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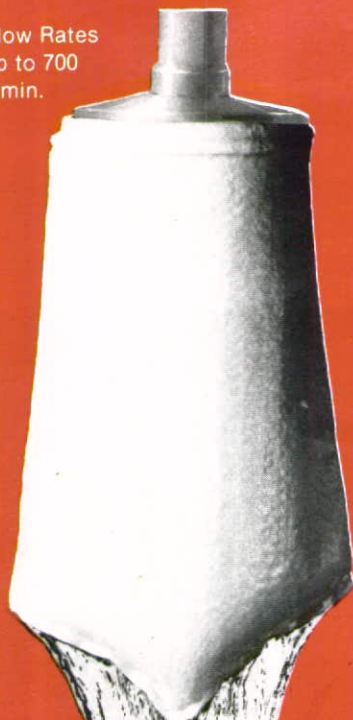
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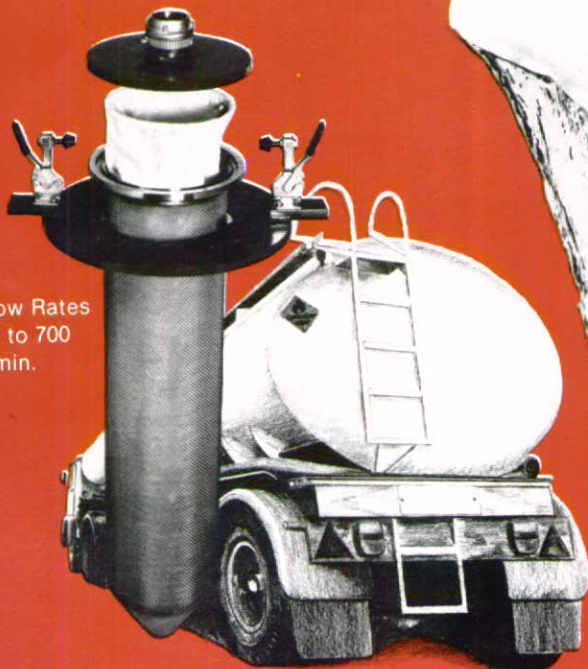


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The ditchwater syndrome

In sounding out various acquaintances on ways to make the journal more interesting, one of them suggested that I was behaving rather like Phanaeus vindex¹ on a steep slope (his wording was slightly different).

His reasoning was that a journal written by chemists, about chemists, for chemists could not avoid being dull because chemists were dull people. Quickly on the defensive, I proffered several names as contradictions to his argument. To the first and most obvious he merely laughed, thereby damaging my self-esteem. To each of the others the reply was "But he/she has got out of chemistry".

To a certain extent he was right, many of the more interesting chemists have abandoned what an academic purist would call proper chemistry and are happily enjoying themselves with the improper peripherals.

His argument possesses a certain elegant symmetry — since chemists were dull, an interesting person could not be a chemist — but even his faulty logic could not hide 64.7989 mg² of truth.

As a profession we have never been much of a smash with the public. The words chemical and biochemical can make even the Pentagon act squeamish (although the fine distinctions between the Russians dropping "chemicals" and the Americans dropping napalm continue to elude me).

Most of our work is fairly narrow in its audience appeal, the cocktail party line "Come and see my rearrangements of piperonyl butoxide" is unlikely to precipitate anyone into a paternity suit.

However, there are items of chemical information that are of general interest to anyone with the slightest acquaintance of the world outside his own test tube.

Take the general news item on the discovery of a new Pacific phosphate deposit (in the news pages) as an example. Not many of the journal's readers would be enthralled in a 10 page article on the subject, but as a short item of news, most chemists should find it of interest.

I cannot believe that your working lives are so dull or specialised that they contain no snippets of information that would be of interest to NZIC members.

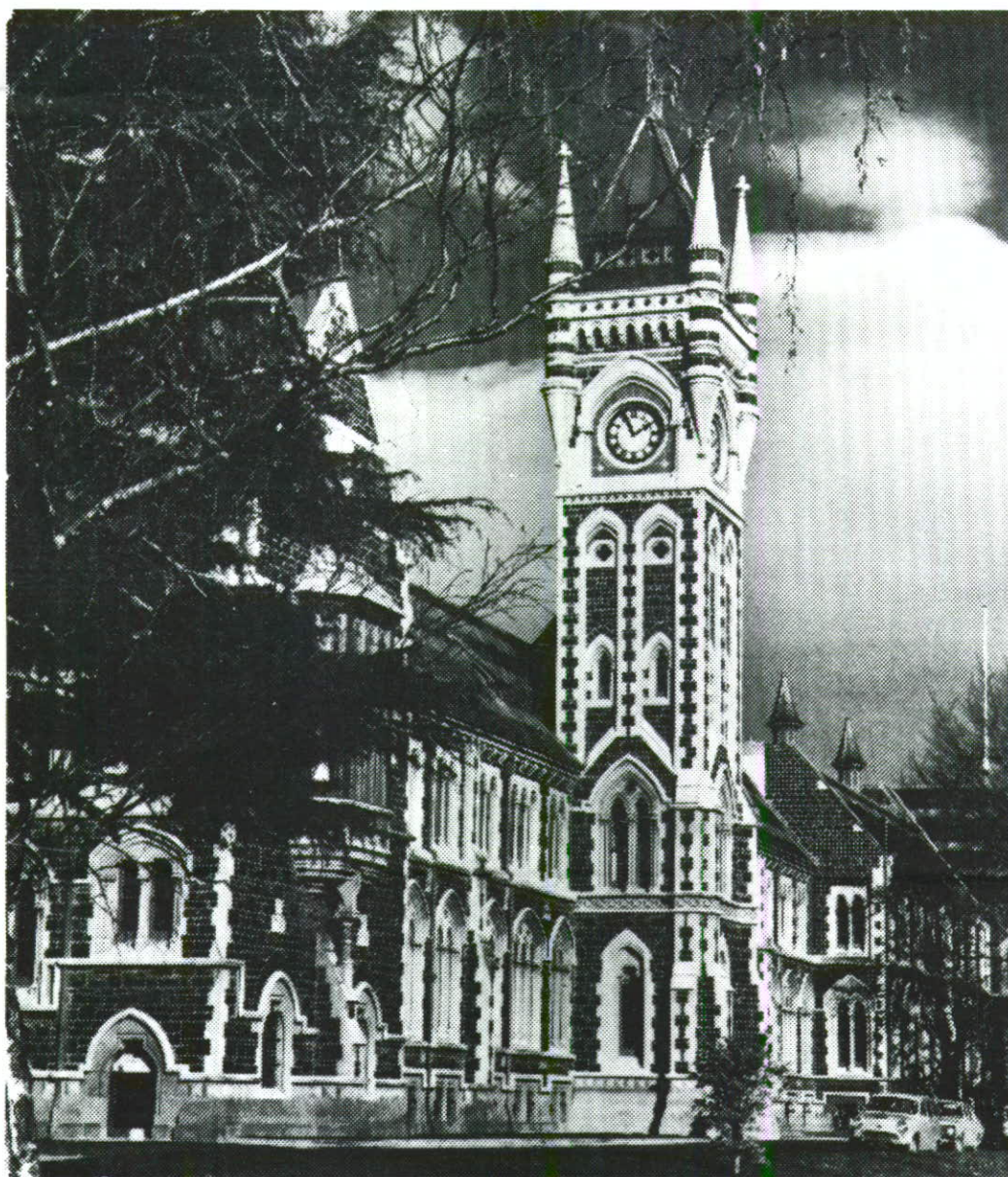
Why then do I have to read the NZ Woman's Weekly to find out what deionised apple juice is all about when I might expect some eager chemist to contribute a slightly more scientific treatment to Chemistry in New Zealand? Is this because chemists are so modest that they do not expect anyone to be interested in them, or are they just too lazy to write 200 words for the journal, or are we as a profession really just plain dull?

