences in this area of research. From discussion at the seminar it was generally hoped that a central facility for image production, handling, enhancement and analysis could be established. A newly formed committee representing several major user groups will be looking into this possibility shortly. Present and potential uses for image analysis that were discussed at the seminar included assessment of wool fibre size, analysis of Chinese writing, filament straightening, three dimensional reconstruction, immune-gold cytochemistry, two-dimensional gel comparisons, protein precipitate sizing, X-ray tomography, visual perception, aerial photography, remote sensing and leaf canopy estimation.

Dr Alan Johns, the recently retired Chairman of the University Grants Committee, has been awarded an honorary Doctor of Science degree in recognition of his service to the University system. As both scientist and administrator, Dr Johns has had a distinguished career. After graduating, he researched the causes and control of bloat in cattle, initially in the DSIR Plant Chemistry Division and later in Grasslands Division. Dr Johns went on to become Director of Plant Chemistry Division (now called Applied Biochemistry Division). In 1968 he was appointed Director General of the Department of Agriculture (later renamed Ministry of Agriculture and Fisheries) and in 1977 he was appointed Chairman of the University Grants Committee.

Chemistry at University: Try your hand

Ross Moultrie and **Chris Ridge** (left) from Palmerston North Boys' High analyse the dyes used to colour Fanta and Teal soft drinks. Ross and Chris were among 400 Sixth and Seventh formers from the Hawke's Bay and Manawatu who recently visited Massey University to find out just what is involved in studying chemistry at university.

Victoria

Dr S. I. Smedley spent part of July visiting corrosion research centres in the northern hemisphere. Among the institutes visited were: Stanford Research International, California, University of Manchester Institute of Science and Technology, the Woolfson Centre for Electrochemistry, Southampton, and the King Saiid University, Riyahd. He attended the Molten Salt Discussion Group meeting in Bristol.

Dr G. R. Burns returned in August after spending a year at University College, London, working with **Professor R. Clarke** on Raman spectroscopy studies.

Dr Geoffrey Chambers has joined the Biochemistry Department as a Senior Lecturer. His degrees were obtained from Leeds University, with Ph.D Studies in protein chemistry. Several post-doctoral appointments followed where he studied enzyme variants in ***Drosophila.*** Dr Chambers intends to continue his interests in molecular evolution and genetic variation in local fish species, and in endangered birds.

Canterbury

Dr Murray Munro visited the Harbour Branch Foundation at Princeton and Florida, and he attended the Marine Natural Products Conference in Paris, the IUPAC Chemistry Conference in Manchester, and the Natural Products Conference in Sofia, Bulgaria, while on leave August-September.

Dr W. T. Robinson attended a meeting of the American Crystallographic Association in Stanford and visited other institutions in California while on leave from 9 to 25 August, 1985.

Dr Peter Harland is taking a well-earned Erskine Fellowship after his work as Secretary of the 1985 NZIC, NZBS, NZACB Conference. He will be visiting Science City, Tsukuba and Osaka, Japan, the Department of Space Research, Birmingham, the U.S. Air Force Base at Hanscom Field, Boston, the Oakridge National Laboratory, Tennessee, and he will attend a conference on Gaseous Electronics, at Monteray, California, while on leave September-October.

Dr Murray McEwan will be on leave for 12 months from November '85, at the California Institute of Technology, Jet Propulsion Laboratories.

Professor H. F. Schaefer from the Department of Chemistry of the University of California at Berkeley will be visiting Canterbury as an Erskine Fellow, February-March 1986. His research interests are in quantum chemistry: the theoretical calculation and prediction of molecular properties.

Another Erskine Visitor will be **Professor John H. Ridd** from University College, London. His research area is organic reaction mechanisms and he will be visiting from March-May, 1986.

Dr R. G. A. R. Maclagan will present a paper at the Fourth Australian Conference on Atomic and Molecular Physics and Quantum Chemistry, attend a workshop in Tasmania and visit Perth while on leave from 20 January to 8 February, 1986.

Recent visitors to the university have included Professor George Dawson, University of Arizona, and Professor Stephen Brewer, East Michigan University.

Otago

From the Biochemistry Department, **Dr D. Russell,** currently on sabbatical leave at Purdue University, Indiana, has been granted an additional year's leave to gain experience in plant genetic engineering. **Assoc. Professor Merv Smith** has just returned from a year at the Arthritis Institute, Bethesda, Maryland, where he has been working with former student, **Barry Carter.**

Professor Max Shepherd, of the Department of Oral Biology in the Dental School, has been awarded $194,000, being a Wellcome Trust Major Award for New Zealand. This will be used to support two post-doctoral fellows in three-year studies of the metabolism and cell wall of Candida albicans. He has also received $141,000 from the M.R.C. for the support of a scientific officer and a technician for three years. And to complete his hat trick, Max will be the first recipient of the Denis Thienport prize from the Royal Academy of Medicine in Belgium. The prize will be presented at a session of the Royal Academy in November. This will be in recognition of his work on fungal metabolism and dimorphism in Candida albicans.

contd. on p. 134

GOVERNMENT DEPARTMENTS & RESEARCH INSTITUTES

DSIR

Head Office

Mr I. R. C. (Ian) McDonald retired during August 1985. Ian was one of the first Chief Directors appointed by the DSIR when this position was created in 1981. His responsibility was for the Industrial group (Chemistry Division, Industrial Processing, Division of Information and Technology, Auckland Industrial Development Division, Applied Mathematics, Physics and Engineering, Institute of Nuclear Sciences and the Southern Industrial Development Division.)

Ian's career with the DSIR commenced in 1942, when he joined the Organic Section at Chemistry Division. His work there included extractives from wood, and one of his better known industrial achievements was to extend the useful life of railway tarpaulins by chemical means.

During his career at Chemistry Division Ian was at various times, Organic Section Head, Dominion Analyst, and in 1979 he was appointed Director. He held this position for less than two years until his appointment as Chief Director.

The new Chief Director for the Industrial Group is **Dr D. J. (Don) Barnes** who has joined the DSIR from the Ministry of Defence.

Chemistry Division

The new DSIR Library Centre at Gracefield, incorporating Chemistry Division, PEL and the DSIR Central Library was opened during August 1985.

The Dominion Analyst, **Dr C. D. Stevenson** attended the meeting of Government Chemists and visited a number of laboratories in Perth during September.

Mr L. Pickston, will be attending a meeting of Government Food Analysts at Lidcombe and attended the 12th Conference of Residue Chemists at Pymble, N.S.W. during October 1985.

Chemistry Division, DSIR, hosted the inaugural meeting of N.Z. Scientific Glassblowers at the end of August.

Dr C. J. Randall, who recently completed a Ph.D. at Victoria University of Wellington with **Dr. B. Hallon** is working for six months in the Food Section at Chemistry Division.

N.Z. Oceanographic Institute

Dr Geoff Glasby will be cruising on HMNZS Tui to the Manihiki Plateau during January-March 1986. The object is to search for cobalt rich crusts of possible economic significance.

Before this cruise Dr Glasby will be visiting the other co-chief Scientist Dr M. A. Meylan at the University of Southern Mississippi, and the Woods Hole Oceanographic Institution and the U.S. Geological Survey at Menlo Park. These studies are part of a continuing programme to study the marine mineral resources of the Pacific.

Soil Bureau

During July **Mr N. Wells** and **Dr B. Theng** attended the 1985 International Clay Conference, which was held in Denver, Colorado.

Cyril Childs was also overseas, attending the NATO Advanced Study Institute Conference on iron in soils and clay minerals, a two week workshop in Bad Windsheim near Nuremburg in Germany limited to about 100 people working on iron in soils around the world. Cyril presented a poster — "Iron Pans Associated with an Andesitic Volcano, New Zealand". He returned to New Zealand via the Macauley Institute.

Physics and Engineering Laboratory

Mr Rick Gould, a Ph.D. student from Lancaster University worked in the Biophysics Section for three months investigating the effects of low level SO_2 on plant functioning. This work used the short lived isotope 11C which was produced by INS.

Dr Gerald Smith of the Biophysics Section has been appointed to a temporary lectureship for one year in the department of Physical Chemistry at the University of Melbourne.

Division of Horticulture and Processing

Professor John E. Cronan Jr., University of Illinois, is visiting DHP for 9-12 months from September. John Cronan has made a major contribution to our knowledge of the genetics and biochemistry of glycerolipid synthesis in E. Coli. He is going to study the specificity of acyl transfer from acyl carrier protein to sn-glycerol-3-phosphate by the chloroplast enzyme from chilling — sensitive and — resistant plants. He will also test the compatability of the various activities within fatty acid synthetases from E. Coli and from chloroplasts.