Tony Herd

1. Dung beetle.
2. Equals 1 grain.
3. Like most of my knowledge of organic chemicals, this also was derived from the fine print at the bottom of a spray can.

**NEW ZEALAND INSTITUTE OF CHEMISTRY
AND
NEW ZEALAND BIOCHEMICAL SOCIETY**

1982 CONFERENCE



DUNEDIN

Wednesday 25 August - Friday 27 August

SCIENTIFIC PROGRAMME OUTLINE

The Scientific Programme will commence at 9.00 a.m. on Wednesday 25 and conclude at 12.30 p.m. on Friday August 27. The main features of the programme are as follows:—

R. E. Corbett Symposium:—

This will take place on Wednesday August 25 to mark the retirement of Professor R. E. Corbett. The symposium will consist of a series of invited lectures presented by former associates of Professor Corbett on general and current research topics in chemistry. Participants are also invited to attend a luncheon gathering. (Those who wish to attend the luncheon should tick the appropriate box on the Registration form). A commemorative booklet to mark the event will also be produced.

Lignite Chemistry Symposium:—

A symposium on the chemistry and technology of lignite, with special reference to New Zealand lignite deposits, will be held on the mornings of August 26 and August 27. Guest lecturer for the lignite symposium is Mr. Douglas Rash, Senior Research Officer in charge of the coal liquifaction programme in the Chemistry Department, Monash University, Melbourne.

Other speakers include the Assistant Secretary for the Energy Ministry, Technical Director of L.F.T.B. and the Director of Coal Research Association. If there is sufficient interest a field trip to the three lignite mines in Southland will be held on Friday following the symposium. Probable cost: \$5.00. Delegates interested in this field trip should tick the appropriate box on the Registration form. Note that those participating in the field trip will be unable to leave Dunedin on Friday, August 27.

Monoclonal Antibodies Workshop:—

A lecture-seminar session has been scheduled for Thursday August 26th 10.30-12.30 p.m. with the aim of providing those working in the areas of cell biology, bio-chemistry and microbiology an opportunity to update their knowledge of monoclonal antibodies.

Areas to be covered include cell fusion, isolation, assay, applications, costs and laboratory facilities needed.

Speakers at this seminar will include several N.Z. scientists with experience in this field.

Agricultural Research Symposium:—

A conference session on research associated with the agricultural industry will be held at the M.A.F. Research Centre at Invermay on the morning of 27 August. Buses will be provided to transport delegates to and from Invermay, which is about 14 kilometres from Dunedin. Topics to be covered by lectures and contributed papers at Invermay may include deer nutrition, fatness in sheep, condensed tannins in lotus grass, methyl cysteine sulphoxide in Brassica plants, biogas production and soil and plant analysis.

CONTRIBUTED PAPERS

Delegates are invited to present papers at Conference on any aspect of chemistry. It is anticipated that contributed papers will form a major part of the scientific programme. They may be presented in lecture or poster form and the author's preference will be followed where possible. Fifteen minutes will be allowed for each lecture session plus five minutes for discussion.

Posters will be displayed on bulletin boards. Authors are to be in attendance throughout the poster session for discussion of their contributions. Contributors will be provided with more detailed instructions after the receipt of the abstract.

A special time has been assigned for the poster session, and no competing scientific events will be held during this allocated period.

Each contribution will be allocated to one of the following groups:

Analytical, Biochemical, Chemical Education, Chromatography, Crystallography, Electrochemistry, Industrial, Mass Spectrometry, Organic, Thermodynamics.

PREPARATION OF ABSTRACTS

Abstracts will be published with the Programme in the Conference Booklet and will be photographically reproduced. Diagrams or structural formulae may be included. The Abstract must be typed, one and one half spaced, with black carbon ribbon, and diagrams must be drawn in black. Place an asterisk after the name of the author who will present the paper. All material must be inside a rectangle 180 mm high by 150 mm wide on A4 paper. Authors are responsible for the final appearance of their abstract.

Example

PHOSPHOLIPID STIMULATION OF SOLUBILIZED ACYL-CoA:

M.R. Grigor* and R.M. Bell

Departments of Biochemistry, University of Otago and
Duke University, Durham, NC.

The acyl-CoA:diacylglycerol acyltransferase (DGAT) . . .

The abstract should be sent to:

DR. JOAN McKENZIE, CONFERENCE SECRETARY,
DEPARTMENT OF NUTRITION,
UNIVERSITY OF OTAGO, DUNEDIN,

and be received NO LATER THAN JUNE 18, 1982. Please indicate clearly whether it is for poster or lecture presentation. Late arrival may prejudice acceptance.