Professor Guy A. Thompson Jr., University of Texas at Austin is visiting DHP, Auckland, until mid-October when he will move to Plant Physiology Division, Palmerston North, for a further three months stay. Guy Thompson has intensively studied the fatty acyl restructuring with the glycerolipids of ***Tetrahymena*** cells exposed to low temperatures, but is now entering the arena of plant lipid metabolism. (The contact at DHP for both these visitors is Grattam Rougham. Professor Thompson may be contacted at PPD through John Browse).

Applied Biochemistry Division

Mr Phil Christmas, a chemical technician in the Organic Chemistry Group, left the Division on Friday, 13 September, to take up a position in a local share broking company. Mr Christmas joined DSIR's Entomology Division in 1968 to work with the late **Mr Doug Todd** on insecticide trials, and then with **Dr Rod Hutchins** on the isolation of insect lipids and attractants. Since 1973 he has worked with **Dr Graeme Russell** in ABD studying insect toxins in native plants and feeding deterrent compounds in legumes. He developed the Division's black field cricket colony and feeding preference tests for these insects. Recently, Mr Christmas has been operating the Division's recently-acquired Bruker WP80SY nuclear magnetic resonance spectrometer. His departure will be a serious loss to this Group and to the Division.

Chemistry Division/Wheat Research Institute

Dr Bill Swallow is performing a sideways shuffle by transferring from his position as head of Police Section, Chemistry Division to Leader of the Process Group, Wheat Research, in September.

MINISTRY OF ENERGY

The NZE Division of the Ministry of Energy recently held its 9th Annual Station Chemists' Conference at Huntly Power Station. The two day conference, chaired by **Dr J. Nicholson,** discussed a variety of topics relating to power station chemistry. It had as guest speaker **Associate Professor Graham Wright** of Auckland University. Graham addressed those present on the subject of recent advances in the chemistry of corrosion.

HEALTH DEPT

Dr Alistair Bingham has joined the staff of NECAL in Auckland. Alistair completed his PhD at Massey University in 1983, spent a year in Germany on a post-doc, and then returned to Massey in a temporary lecturing position. Alistair will initially be involved in the general chemical service work of the laboratory and special investigations into the disposal of hazardous wastes.

Also on the subject of hazardous wastes, **Norman Thom** recently returned from a trip to Canada, where he attended a conference on the subject, and **Nick Abbott** has just left on a short tour of the USA to inspect a number of incineration facilities.

MAF

Ruakura Soil and Plant Research Station, Hamilton.

Dr Philip Poole has transferred from the Plant and Analytical Chemistry Group to the Insect Control and Organic Chemistry Group. He will become involved in projects where trace organic analyses are required. Dr Poole will be working with **Dr Pat Holland** and **Dr Denis Lauren** in the new organic chemistry laboratories, which are included in the recently constructed Insect Control and Organic Chemistry building at Ruakura.

Dean McGaveston is leaving Ruakura on 13 September to become Scientist-in-charge of the Chemistry Laboratory at State Coal, Huntly. He has been Plant Analysis Laboratory Supervisor for just over two years, having previously worked for about three and a half years in the Insect Control and Organic Chemistry Group at Ruakura.

RESEARCH INSTITUTE OF TEXTILE SERVICES

Mr Michael McCartain has been appointed to RITS as a Scientific Officer.

WOOL RESEARCH ORGANISATION

Four Institute members, **Stan Simpson, Rex Stewart, John McKinnon** and **Campbell Page** were among a group of nine staff who attended the 7th Quinquennial International Wool Textile Research Conference in Tokyo, 28 August to 3 September (thereby unfortunately missing the NZIC Conference). They presented seven papers on wool photostability, Chemset yarn technology, carpet soiling and appearance, woolscour effluent treatment, and wool opening. Drs McKinnon and Page visited several laboratories in Australia on the way home.

cont'd on p135

BOOK REVIEWS

Reactive Intermediates. Vol. 2.
R. A. Abramovitch (Ed.)
Plenum Press, New York 1982 xv + 599 pp.
$(U.S.) 59.50 ISBN 0-306-40594-6

Reactive Intermediates. Vol. 3.
R. A. Abramovitch (Ed.)
Plenum Press, New York 1983 xiv + 630 pp.
$(U.S.) 59.50 ISBN 0-306-40970-4

These are the second and third volumes of an open-ended series which are intended "to appear at irregular intervals of a year to 18 months" and "to publish up-to-date reviews in relatively new areas of the chemistry of reactive intermediates". They should not be confused with another series of books with the same title which is edited by M. Jones Jr. and R. A. Moss and published by Wiley-Interscience. The Jones-Moss series, which so far has produced two volumes, is concerned with recent developments in the area of well-known intermediates such as carbocations, carbanions, radicals, carbenes and nitrenes, and gives critical evaluations of the recent literature in a manner similar to that of the Wiley-Interscience series "Organic Reaction Mechanisms". The Abramovitch series deals with selected topics which are reviewed in depth. The title is somewhat of a misnomer, since it is not always obvious from some of the chapter titles just what "reactive intermediate" is being reviewed. Volume 2 contains six reviews, while Volume 3 contains seven, of which four are concerned with radicals.

In Vol. 2, E.F.V. Scriven deals with Current Aspects of the Solution Chemistry of Arylnitrenes (54 pp.). In this review, he examines the formation of nitrenes from azides, nitro and nitroso compounds, and heterocycles, as well as their reactions and synthetic applications, and updates, among others, earlier reviews by Lwowski (1970) and Smith (1970). A. Padwa and P.H.J. Carlsen provide the first review of the generation of Nitrile Ylides and Nitrenes from 2H-Azirines (64 pp.) and deal mainly with the photocycloadditions of the former. In a more lengthy and systematic review, J-M. Surzar examines Radical Cyclizations by Intramolecular Additions (174 pp.), giving attention to the principles governing cyclization of alkenyl radicals and their heteroatom analogues, together with kinetic and stereo chemical aspects. Y-N. Tang reviews both the formation and Reactions of Silicon Atoms and Silylenes (70 pp.) comparing their insertion and addition reactions with carbon atoms and carbenes. In Five Membered Hetarynes (160 pp.), M.G. Reinecke reviews the formation and reactions of aryl compounds based on thiophene, furan, and pyrrole, which possess a formal triple bond. The literature here is critically examined, the reviewer pointing out that many reactions for which such intermediates are postulated take other pathways. In the final chapter, A Survey of Favorskii Rearrangement Mechanisms. Influence of the Nature and Strain of the Skeleton (58 pp.) by A. Baretta and B. Waegell, the Favorskii rearrangement of 2-haloketones involving cyclopropanones and carbanions is reviewed in terms of stereochemistry and ring strain.

In Vol. 3, J.R. Marquart, R.L. Bedford, and L.C. Grazanio survey the literature on the Chemistry of Selenium and Tellurium Atoms (60 pp.), an area of gas phase reactions which has not been dealt with in reviews of the better known reactions of selenium and tellurium compounds in solution. In Homolytic Aromatic Substitution (52 pp.), M. Tiecco and L. Testaferi systematically examine the production of alkyl radicals, the course of alkylation, quantitative aspects, and synthetic uses of the reaction. J.W. Wilt reviews the many and varied Radical Reactions of Silanes (86 pp.), while W.G. Bentrude deals with the four-coordinate phosphorus species known as Phosphoranyl Radicals, covering the literature to near the end of 1979. In a timely and clear review, G. Szeimies deals with Bridgehead Olefins (68 pp.), while P. Brun and B. Waegell summarize the Synthetic Applications and Reactivity of Alkoxyl Radicals (60 pp.) highlighting the marked increase in the former and the greater understanding of mechanistic refinements such as stereoelectronic control on reactivity. Despite many extensive reviews on the subject, the lengthy review of Vinyl Cations (188 pp.) by Z. Rappoport is of value, since it concentrates on methods for the generation of vinyl cations, competing reactions in their formation, and the evidence for free ions and ion pairs in reactions leading to their formation.

These volumes will be of interest to chemists involved in mechanistic and synthetic chemistry. The reviews are all at a detailed and specialised level, but most chapters will be appreciated by a wider circle of readers. The volumes are well produced, carefully edited, and are likely to take their appropriate place in most chemical libraries.

R. C. Cambie
Professor of Chemistry,
University of Auckland

"Phytochemical Methods, 2nd edition.
by J. B. Harborne.
Publisher: Chapman and Hall, London, 1984.
Price: $NZ79.95.

This book is a user's guide to routine, tried and tested methods for the qualitative analysis of the wide range of complex organic molecules found in plants and, as such, is of great practical use to natural product chemists, biochemists and botanists. It is the availability of rapid and accurate methods of screening large numbers of plants for particular chemicals, for classes of chemicals, that has led to the tremendous upsurge of interest in phytochemistry over the past two or three decades.