STUDENT PAPER COMPETITION

The usual student paper competition will be held. Further details may be obtained from the Conference Secretary if required.

TRADE DISPLAY

A variety of equipment and related products will be displayed by scientific supply houses. The display will be housed in Allan Hall which is centrally located. Morning and afternoon tea and coffee will be available at the trade display.

POST CONFERENCE SYMPOSIUM

A symposium on "The Regulation of Carbohydrate and Lipid Metabolism" will be held immediately following the Conference, on Friday 27th August and Saturday 28th August. This symposium is being organised by Dr. M. Grigor. The programme will consist of four half-day sessions and include invited and contributed papers as well as posters. Overseas speakers taking part in the symposium include:

J. D. Corbin (Vanderbilt), J. H. Exton (Vanderbilt), R. C. Nordlie (North Dakota), H. S. A. Sherratt (Newcastle-on-Tyne), W. Stalmans (Louvain), G. van de Werve (Geneva), M. A. Wells (Arizona) and R. L. Wykle (Bowman Gray) with others still pending. If you wish to contribute to this symposium contact Dr. M. Grigor, Department of Biochemistry, University of Otago, for a special ABSTRACT FORM and further details. Completed abstracts are required by June 18.

ACCOMMODATION

Single rooms are available in University College, a University hostel close to all Conference activities. Requests for this accommodation, accompanied by a \$30.00 deposit, must be received by 18 June.

The tariff is as follows:

Single room and breakfast	\$14.00 per day
Lunch	\$ 2.00
Dinner	\$ 4.00

It is especially important that delegates who request hostel accommodation indicate clearly on the Registration form the meals they wish to have at the hostel by ticking appropriate boxes provided.

A limited amount of motel accommodation close to the University campus has also been reserved as follows:

Cherry Court Lodge and Restaurant, 678 George Street,
15 Single bed rooms — \$28 per person per night.

Abbey Lodge Motel, 900 Cumberland Street,
2 Double bed rooms — \$34 per night,
3 Double bed and Single bed rooms — \$38 per night.

Persons requiring motel accommodation should advise the Conference Secretary of their requirements by 1st June.

TRAVEL

Travel concessions are available on return air or rail travel within New Zealand. These concessions must be claimed when tickets are purchased and are available on presentation of a voucher which will be forwarded by the Conference Secretary to those requesting it on the Registration Form. It should be noted that the present Epic fares offered by Air New Zealand would provide for much cheaper travel than the above air travel concession voucher.

Arrangements have been made for the airport buses meeting Air New Zealand flights Nos. 405, 515, 525 and 493 and arriving at Dunedin at 10.50 a.m., 2.45 p.m., 6.05 p.m. and 6.45 p.m. to take delegates on to University College. Please indicate this to the driver when boarding the bus at the airport.

REGISTRATION

The Registration form should be completed and returned BEFORE JUNE 18. A late fee of \$10 will apply after this date. Please complete all sections of the Registration Form clearly, and include in your remittance all fees, accommodation deposits and Conference dinner and luncheon costs.

This pamphlet has been prepared and supplied by the
New Zealand Institute of Chemistry (Inc.)



Who goes to conferences?

Duncan McLennan, Department of Chemistry
University of Auckland, Private Bag, Auckland.

A recent guest editorial in these pages by Dr Laurence Eyres (December, 1981) argued that involvement breeds interest as far as industrial members of the NZIC are concerned. He pointed out that such members play a less than full part in the affairs of the Institute, to their own detriment.

An occupational survey by Dr Robert Maclagan (February, 1981) revealed that some 33 per cent of members could be classified as being employed by private industry. There is a regional factor involved — 51 per cent of the Auckland membership comes from industry while Waikato and Canterbury branches number only 22 per cent of their members in this category.

It has been a constant source of concern to successive councils that industrial members are not attracted to annual conferences. By default, the program is often dominated by specialist research contributions from university and government departments.

The Catch-22 closed cycle now develops — industrial members ask "what's in the latest conference for me?" and do not bother to attend even if an understanding employer is willing to grant leave. The program becomes more specialised and incentives for industrial chemists further diminish.

It may well be that they begin to feel left out, with the result that a plea along the lines of that enunciated by Dr Eyres (a most involved industrial chemist) has to be publically made.

Council in its wisdom decided to break the cycle on the occasion of the Golden Jubilee Conference in 1981. When initial plans were being made there was a whiff of the government's growth strategy in the air and the development of chemical industries was obviously going to be of importance. What better to do than to celebrate the jubilee than with an industrially-biased conference? Where better to hold it than Auckland, with its predominance of industrial members? Who better to chair the conference committee than Alan Mackney, surely the most eminent of members with a purely industrial background?

These decisions augered well for the detailed planning of a conference designed to attract and interest industrial members — a conference that would look forward to the next 50 years of chemistry in New Zealand with its emphasis, for better or for

worse, on growth in the heavy chemical industry.

Under Alan Mackney's hand the broad plans of council took shape. Distinguished overseas chemists whose expertise lay within industry or were related to problems of industrial concern, were invited as plenary lecturers. The science/technology interface exemplified by industrial R and D was not left out — the respective chairmen of the Australian Science and Technology Council and the Science and Engineering Research Council (UK) shared the stage with Dr Ian Shearer, our own minister of science and technology.

Six symposia on industrial themes pertinent to New Zealand were organized and speakers included leading industrial figures from New Zealand and some appropriate overseas guests. It is noteworthy that all the New Zealand industrialists participating in this symposium received full financial support from their companies — the conference committee had to meet travel and accommodation expenses for none.

There are only a given number of hours available for a conference and the celebratory nature of the Golden Jubilee Conference could not be neglected. Thus the specialist groups were squeezed into a total of 7½ hours in a 4½ day conference. This is less time than is usually provided for them in the normal 2½ to three day annual conference.

There emerged some underground rumbling at this, but fevered brows were cooled by diplomatic letters from the conference secretary (whose qualifications to assist with an industrially-biased conference could scarcely be worse; he being a university academic and a putative computer-besotted theoretician at that). Academic and other research biochemists claimed more time than that given to the specialists with the connivance of the conference committee. The enthusiastic participation of biochemists, whether members of the NZIC or NZBS, is a bonus no conference committee can afford to ignore.