Professor Harborne begins his book with an introductory chapter on the general methods of extraction and isolation of chemicals from plant material including a useful general flowchart of procedures in Fig. 1.1. However, I was surprised to see no mention of the special merits of freeze-drying (lyophilisation) for the initial preparation of plant material. Chromatographic procedures are still the basis for most phytochemical separations and the author outlines the merits and limitations of the various systems; this edition includes a new section on HPLC whilst the sections on methods of identification contain expanded coverage of GC-MS and 13C-NMR spectroscopy, techniques which are becoming increasingly important in phytochemistry. Finally the author exemplifies the useful applications of phytochemical studies to plant pathology, genetics, paleobotany, etc.

The subsequent six chapters each discuss the analysis of specific groups of compounds. Chapter 2 deals with all classes of phenolic compounds from simple phenolic acids to the more complex flavonoids. There is a new section devoted to tannins and their relationship to herbivory, also a brief section on alleopathic compounds.

Subsequent chapters cover the analysis of terpenoids, including essential oils and carotenoids, organic acids, sulphur compounds, polyacetylenes, sugars and their derivatives. Chapter 5 is devoted to nitrogenous compounds and includes amino acids, alkaloids, cyanogenic glycosides and the cytokinin growth hormones. Finally Chapter 7 discusses procedures, such as electrophoresis, for the study of macromolecules including nucleic acids, proteins, enzymes, and complex polysaccharides. Recommended TLC procedures for all major classes of compounds commonly found in plants are summarised in a convenient appendix.

Professor Harborne is an undoubted authority in the area of phytochemistry and we are fortunate to be able to share his knowledge and experience in this text. It is an eminently readable, practical book designed for the laboratory bench. It even has brief protocols for interesting undergraduate laboratory experiments. I heartily recommend "Phytochemical Methods" to anyone interested in the chemical constituents of plants.

J. R. L. Walker

(Dr J. R. L. Walker is Reader in Plant Biochemistry, Botany Department, University of Canterbury.)

UNIVERSITY NEWS
contd
from p.132

Otago (contd)

From the Department of Chemistry, **Professor Arthur Campbell** will be in France and Britain for three weeks in September. He is a member of the Bureau of IUPAC, and will be N.Z. delegate to the IUPAC Council meeting in Lyon. While away, he will also represent the President of the NZIC at a meeting of Chemical Society Presidents, attend a meeting of the Commission for Microchemical Techniques and Trace Analysis, and attend the 10th International Mass Spectrometry Conference in Swansea.

Professor B. H. Robinson gave a lecture to the Royal Society, Otago Branch, in July on "A Petrochemical Industry for Otago and Southland". **Assoc. Professor J. Simpson** will present a paper on electron-transfer catalysed reactions at the IUPAC Conference in Manchester in September. At this time also, **Dr Keith Hunter** will attend a conference on "The Role of Sea-air Exchange in Geochemical Cycling" at the NATO Advanced Study Institute in Bombannes, France. Results obtained during the 1983 Sea-air Exchange (SEAREX) Experiment in New Zealand will be discussed. He also plans to visit the Centre des Faibles Radioactivites at Crif-sur-Yvette, and the University of East Anglia. Finally, **Dr John Spencer,** who obtained his B.Sc. and Ph.D. degrees at Otago, and is now at the University of Bristol in England, will be taking up the Chair of Inorganic Chemistry at the University of Salford in October this year.

GOVT DEPTS etc

From Page 133

FOREST RESEARCH INSTITUTE

Dr Bernard S. W. Dawson has joined the staff as analytical chemist. He completed his Ph.D. at Canterbury University in 1982 on aspects of soil analytical chemistry before working in Canada and Australia on the application of Raman spectroscopy to soil extracts. His current responsibility is for the operation of the XRF instrument, analysis of wood preservatives, etc.

Dr J. Ralph is to visit the USA, Canada, and Germany. He will be participating at the Int. Symposium on Wood and Pulping Chemistry as well as giving papers on the application of multinuclear NMR and visiting Brucker for additional training. This follows the successful commissioning of the AC-200 FT NMR in early July which is now being used round the clock on standard samples. Other nuclei tried include Si-29, Sn-119, and P-31. Resolution and line shapes are outstanding and researchers are coming to grips with multiple quantum and 2-D experiments.

COAL RESEARCH ASSOCIATION OF NEW ZEALAND

The Coal Research Association are hosting an International Coal Science Conference in Wellington from 15-17 October. This conference is a combined meeting with the Combustion Institute (Australia and New Zealand Section) and the Clean Air Society of Australia and New Zealand. Approximately 250 delegates are expected and more than 100 papers are scheduled.

The laboratory has recently installed a Digilab FTS 50 Fourier Transform Infra Red Spectrometer. This instrument will be used to study the effect of coal oxidation on its fluidity.

Dr T. W. Matheson has been appointed to CRA. Dr Matheson graduated from Otago University, and has post graduate experience at the University of Cambridge. He has been employed in Australia for the past 10 years working on catalysis and oil shales.

Mr Peter Toynbee recently attended the conference of the Australian Institute of Energy in Melbourne.

Dr A. H. Clemens will be attending the International Coal Science Conference in Sydney during October.

New X-Ray Powder Diffractometer installed at Chemistry Division, DSIR

A new Philips X-ray powder diffractometer which has just been commissioned for the Solid State Chemistry Section is the only one of its kind in the country, and one of only two or three in Australasia. The machine uses a powerful microcomputer to control the goniometer, and collect and process the diffraction data. Identification of unknown solid materials is done automatically by software which searches and compares reference files of more than 40,000 diffraction patterns stored in the memory. This procedure, which previously was carried out manually, is used in the identification of a wide range of materials, including suspected drugs, forensic samples, solid contaminants in food, mineral samples, corrosion products, etc. The new equipment is also programmed to carry out quantitative analyses of solid materials. Its major research uses will be in the chemistry of high-technology ceramics, which will exploit its sophisticated computer programmes to extract structural crystallographic information from the powder diffraction data.

NOTICE

Oil & Fats Group

A two-day seminar on **Utilising New Zealand Raw Materials** will be held on 18, 19 November, 1985, at the Sharella Motor Inn, Wellington. Topics covered will include World Economic Factors, Orange Roughy Oil, Tallow Methyl Esters, Yeast Oil, and Evening Primrose Oil.

For further information contact either:

Dr S. Hannan, Dept of Medicine, Auckland Hospital, Private Bag, Auckland, ph 797-440 or

Dr L. Eyres, Abels Ltd, Private Bag, Newmarket, Auckland, ph 548-145.

WHAT IS THE IATROSCAN?

A combination of thin layer chromatography and quantitation by flame ionisation detector and optional flame thermionic detector.

WHAT WILL THE IATROSCAN DO FOR ME?

Quantitative analysis of fats, oils, greases, emulsions, surfactants, lubricants, anti-oxidants, polymers, fuel oils, biologicals.

It can be used for screening, fingerprinting, characterising, in Q.A., making M.W. determinations or simply as a research tool.

WHY USE THE IATROSCAN?

Samples need not be GC volatile, UV absorbing, fluorescent or derivatised. Iatroscan methods are, however, compatible with GC, HPLC and standard TLC methods.

WHAT OTHER BENEFITS DO I GET?

Small Sample Size — 1 ul, loading from 2-30 ug
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10 Samples quantitated in 10 minutes
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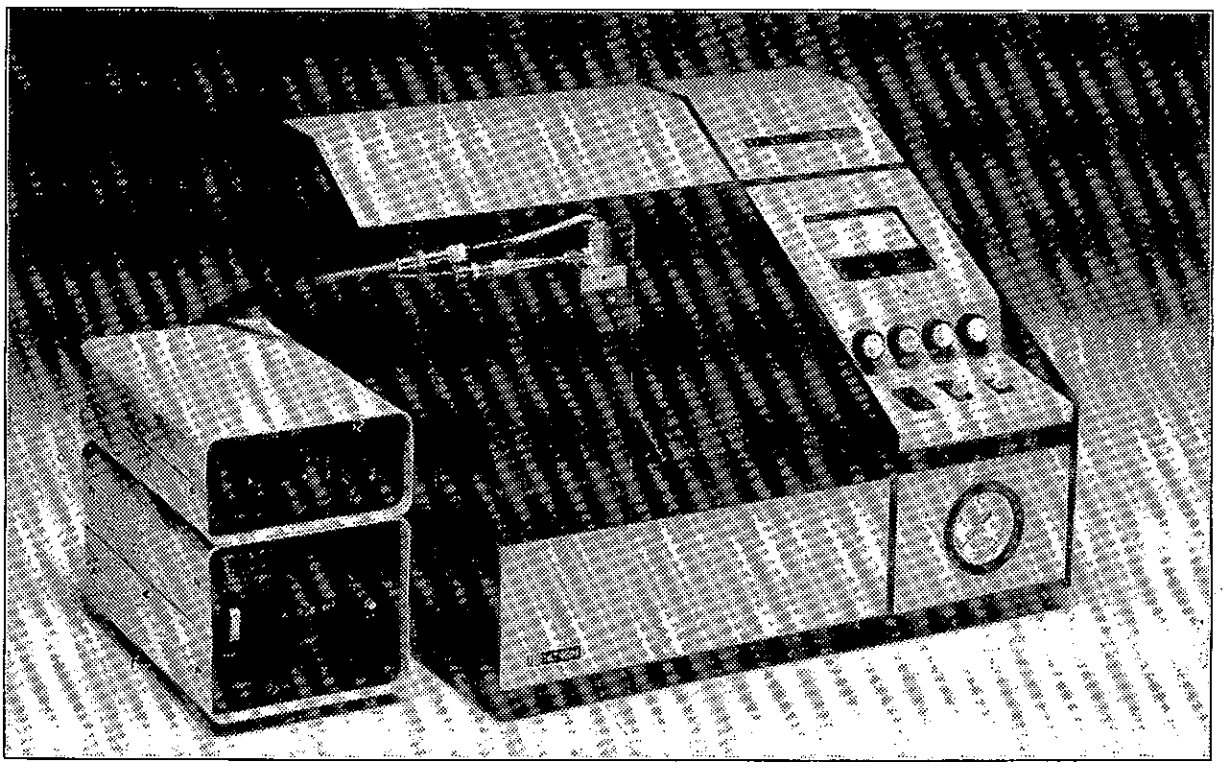
No edge effects from flat plates
Minimal solvent usage — 0.5 mm^3 Rod Volume
Universal response to all organics with F.I.D.
Specific response to nitrogen and halogens with F.T.I.D.
Sensitivity of 10^{-7}gm with F.I.D.
Sensitivity of 10^{-9}gm for N-compounds with F.T.I.D.
Large base of published methods

IATROSCAN SHOWN WITH OPTIONAL DET 5000 FLAME THERMIONIC DETECTOR



Send today for more information and a summary of major references to the use of the Iatroscan

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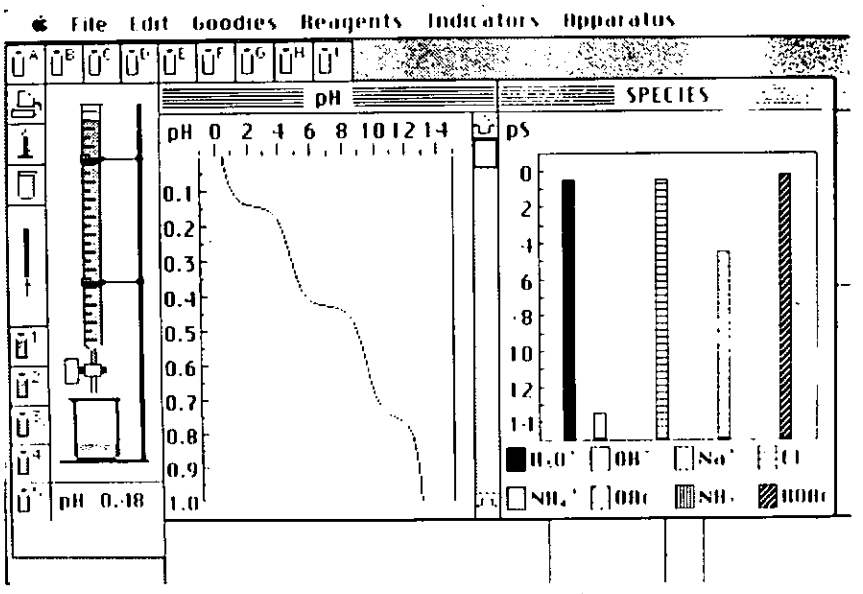
PRODUCT NEWS



An example of laboratory glassware aids for experimentation on screen.

Experiments By Computer

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

MacChemistry is the exclusive product of Auckland-based software developers Southern Software Ltd., whose software systems already are widely used in the United States. Designed for use with the Macintosh microcomputer, MacChemistry provides the professional realism of chemical experimentation using only a desk top monitor. Unlike physical lab experiments, MacChemistry allows the user to stop, advance or go back one or more stages of an experiment, at the simple press of a button.

The system features a rich resource of carefully delineated illustrations — from crystal lattices to quick-fit glassware which at all times results in neat and accurate graphic reports. The Chemlab is a specialised lab set which provides acids and bases for multiple and complex 'on-line' titration experiments. An electronic storage tray, 'Nest', is included to provide the user with the facility to create a personalised annotated indexing system. Intrinsic to the MacChemistry system is an advanced Chemfont feature with an advanced collation of chemical signs and symbols.

MacChemistry represents an 'open-ended' laboratory system which considerably advances the pace with which experiments can be carried out with the benefits of quick reference to previous experiments, recall of experiments by stages, accurate graphic reporting and valuable build up of graduated information which can be stored, without tedious report writing.

For further information contact Southern Software Ltd, 58 Symonds Street, P.O. Box 8683, Auckland, phone 778-525 or circle on the reader reply card.

Alltech Set To Launch Shuttle Payload

ALLTECH ASSOCIATES/APPLIED SCIENCE LABS, of Chicago, Illinois, U.S.A., has announced that final approval has been given by N.A.S.A. for the placement of a 30 kg automated manufacturing payload onboard the space shuttle. The payload is scheduled for Mission Number STS-61-C, take-off date 20 December 1985.

The payload named "PROJECT JOSHUA", was designed and built over a nearly 3 year period to rigorous N.A.S.A. standards, and is part of N.A.S.A.'s 'Get Away Special' (GAS) programme. The GAS programme is a low cost 'space available' method of placing experiments from commercial and educational sources onboard the space shuttle for research purposes.

"PROJECT JOSHUA" will manufacture a High Performance Liquid Chromatography (HPLC) Column in the micro-gravity environment of Earth orbit. Project designers, Brent R. Erwin and James M. Anderson explained that when the columns are produced on Earth, gravity affects the dispersion of the particles of the packing material that the columns are filled with. The particles, which are approximately 5u (0.00020") in size, do not settle in a uniform way; the end result being that the columns are not as efficient or accurate as theoretically possible. Erwin and Anderson believe that the manufacture of the columns in the micro-gravity environment encountered in Earth orbit will allow the more uniform particle size dispersion of the packing material, and produce a more efficient analytical column than is possible on Earth.

"PROJECT JOSHUA" is not the first time that ALLTECH/APPLIED SCIENCE has been involved with the Space Programme. One of the Company's products was used during the Apollo Lunar Missions to collect and store rock samples from the Moon's surface.

Richard Dolan, President of ALLTECH, stated, "PROJECT JOSHUA is just a small part of our ongoing commitment to innovative uses of technology. The project was designed to provide data which will further our understanding and knowledge in the field of Chromatography and will also provide valuable information on manufacturing in outer space."

ENVIRONMENTALLY SAFE AND EFFICIENT MICRO PROCESSOR CONTROLLED DISTILLATION

The BR Solvent Recycling System is also known as a Spinning Band Distillation System. Applications include cost efficient purification of commercial grade solvents to HPLC grade, production of organic synthesis products and the high temperature fractionation of petroleum products.

In essence the BR Solvent System 8300/8400 consists of an Inert Teflon contamination free multiple spinning band or an interchangeable monel mesh band for applications over 180°C housed in an adiabatic glass, silvered and evaluated double walled column. The band is rotated inside this glass column driven via a spark free DC motor. The fitted band rotates so that it continually pumps down the returning condensate. This forms a thin layer of liquid on the walls of the column and creates a substantially increased surface area for vapour-to-liquid contact inside the column, resulting in efficient distillation.

The microprocessor control permits simple, unattended operation, total automation and continuous throughput operation. Step-by-step instructions are supplied and all parameters are read on large LED display.

The BR 8300/8400 can also be operated under vacuum.

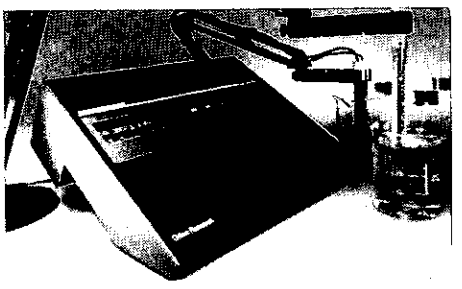
Important safety features incorporated in the BR Stills include over-temperature shutdown, water-pressure sensor and shutdown, grounded electric heating mantle, vent attachment and Alucoband Safety Cabinet.

The BR 8300 has a 5L pot capacity and the 8400 has a 12 litre capacity.

For further details contact John Morris Scientific Ltd or circle on the reader reply card.