With these broad planning strokes filled in the conference committee felt confident that it could approach the more prominent companies in New Zealand's chemical industry for financial support towards the travel costs of overseas invited speakers. This support was readily forthcoming and we believe that the nature of the conference convinced most com-

panies to make cash donations, a prominent speaker from the overseas parent, or both.

The fund-raising exercise was the key to the ultimate success of the conference in that the quality (and quantity) of the invited overseas speakers has never been bettered at an NZIC conference. I regret that the names of the companies whose generosity allowed this were not printed in letters of gold in the journal.

So Who Came?

Academics, government scientists, chemists from research institutes and other specialists turned up in profusion, as they usually do. Even with a truncated program of direct interest to them they still attended.

The cornucopia of industrial delights did not however attract the expected number of industrial members, even from within the host city itself and even despite the fact that daily registration was explicitly designed to draw industrial chemists whose employers would only allow one or two days away from the workplace.

We thus have the paradox that while the captains of industry supported the conference with money, laboratory and plant managers may not have been nearly so generous in permitting industrial members to attend, nor did they seem to be demanding their attendance at such a relevant conference, as should have been the case in an industrial sector fully aware of avenues of innovation, opportunity, research and development.

The breakdown of occupations among registrants is presented in Table 1. The industrial membership of the Institute as a whole is, as already mentioned, 33 per cent of the total. The proportions from universities and from central government are respectively 19.5 per cent and 21.7 per cent. Industry was thus proportionally under-represented at the conference, universities were over-represented by a factor of more than two and government attendance was in proportion to membership. The figures in Table 1 include non-NZIC registrants of course and could thus be a little misleading.

Table 2 tells us where the registrants came from. The origins are further broken down into members and non-members. It is therefore interesting that a higher proportion of the membership attended from Waikato than from Auckland.



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TABLE 1

Employment Categories of Conference Registrants

University:	Chemistry	122	192	(44.3%)
	Biochemistry	70		
Government:	Chemistry	73	97	(22.4%)
	Biochemistry	24		
Industry:			82	(18.9%)
Research Institutes:			28	(6.5%)
Technical Institutes:			8	(1.8%)
Secondary Schools:			5	(1.2%)
Other:			21	(4.9%)
			433	100%

A significantly greater proportion of Canterbury and Otago members attended than from Wellington — this gives the lie to the notion that distance of travel influences attendance. The principal point is that Auckland was not disproportionately represented despite being the conference venue.

A further point of interest pertains to registration of identifiable industrial members. A survey of Auckland registrants alone showed that 32 industrial members attended out of a total of 200 in the branch membership (16 per cent). In fact industrial members from other centres were clearly more prolific with registrations in proportion to their members. And of the 27 non-members of the NZIC and NZBS from Auckland who attended, 20 work in industry. Almost as many industrial non-members as members from Auckland registered.

On examining the total figures, we find that 20.55 per cent of the overall membership of the NZIC attended the Golden Jubilee Conference. The New Zealand Biochemical Society (NZBS) has a membership of about 150 and 66 NZBS members attended (44 per cent). Some 24 of these are also NZIC members. Future conference committees should take heed of this — you neglect biochemists at your own peril.

Implications and the Future

The overall message is clear. A conference specifically designed to appeal to industrial chemists did not attract them in great numbers, even from the host city. A conference in which lowest priority was attached to the interests of specialist researchers in university and government laboratories nonetheless appealed to the denizens of those establishments. They even flocked from Dunedin despite high airfares. Where did we go wrong?

Perhaps we overestimated the generosity of industrial managers in allowing time off and travel/accommodation expenses. If so, this is to the eternal discredit of New Zealand industry — it was quite prepared to give us its money but not its chemically-orientated employees who help to generate the profits. Perhaps industrial chemists switch off as soon as the annual conference is mentioned. In the past these gatherings have given little attention to their areas of interest and it is possible that most are permanently soured to the point of not noticing a good thing when it comes along.

If so the Institute should ensure that the emphasis of the Golden Jubilee Conference is maintained in the future — further attempts to break the cycle of disinterest are required. One can conjecture along lines like these for a while, but it comes back to the demonstrable fact

TABLE 2

Origin of Registrants

	NZIC Members	Non- Members	Total	Branch Member- ship	% of Member- ship Attending
Auckland	102	37	139	392	26.0
Waikato	34	6	40	120	28.3
Manawatu	30	18	48	146	20.6
Wellington	61	14	75	327	18.6
Canterbury	38	13	51	187	20.3
Otago	28	10	38	119	23.5
Overseas	5	37	42	188	4.2
	298	135	433	1479	

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that the Institute and its industrial members have not been paying sufficient attention to each other in the past, so that not even a glorification of industry as provided by the Golden Jubilee Conference is adequate to stir the latter out of apathy.

The apparent rift is a two-way one. Industrial members must put more into the Institute if they want more out of it. The Institute, as exemplified by council, must continue the effort to involve its less-academically inclined members at all levels and to my mind this means more than merely having a prominent industrial representative put up as second vice-president every few years.

Yet all was not lost as far as the aims of the Golden Jubilee Conference were concerned. University chemists will by now realise that not all chemistry comes out of the sacred pages of *J. Am. Chem. Soc.* — even a chemist of such ethereal and esoteric interests as the conference secretary is now prepared to concede this.

We hope therefore that graduate and undergraduate courses will reflect this. I have for some time been teaching as an example of an SN_2 nucleophilic aliphatic substitution reaction the first step in the Mobil synthetic gasoline process. I hope that the example of the conference will compel my academic colleagues to do likewise. After all, who makes

methanol by reacting methyl bromide with hydroxide? On the rare occasions that New Zealand academic and industrial chemists indulge in a dialogue, the former typically accuse the latter of doing no chemistry of educational importance and the reverse accusation follows that academics never seem to take the time to find out what industry really does. There are several other set moves in this dialogue, but perhaps the papers and symposia of the Golden Jubilee Conference will move discussion to a higher plane of cooperation rather than accusation.

The conference committee and I believe that despite the absence of the bulk of our industrial members, the conference was successful as a scientific and celebratory event. We hope that the picture painted in this article is a starting point for a change in emphasis within the Institute.