New pH/ISE Meters From Orion

Now you can combine pH and ISE testing on the same meter without disconnecting electrodes. The new EA920 and EA940 meters from Orion calibrate and recall any two electrodes independently. You can also switch back and forth between the electrodes without disturbing or losing the calibration of either. Meters that work like two for the price of one.



The meters are easy to operate. The model EA940 guides you through calibration and measurement with prompting that is easy to understand. The model EA920 automatically advances, making calibration a simple, two-step operation. Both meters link up to a recorder and printer or a computer via an RS232C output.

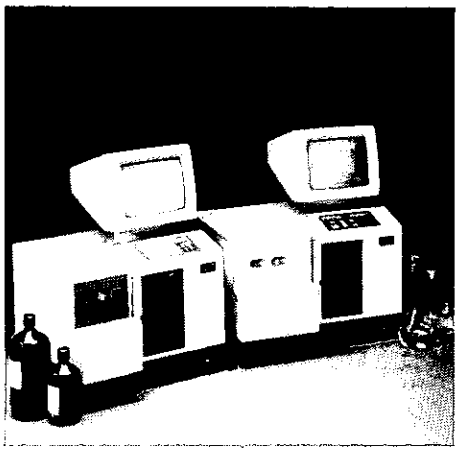
Dual electrode inputs, expandability, ease of use, and recorded text data are four of the many features of the new ORION meters. They identify the new, top-of-the-line Orion pH/ISE meters as a unique, expandable design concept making sure that today's meters won't be obsolete tomorrow.

For further information please contact Watson Victor Ltd, or circle on the reader reply card.

PRODUCT NEWS

Gas Chromatographs — New 8000 Series From Perkin-Elmer

Perkin-Elmer have announced two new instruments in their 8000 Series of gas chromatographs.



Based on the very successful Model 8300, the Models 8400 and 8500 offer the same unique combination of unparalleled chromatographic performance and advanced specifications. Inheriting the proven reliability of the Model 8300, the new instruments are also compact and exceptionally easy to use.

The 8000 Series instruments are controlled through a simple keyboard and high resolution screen, and offer the unique combination of real time screen graphics display of the chromatogram, data handling and reintegration. Four ramp temperature programming facilities are standard, while up to ten complete analytical methods can be stored and recalled when required.

Automated Bleed Compensation (ABC) for temperature programmed operation is a standard feature of the 8000 Series. This unique single column/detector system provides correction for column bleed after a single calibration run. The temperature program can even be modified without recalibration.

At the end of an analysis, the data handling system takes over and displays the results in the form of a fully edited report. The reintegration facility saves valuable time in method development, and linking the system to the GP-100 printer/plotter enables chromatograms to be re-plotted at any attenuation, complete with overlaid peak names and all required integration data.

The Model 8400 is a single detector type instrument. As the direct successor to the Model 8300 it is available as 8410 — essentially for packed column operation, and 8420 for dedicated capillary column operation.

The Model 8500 has all the versatility required for a research environment with outstanding performance for single or dual detector operation. Some outstanding features include: an extensive range of detector combinations from the six types available; packed and capillary injectors installed simultaneously; the ability to switch between two detector signals, with ABC applied to each signal independently for analytical flexibility; a wide range of pneumatics modules for optimum control of carrier and detector gases.

The 8000 Series offers automation for multiple sampling applications and there is a unique and comprehensive range of sampling systems and accessories to cover all chromatographic requirements.

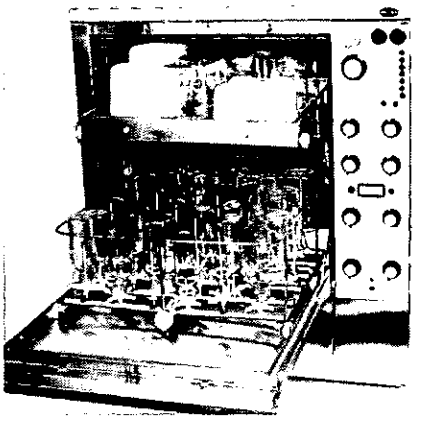
Further information is available from John Morris Scientific, or circle on the reader reply card.

GLASSWARE WASHING FROM LANCER

Lancer offer a range of highly sophisticated washing machines for the use in both the laboratory and industry.

The laboratory glassware washing unit, model LV LABO 910, for example has been specially designed and created to tackle specific problems. It is particularly suited to research laboratories, hospitals, clinics and maternity hospitals. A large number of baskets, all made of stainless steel allows a perfect and careful wash of flasks, balloon flasks, pipettes, test tubes, surgical instruments, feeding bottles etc.

The easy-to use Multi-Programme of the LV LAB 910 provides the user with many options of how to wash is glass-ware and instruments. According to the condition of the material to be washed a choice can be made between four different basic programmes. This enables the machines to wash the most fragile glassware of any shape as gently as needed. Thus, a rinse with running water can be followed by an acid rinse then by cold or hot distilled or demineralized water. Temperature and duration of each step is selected individually and the operation of a cycle can be altered to any point. A drying of up to 60 minutes completes a cycle.



Finally, various accessories as well as baskets of different sizes and forms are available to suit the various glassware and instruments in the most convenient way.

The advance technology and its great versatility makes the LV LABO 910 an indispensable machine for every laboratory which has concern for efficiency hygiene and economy.

For further information, please contact Watson Victor Ltd, P.O. Box 1180, Welling or circle — on the reader reply card.

PRODUCT NEWS

DIGITAL pH METERS

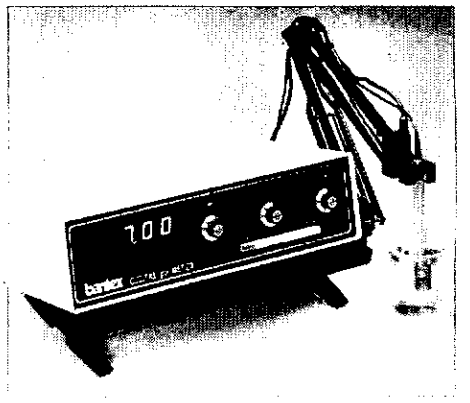
Of particular interest to the chemical and food industries as well as to farmers and horticulturists are two new digital pH meter kits, one a bench model, the other a portable version, both now being marketed by Medic DDS Ltd.

Manufactured by Bantex Corporation of the USA, both kits come complete with two buffer solutions, electrode and electrode clamp, carry a 12 month warranty and have a range of 0-14.00pH ± 0.01pH.

The bench Model 300A, costing $1260 complete, features an ATC (automatic temperature compensation) probe with both manual and automatic temperature compensation from 0-100°C, with the manual control calibrated in 0.1°C divisions.

The portable version, Model LCD-5, costs $650 complete and operates off either mains power or off one 9 volt internal battery which has a typical life of 300 hours continuous drain. The rugged carrying case containing the kit measures 270mm x 330mm x 96mm and weighs 2200g. Controls provide for slope adjustment and temperature compensation.

Further information is available from Medic DDS Ltd, or circle on the reader reply card.



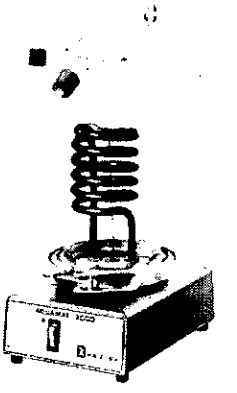
"Waterstills" Up To 4.5 Litre/Hour

The Janke & Kunkel Aquamat 2000 is a compact bench instrument for producing distilled water.

By traversing the clamp of the conventional snap closure, the glass body can be separated quickly from the heating unit. To prevent fine water drops from being carried over by the fast evaporation speed, the vapour feedpipe has flow baffle plates. This makes the specially low and practical design possible. The automatic level control is fixed to the still body and replaces the evaporated water by pre-heated cooling water. For descaling the instrument, a special intake is provided with a funnel for adding the cleaning fluid.

The stainless steel tubular heating element in the heating unit supports on its top coil a capillary tube temperature sensor. Should anything go wrong; e.g. if no cooling water flows in or if there is not sufficient water, the temperature sensor automatically switches off the energy supply at approximately 180°C. A small red pilot lamp indicates whether the heating element receives energy.

For further details contact John Morris Scientific Ltd, or circle on the reader reply card.