If elements of the growth strategy become fact there is no doubt that the chemical industry will play a far more important role in determining the overall economic situation in the country than it has in the past. We may even have to stop and remind ourselves from time to time, as did the esteemed leaders of both major political parties during the recent election campaign, that agriculture still exists, let alone as the bulwark of the economy.

The Institute must move with the shifting emphasis and despite our comparative failure to get the right people to register for the Golden Jubilee Conference, there is no better place to start than with the annual conferences.

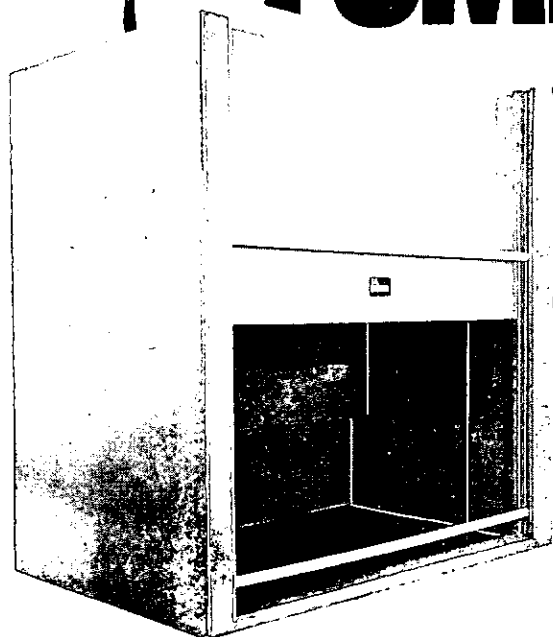
Duncan McLennan is a native of Hastings and attended Hastings Boys' High School. His MSc and PhD degrees were taken at Victoria University under the supervision of the late Brian England.

Two years of post-doctoral work in the USA and JF Bunnett followed (Brown University and the University of California, Santa Cruz) and he was appointed to a lectureship at the University of Auckland in 1968. He was awarded the degree of DSc and the rank of associate professor in 1979.

His research interests lie in the area of heterolytic organic reaction mechanisms and the computer modelling of equilibrium and kinetic isotope effects.

He served two terms as Auckland branch secretary and, under the guiding hand of Stan Brooker, presided over the unlamented demise of the NZIC Examinations Committee. He was organising secretary for the 1981 Golden Jubilee Conference and thereafter resumed his acquaintance with his wife, son and daughter.

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The properties of marine wax esters

Denis R. Body

Applied Biochemistry Division, DSIR, Palmerston North.

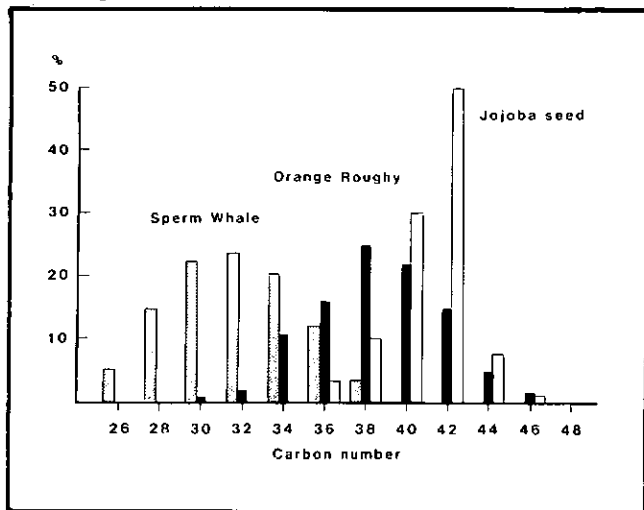
(Presented at the Golden Jubilee Conference of NZIC
in Auckland, August 1981.)

Since the government has extended controlled marine sources for the Fishing Industry as Exclusive Economic Zones (EEZ), a variety of little known fish species has been landed. This has stimulated research to ascertain any nutritional or commercial values, revealing a promising source of marine wax esters (WE) associated with some deep sea fish, namely Orange Roughy (*Hoplostetetus atlanticus*), which yield high quantities of WE.

The properties of marine WE can be sub-divided into three categories, chemical, physical and biochemical.

Chemically, WE are some of the simplest form of lipid constituents found naturally. These are made up of long-chain fatty acids condensed with long-chain fatty alcohols. The lengths of these individual carbon chain-lengths vary and the resultant typical WE mixtures are shown in Figure 1.

Figure 1. A comparison of the distributions of naturally occurring wax esters.



The marine sources, both mammalian and fish show distributions which appear to follow ideal natural curves.

For Sperm oil the most abundant wax ester has a chain-length made up with 32 carbon atoms while the Orange Roughy curve has shifted with its peak at 38 carbons.

These figures were obtained by direct gas-liquid chromatography (GLC) analyses of the isolated wax ester fractions.¹

Complete details of the individual WE compositions can also be obtained. This is achieved by hydrolysing the WE and analysing the isolated products, fatty acids and fatty alcohols independently by further GLC.^{1,3}

These results are shown in Table 1 which represents the percentage distribution of the individual fatty acid/alcohol contents of Orange Roughy and Sperm oil wax esters. These are both predominantly unsaturated but with random combinations of acid and alcohol mixtures, the resultant maximum carbon number for WE

will be 32 and 38 for Sperm oil and Orange Roughy oil respectively.

The "physical" properties of marine WE do have practical values that are associated with industry (Table 2). Extensive investigations carried out by the US government⁴ concluded that the applications of Jojoba oil are superior to those of Sperm oil. Initially these factors were obtained from harvested wild Jojoba seeds but their excellent qualities have encouraged successful cultivations for future production.

According to the literature⁵⁻⁷, the biological properties of marine WE are very important contributors for marine life. They certainly play a vital role in the massive continuous ocean food-chain and are

Table 1

The composition of the marine wax esters derived from Sperm Oil and Orange Roughy Oil				
Configura-tion	Sperm Oil		Orange Roughy Oil	
	Fatty acid	Fatty alcohol	Fatty acid	Fatty alcohol
n-Saturated				
< 14:0	21.6			
14:0	9.4	8.0	1.2	
16:0	5.1	39.5	1.0	6.5
18:0	1.5	7.7	0.3	1.0
n-Unsaturated				
14:1	19.6		0.5	
16:1	15.6	4.1	11.8	
18:1	17.8	35.4	56.0	34.0
20:1	1.4	1.4	17.8	30.6
22:1	—	—	7.8	23.9
24:1	—	—	—	4.0

Table 2.

Industrial Usage Of Marine Wax Esters	
Lubrications	} After being sulphurized
Transmission oil	
Cosmetics	} After hydrogenation
Candles	
Polishes	

classified as being the principal source of all marine organo-energies. Basically, almost half the organic matter synthesized by the so-called ocean producers is related to wax ester formation at some stage or other.

Apart from these metabolic purposes, wax esters have significant biophysical properties that are used advantageously by deep-sea fish. Compared with their other lipid counterpart, triacylglycerol, WE are liquids with lower specific gravity which improves buoyancy.

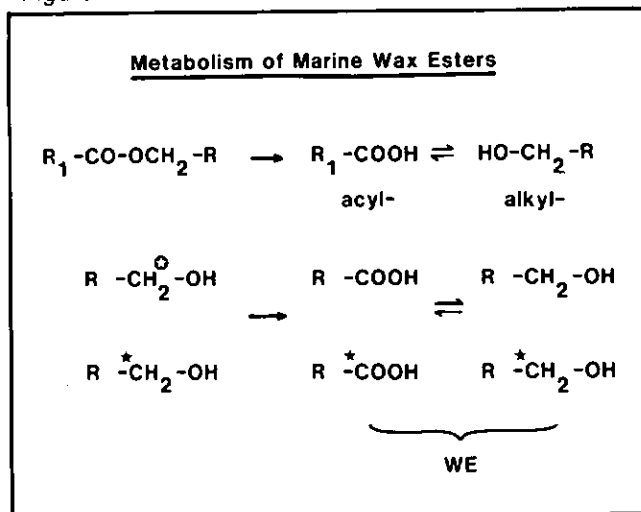
However, there are other reasons why marine animals use either WE or triacylglycerol as their body-fat. Animals which have limited food resources usually use WE as their body-fat reserve but, when abundant food was available for similar species elsewhere, they appeared to use triacylglycerol as their energy reserve. This indicates marine animals have different metabolic turnover rates with different resources and it is interesting to compare these reactions with mammals.

Experiments where triacylglycerol and WE were incubated with the digestive fluids (in vitro) of pigs and fish⁹, showed that both species hydrolyse triacylglycerol at about the same rate and after four hours only half the triacylglycerol remained intact. However, the rate for WE is very different. Although the hydrolysis of WE (cf triacylglycerol) is four times more resistant to the digestive juices of fish, this resistance was raised to a much higher level (50 times) against the pancreatic lipase activities of pigs.

The hydrolysed products from WE contain equal proportions of fatty acid (acyl-) and fatty alcohol (alkyl-) units (see Figure 2). Fatty acids are generally absorbed more quickly than the alcohols and appear to be incorporated into the animals' tissues to a greater extent than their alcohol counterparts.

These products are readily distributed as acyl-lipid constituent formations, eg glycerylethers, are noticed⁹.

Figure 2.




These features are not solely controlled by their different responsive absorption rates, because there are other situations as well.

In the gut, the alcohols can be oxidized to form their acyl-derivative, which means less alcohols are available for absorption into the system. However these reactions are reversible⁹. This was proved by using tritium labelled C₁ in the fatty alcohol structure. The loss of labelled tritium in the final alcohol product showed that this reaction occurred. This was further confirmed using a similar substrate with [¹⁴C]-labelled alcohol. Here the labelled C remained constant. Changes between [¹⁴C/³H] ratios were ideal to measure these reactions. Such released acids and alcohols can also be again re-esterified to provide additional WE.

Currently, investigations have commenced on evaluating nutritional values by feeding rats a diet rich in Orange Roughy WE oil.



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Table 3.

Fatty acid	Diet		Faeces	
	WE [*]	TG ^o	WE	FA
16:0	1.0	14.0	6.0	10.2
16:1	11.8	0.4	4.0	2.2
18:0	0.3	4.0	8.0	15.6
18:1	56.0	28.3	34.0	27.5
18:2	1.9	52.0	12.0	15.6
20:1	18.0	tr	20.0	14.7
22:1	8.0		11.0	7.6

^{*} Orange Roughy oil 5%
^o Corn oil 8%

Table 3 describes some results of a digestion experiment with rats using WE derived from Orange Roughy oil. Basically, WE represented about 38 percent of the dietary lipids and 80 percent of the total faecal lipids. The table compares the percentages of the dietary fatty acids with those excreted with the faeces. Those exclusively in the WE diet are predominately unsaturated with a homologous series of monoenoic acids. However, after passing through the digestive tract, the fatty acid composition of the faecal WE has altered.

There appears to be an increase of levels of saturated fatty acids. Palmitic (16:0) and stearic (18:0) acids have increased with a corresponding reduction of palmitoleic

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(16:1) and oleic (18:1) acids. Even though the higher 20s and 22s are similar, the six-fold increase of linoleic (18:2) acid, the precursor of biological essential fatty acids, in the excreted faecal WE, indicates other interactions with dietary WE have occurred.

Biohydrogenation is not restricted to ruminants. The intestinal microflora of monogastric animals have similar effects. For instance, the hydrogenated labelled products of 18:1 and 18:0 acids have been located in the faecal fatty acids of rats orally administered with labelled linoleic acid⁹. However, the build up of saturated fatty acids in the faecal WE is probably not due to direct biohydrogenation of esterified fatty acids because this reaction is unknown, but rather to the re-synthesis of WE with the products of hydrogenated released dietary unsaturated fatty acids.

Dietary corn oil (TG) was included with this diet to provide essential fatty acids, ie linoleic acid (18:2), because other sources via the dietary WE, stable against lipase activities, are very restricted. The footnotes with Table 3 indicate the proportions of the lipid constituents administered with the diet.

The faecal free fatty acids (FA) column reflects the extent of those hydrolysed from the diet and not absorbed by the animal. Compared with the corn oil contribution of linoleic acid, this level was reduced and this could represent the quantity absorbed. However, since the linoleic acid content of the faecal WE fatty acid composition was also raised, this could not apply. This rather confirmed that WE can be synthesized in the gut and utilized some of the linoleic acid released from the corn oil to deprive the rats from their dietary essential fatty acids.