INTEGRATORS

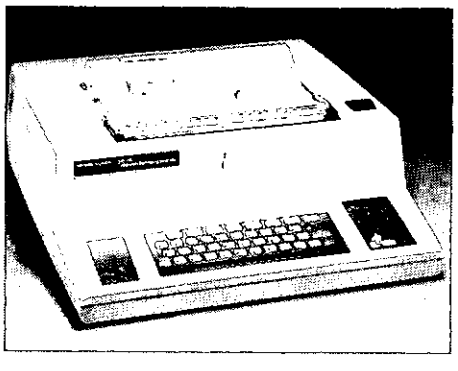
Integrators — Market Survey

So you're thinking of buying an integrator? You've read Peter Robinson's article in this issue of Chem. in NZ, and now you're wondering what's available. The short answer to that question is, plenty. The major limitation to your choice is probably going to be the size of your budget. For $5000 you can still buy some of the basic models, and even expect enough change to be able to afford a roll or two of chart paper. Many of the models on offer are in the range $5000-10,000, and here the market seems very competitive. Many of the systems are expandable however, and you could easily take your final cost up to $15,000 or more. At this level you can also look at the few top-of-the-line options. Why stop there? Throw in a laboratory data system or laboratory management and control unit and the sky's the limit! But hang on, it is integrators we're talking about here. Let's get back to a few basics.

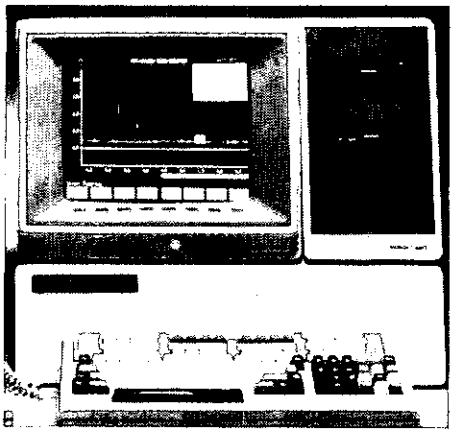
Nowadays most integration systems, no matter what their size and cost, seem to offer a fairly standardised menu of operational variables. Presentation factors such as chart speed and attenuation are widely variable, as are the peak processing parameters. Most units have the ability to deal with a range of difficult integration problems, such as multiple merged peaks, fluctuating baselines, and "tangent skimming" off the tails of large peaks. Quantitation methods also come from a fairly fixed list of area %, ISTD and ESTD, with or without correction factors; though watch out for those units that can also handle an exponential output, such as that from an FPD. Most systems also have the ability to interact with other laboratory hardware, including controlling, or being controlled by, the instrument producing the signal that is to be integrated (though usually only if both units come from the same manufacturer).

In the summaries below we have attempted to highlight those **additional** features which are not found in all systems. From these you can begin to make your final choice — what is it that you particularly want in an integrator?

Perkin-Elmer, Model LCI-100

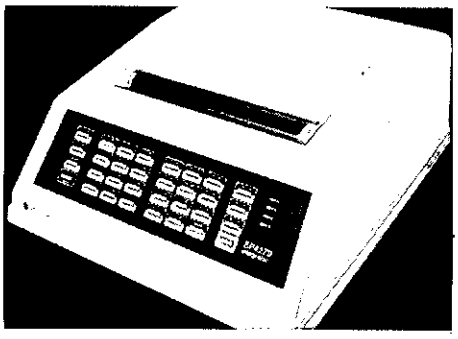


NZ agents John Morris Scientific, or circle on the reader reply card. Has the ability to re-plot and/or re-integrate without re-running the sample. Method set-up is by an interactive LCD display (less wasteful of chart paper!). Functions such as integration, plotting, peak labelling etc can be disabled if desired. Retention times on adjacent peaks are offset to avoid overlap. The memory capacity of the system is large at 256k bytes in ROM and 128k bytes in RAM.



Expansion of the system is possible by means of the **Chromatographics 3** Professional Computer, this system can take up to four channels of data input simultaneously, has over 1.5 megabytes of RAM, and offers extensive capabilities for post-run data manipulation. If that's not enough for you, ask about the **C/LAS** system for chromatographic laboratory automation, or the **LIMS/2000** information management system for data collection, reduction, and reporting, and information management.

Spectra-Physics 4200 Series



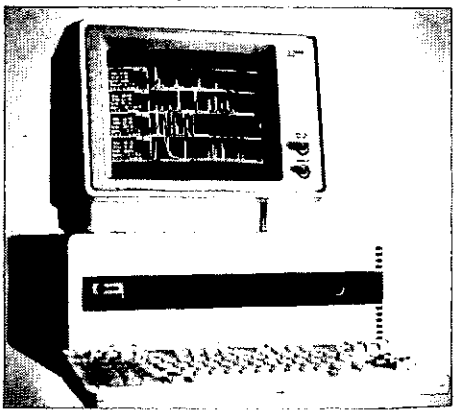
NZ agents Watson Victor Ltd, or circle on the reader reply card. Spectra-Physics offer a choice of three models in this series, the 4200,

ity. All have the option of single or dual channel inputs, with memory capacities of 48-56k bytes ROM and 13.5-16k bytes RAM per channel. BASIC programmability is available on the 4270, and 4290, in order of decreasing complexcapacity for re-integration or re-plotting of each analysis. On the model 4200 method set-up is assisted by a 16-segment alphanumeric LED display which acts as a keyboard echo, and allows for disabling of the chart print-out if desired.

Both the 4200 and 4270 integrators can be incorporated into the Spectra-Physics LABNET laboratory management system, which includes a multi-channel data system built around the IBM personal computer. With a 256k byte RAM, 10-megabyte hard disk, and 360k byte floppy disk, data storage capacity is enormous, and the system also has the capability to function as a complete laboratory automation and management tool.

Varian Systems

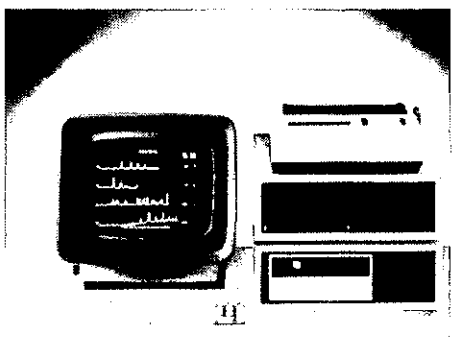
NZ agent Wilton Instruments, or circle on the reader reply card. Two dedicated integrators are available from Varian; the 4270 and 4290. These instruments are essentially the same as those offered by Spectra-Physics and detailed previously.



Also available from Varian are the 600 series data systems; the 601 for operation with one or two detectors on a single instrument, and the 604 for simultaneous monitoring and control of up to four instruments. Hardware on the systems include 0.5 megabytes of RAM main memory and an 800k byte floppy disk for storage of user generated information. Software design includes a menu-driven input system for methods set-up, extensive data processing, including automatic baseline subtraction and chromatogram re-plotting, and facilities for bidirectional communications with other computer systems.

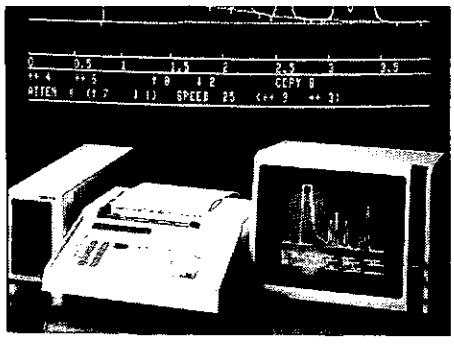
Pye Unicam Systems

NZ agents Philips New Zealand Ltd, or circle on the reader reply card. As with Varian, the Spectra-Physics 4270 and 4290 models are also available from Pye as the PU4810 and 4811 respectively. Considerably further up the scale in terms of both price and capability is the PU4850 Video Chromatography Control Centre which offers full microprocessor control of up to four channels of input data, with simultaneous processing and display if required. The system is at its most powerful when operated in combination with the Pye chromatographs, for which it acts as a central control and monitor. Program and data storage is via 0.8 megabyte dual floppy disks, and the unit is also supplied with 160k bytes of RAM, expandable with 32k or 128k memory boards to a maximum of 640k bytes. The Pye software is of course custom designed for the chromatographer's needs.



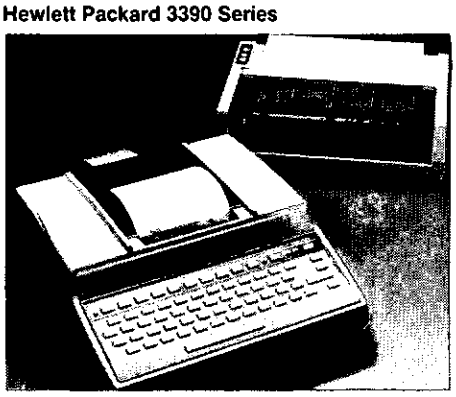
INTEGRATORS

Shimadzu C-R3A



NZ agents Sci-Med (N.Z.) Ltd, or circle on the reader reply card. This model from Shimadzu offers a large 176k bytes of chromatographic memory as standard, expandable with an optional disk drive to allow storage of up to 100 hours of chromatographic data on each high density disk. Storage is also available in the integrator for up to 10 analysis methods and transfer between method stores is also possible. Baseline storage is also available, and this can be automatically subtracted from subsequent runs. The unit can be programmed in BASIC for data manipulation, and also has the facility for re-integrating data under modified parameters. With the optional disk storage this operation can be carried out on any stored chromatogram. An optional CRT is also available which allows viewing of results on screen before taking a hard copy. The integrator is able to communicate with other Shimadzu instruments, including exchanging data with other C-R3A units, for the production of combination reports. Software is also available for the use of one or more C-R3As with an IBM personal computer.