In summary these marine WE not only have very little nutritional value, they can also hinder the animal from essential dietary requirements of supplementary sources. This suggests that thorough investigations of marine WE (common to deep-sea fish) metabolism with rats are necessary and these findings must be compared with those related to other "consuming mammals".

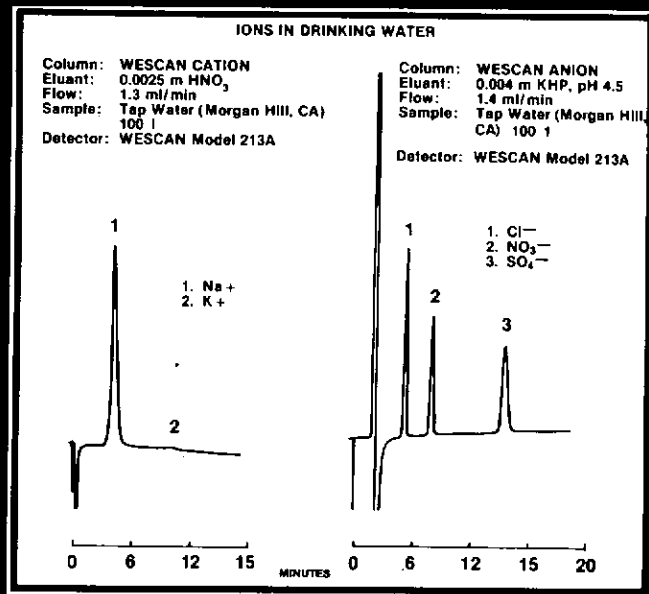
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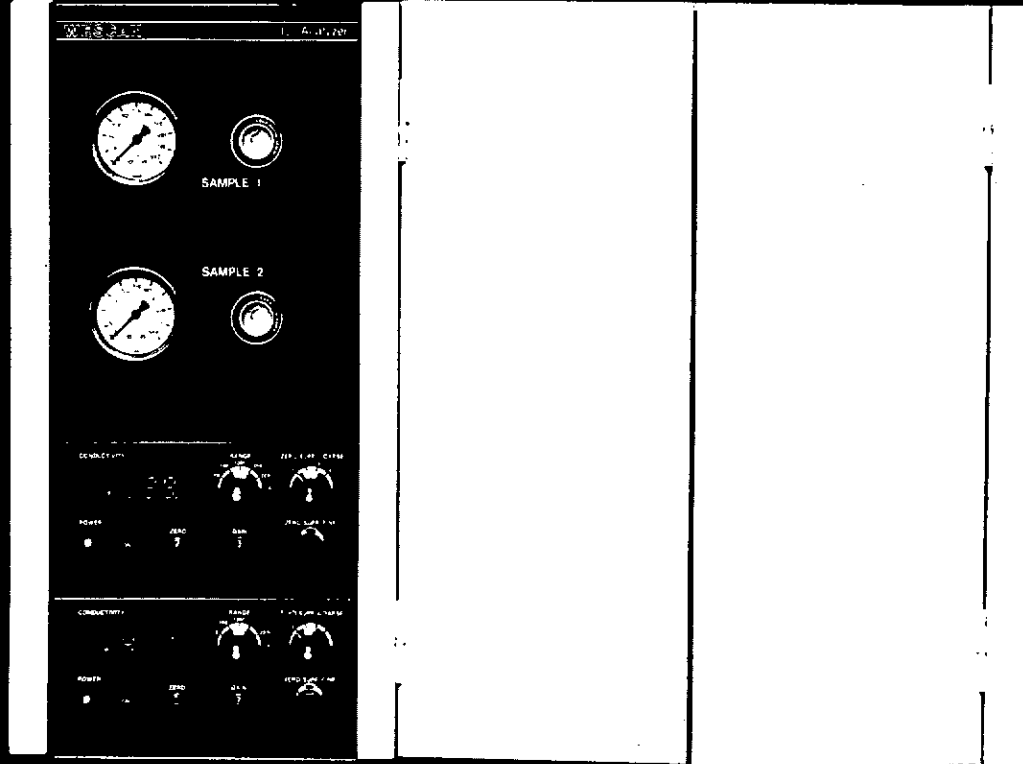
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WILTONS

The determination of mercury in anti-fouling paints

A.D James and L.P. Judson
Defence Scientific Establishment,
Auckland

Following recent concern over environmental contamination of harbours which might be aggravated by the use of anti-fouling paints known to contain mercury, the Defence Scientific Establishment (DSE) began a program to analyse the anti-fouling paints used by HMNZ ships as well as some locally-produced paints available on the open market.

Research into the literature showed that little work has been published in this field. Most methods reported did not use atomic absorption spectrophotometry, although this is the most favoured method of analysis for mercury. The cold vapour atomisation method is known to be more accurate than flame atomic absorption, which tends to lose mercury and is less sensitive.

of cold vapour atomisation as used at DSE allows the progressive build up of mercury vapour until a constant absorption signal is attained.

EXPERIMENTAL

All glassware was cleaned with a suitable laboratory chemical cleaner and rinsed thoroughly with water. It

Sample	Run 1			Run 2		
	Paint A	Paint B	Paint C	Paint A	Paint B	Paint C
Weight (g)	0.3868	0.3671	0.4024	0.3693	0.3897	0.3650
Blank ABS	0.017	0.017	0.017	0.018	0.018	0.018
ABS-Blank	0.105	0.101	0.064	0.102	0.104	0.054
Wt of Hg (μ g) (from graph)	0.236	0.218	0.138	0.233	0.237	0.123
Hg content μ g/g	0.61	0.59	0.34	0.63	0.61	0.34

The continuous circulating method

Table 1. Mercury content of anti-fouling paints tested.

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was then boiled in aqua regia and rinsed finally with de-ionised water.

Standards containing 0 to 0.30 μg of mercury in approximately 70 ml of water were prepared immediately before measurement from a 0.2 mg/l stock solution. The paints were thoroughly mixed and brushed as thinly as possible on to clean glass slides. These were dried overnight in an oven at 30-40°C. (Drying at too high a temperature must be avoided as mercury losses could occur through volatilisation). The slides were then scraped and the dry paint stored in a suitable airtight container.