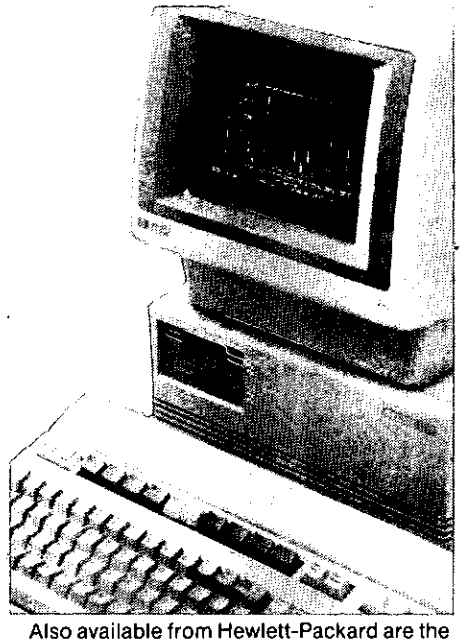
Hewlett Packard 3390 Series



NZ agent Northrop Instruments & Systems Ltd, or circle on the reader reply card. Hewlett Packard offer three instruments in this series. The 3390A was released in 1980 and heralded as the first truly affordable, easy-to-use, reporting integrator. Over 25,000 of this model have been sold worldwide and it is still very popular. The features are those now considered as standard in most integrators: built in printer/plotter, the usual range of chromatographic calculations, storage of nine methods, multiple reference peaks, etc.

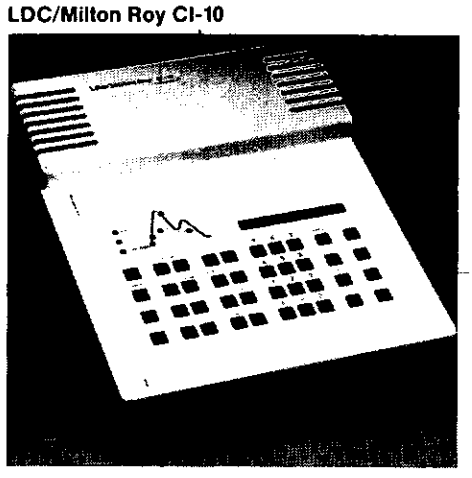
The model 3392A is similar to the 3390A but also includes digital interfaces for communication with a computer and communication and control of instruments such as the HP 5890 GC. A specific package is available for interfacing with the HP 150 touchscreen computer, for enhanced data processing and storage, and this system also includes access to a sophisticated laboratory management system.

The most recent addition to the series is the 3393A which has all the capabilities of the previous models, but in addition offers BASIC programming, alphanumeric keyboard, re-integration capabilities, and multi-level calibration at up to 63 levels. Interfacing capabilities include the addition of disc drive, external printers, and CRT.



Also available from Hewlett-Packard are the 3350A Lab. Automation Systems, which are capable of managing the flow of data from up to 85 chromatographs in multi-user, multi-testing configurations. Chromatographs can be interfaced via A/D convertors or via "intelligent front-ends" such as the HP 3392 or 3393 integrators.

LDC/Milton Roy CI-10



NZ agents Advanced Electronics, or circle on the reader reply card. The CI-10 computing integrator is a low cost unit which nevertheless incorporates a number of advanced features, including a sampling rate programmable to 10 milliseconds, and the ability to reprocess complete chromatograms with a single keystroke. Operation and programming is conducted through a 40 key dedicated keyboard and 16 character alphanumeric display — with scroll function — allowing the user to view and review operating parameters with ease. The unit has 32k RAM which provides for storage of up to 850 peaks, as well as nine methods and one sequence file. A separate printer/plotter is required and a number of options are available to choose from.

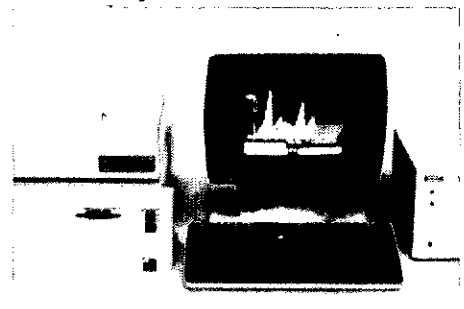
Software is now included as standard in the CI-10 for interfacing to IEEE devices. To utilise this LDC/Milton Roy have developed programs to allow the CI-10 to interface with the Apple, IBM PC and BBC/Acorn personal computers. Up to 15 CI-10s can be networked and controlled from the host computer. All files in the internal memory of the integrators can be uploaded to the computer for further processing or storage. Downloading for re-integration can also be carried out, and a powerful feature in the ability to divert information from the computer through the CI-10 and out to the printer/plotter in any desired format.

Waters 740 Data Module

NZ agents Alphatech Systems, or circle on the reader reply card. The Waters 740 offers a variety of routines for peak by peak reprocessing of the last stored chromatogram. Unwanted peaks can be excluded, either individually, or by the normal use of values for minimum peak height, width and area. For peaks which are broad or poorly defined a unique "peak doubling" routine allows accurate quantitation. There are routines for leading, tailing, shoulder, and drift peaks; tangent skimming is standard, and in addition positive and negative peaks can be incorporated into the same chromatogram. The options for replotting are equally as varied and include being able to position the chromatogram anywhere on the paper, and plotting of each chromatogram twice: the first according to required parameters, the second automatically compressed to 10 cm in length. The capacity of the system is large enough to handle up to 800 integrated peaks, with a peak recognition speed of 6 peaks/sec (maximum). For further details see the cover story in this issue.

Also available from Alphatech is the **Waters 840** Data and Chromatography Control System, which combines the Digital Professional 350 bench-top computer, and Waters Expert Chromatography Software for data management and systems control of chromatography equipment. Simultaneous data acquisition is possible from up to four detector channels at a time, and extensive data reprocessing and post-run manipulations can be carried out using the menu-driven disk-based Waters software.

Other Data Systems



A number of large computer-based chromatography data systems have been listed above under the various suppliers. Similar systems are also available from **Chrompack** (Lab Supply Pierce, circle on the reader reply card, **Trivector** (Sci-Med, circle on the reader reply card), and **Nelson Analytical** (Northrup, circle on the reader reply card). All offer multi-channel capability, extensive data storage, and purpose built user software. Space does not permit us to detail these further.

INTEGRATORS

COMPUTER BASED INTEGRATORS

As noted in Peter Robinson's article, the use of computers for integration is a recent development which may offer a number of advantages to many users. Of prime consideration perhaps is the fact that the computer is available for other tasks when not operating as an integrator. The cost of available systems is also highly competitive with many of the integrators detailed previously. A number of systems are available locally as described below.

Chromcard II

NZ agents Alphatech Systems, or circle on the reader reply card. Designed for the Apple II computer this system consists of two printed circuit boards for the computer and a program supplied on disk in DOS 3.3 format.

The system provides for dual channel integration with real time CRT display of either channel. Collected data is processed at the end of a run, and re-integration/re-plotting is available from disk storage. The capacity of the system has a maximum of 250 detected peaks.

Alltech — RSL Chromlab

NZ agents Alltech Associates, or circle on the reader reply card. The Chromlab data acquisition system is a low-cost GC/LC integration package that can be used with the Apple IIe computers. It consists of an A/D converter for data acquisition and the necessary software for data processing. Peak processing options are those found in most integrator systems, along with extensive reprocessing, and post-run data manipulation. The current model Chromlab II is about to be upgraded to Chromlab III, which is expected to offer increased flexibility in time — programming, improved baseline correction, increased data — and peak-storage capabilities and increased user-friendliness.

Philips P2000C

A completely home-grown product, and exciting new development is the recently released range of analytical software developed for the Philips P2000C portable computer. Packages are now available for AA, infrared, u.v.-visible, and chromatography, so not only are you getting an integrating computer but it can take care of all your other instruments as well. The system runs general 8-bit CP/M and 16-bit MS-DOS software packages, has dual disc drives, very high resolution graphics and can be expanded to 576 KB RAM.

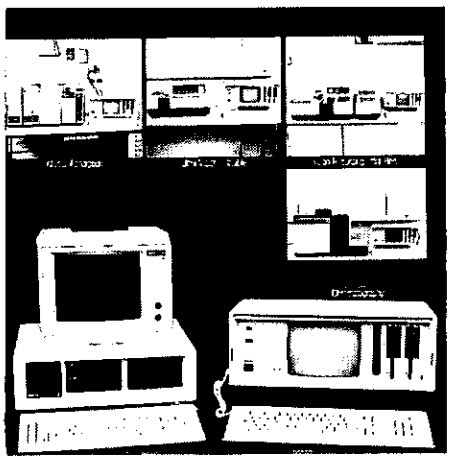
The Chromatography package specifically includes the following facilities:

- Real time data collection and display
- Variable sampling rates
- Chromatogram storage and retrieval
- Full post-run recalculation flexibility
- Internal standardisation
- External standardisation
- Full graphics and plotting expansion
- Dual Channel option (available late 1985)

The system is supplied complete with Analogue to Digital converter and high quality thermal plotting facilities at a highly competitive price; and, also includes word processing, spreadsheet, datamanager, statistical graphics, mainframe transmission and Basic programming software. Future software updates are available free of charge.

Currently in excess of 30 P2000 Data Acquisition and Control Centre units have been supplied with analytical equipment in New Zealand.

For further information contact Philips New Zealand Ltd, or circle on the reader reply card.



SEMINAR

HPLC Analysis and purification of proteins. Amino acid analysis

A one day seminar will be held at Auckland on Friday, 22nd of November to introduce the latest developments from Waters Associates in the analysis and purification of proteins including scale-up from analytical.

Recent improvements in high-sensitivity amino-acid analysis will be presented. Practical demonstrations will be included.

A range of new instruments, columns and packings will be introduced with applications outside protein/amino acid analysis.

For more information, contact Alphatech Systems, Auckland. Telephone 770-392.

COVER STORY

Waters Introduces New, Versatile Chromatography Printer/Integrator

A new integrator/printer/plotter for liquid chromatography, gas chromatography and ion chromatography is being introduced by Waters Chromatography Division of Millipore Corporation at the 1985 Pittsburgh Conference in New Orleans.

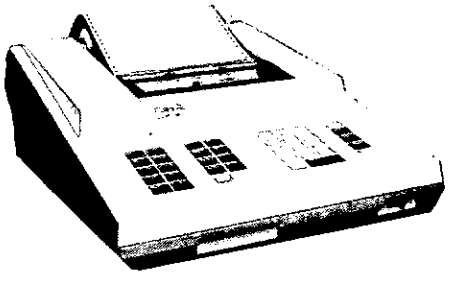
The Waters 740 Data Module provides LC, GC and ion chromatography plotting with integration of peak height and areas, method storage, multi-point calibration, peak labelling, and reprocessing of a chromatogram.

The single channel integrator also features:

— dot matrix thermal printer/plotter,
— attenuation values from 1X to 1024X plus log output to keep large peaks on scale without losing smaller peaks,
— calculation and averaging of chromatographic data without having to rerun the analysis,
— sensitivity compensation function that monitors the baseline over changes in buffer concentration or temperature, and
— memory protection against power failures.

To further increase the versatility of this integrator, various options are available such as an RS-232 interface to allow transfer of data to an external computer for full duplex asynchronous communication.

Contact Conway Bishop, Alphatech Systems, P.O. Box 37-583, Parnell, Auckland. Telephone (09) 770-392.

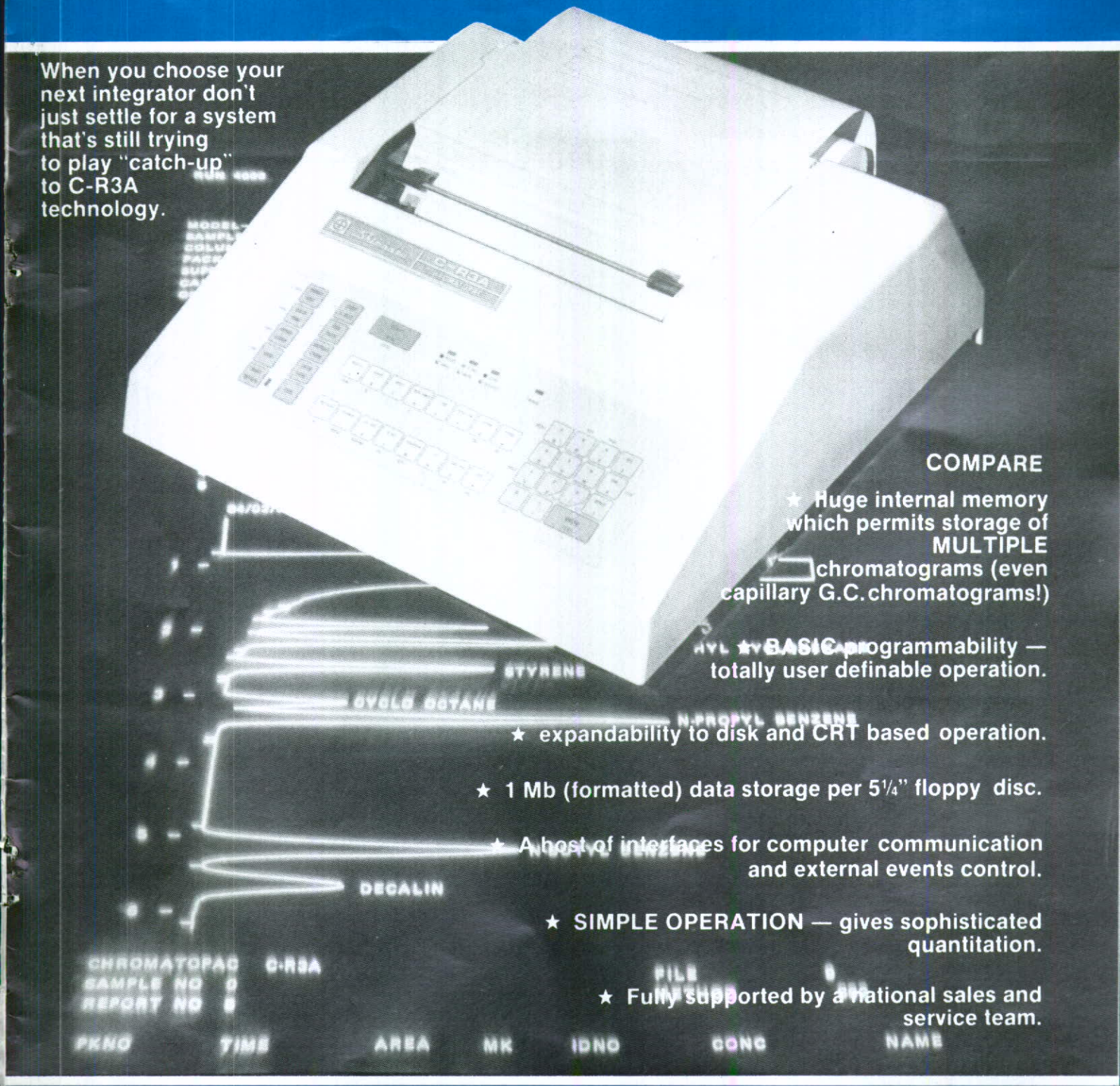


SHIMADZU C-R3A

CHROMATOGRAPHY DATA PROCESSOR

ONE YEAR ON AND

STILL TOP OF THE CLASS!



COMPARE

★ Huge internal memory which permits storage of MULTIPLE chromatograms (even capillary G.C. chromatograms!)

★ BASIC programmability — totally user definable operation.

★ expandability to disk and CRT based operation.

★ 1 Mb (formatted) data storage per 5¼" floppy disc.

★ A host of interfaces for computer communication and external events control.

★ SIMPLE OPERATION — gives sophisticated quantitation.

★ Fully supported by a national sales and service team.

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CHRISTCHURCH	Ph: 831-146, Box 5221.
DUNEDIN	Ph: 775-531, Box 321.

PHILIPS ANALYTICAL GAS CHROMATOGRAPHY

The alternative

No doubt you have heard of the new PU 4900 Total Analytical Chromatograph from Philips Analytical. You may already be starting to appreciate its significance.

Nevertheless, it would be unrealistic to suppose that the PU 4900 will meet every requirement for high quality gas chromatography, perhaps because constraints in budgets or application sometimes dictate that data handling should be kept external.

For this reason, Philips Analytical has also developed the PU 4550, a high resolution GC separation station with microprocessor control, capable of outstanding capillary or conventional chromatography by itself or as part of a multi-station automatic system.

Indeed, the PU 4550 is so good that other companies would be proud to present it on a pinnacle. We, however, prefer simply to set it alongside the PU 4900 – as the logical alternative.

Philips New Zealand Ltd
PO Box 41-021 Auckland 3 Phone: 894-160
PO Box 2097 Wellington Phone: 735-735
PO Box 1488 Christchurch Phone 798-030

PU 4550 – High Resolution GC Separation

GC 12

PHILIPS **Scientific & Analytical Equipment**

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