Finally the dry sample was ground using a mortar and pestle to give a finely divided powder ready for analysis.

Sample solutions were prepared by either of two methods. In the first, an accurately weighed 0.3 — 0.4 g sample was dissolved in 5 ml of concentrated sulphuric acid at 70°C. The solution was cooled, 50 ml of 5% w/v potassium permanganate solution added and reacted at 70°C for a further four hours. After cooling, 15 ml of 20% w/v hydroxylamine

hydrochloride solution was added to reduce the excess permanganate. Reagent blanks were prepared by the same procedure using 2 ml of de-ionised water in place of the sample.

An alternative method of sample dissolution involved digesting 0.050 — 0.100 g of sample with 3 ml of concentrated nitric acid in an acid digestion bomb at 140°C for one hour. The contents were then transferred quantitatively to a 150 ml conical flask and treated as in the previous method.¹

The apparatus is shown in Fig 1. The instrumental conditions used were, a wavelength of 253.7 nm, slit-width 0.2 mm and integration time 4 s. Solutions were treated with 2 ml stannous chloride solution and the resulting vapour pumped for two or three minutes until the absorbance value became constant.

The AAS was zeroed on the standard blank, then the standards were used to plot a linear calibration curve of absorbance versus micrograms of Hg. Sample solution absorbances were corrected for reagent blank readings. Whenever possible the reagent blank should register less

than 0.03 μg Hg. If the reading is higher, the glassware and reagents should be checked for impurities.

Results

The results are given in Table 1.

Satisfactory results were obtained using the normal method of sample preparation. However, the digestion and oxidation stages were somewhat lengthy. As well as being quicker, the results obtained using the bomb digestion method should be more reliable, as possible losses during open digestion are eliminated.

Some anti-fouling paints are manufactured using cuprous oxide, which may contain mercury as an impurity. Tests for mercury content of a supply of cuprous oxide used for this purpose showed that it contained between 0.15 and 0.25 micrograms of mercury per gram of the sample.

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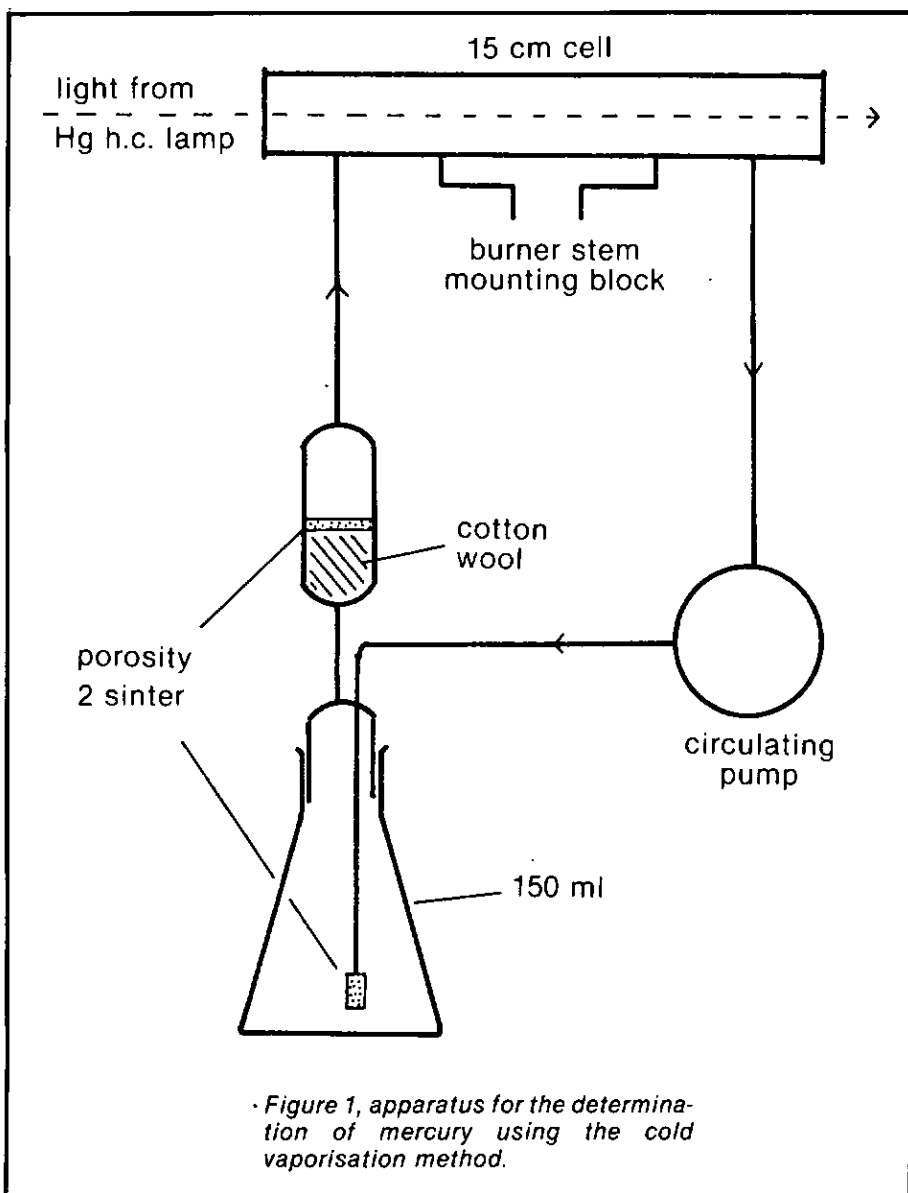
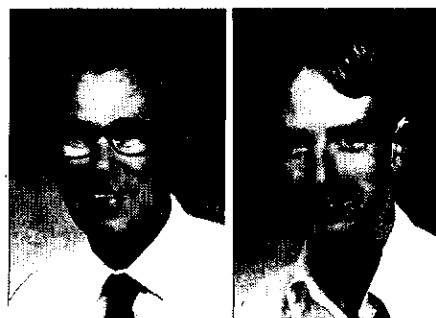


Figure 1, apparatus for the determination of mercury using the cold vaporisation method.



L.P. Judson

A.D. James

Alan James was educated at Westlake Boys' High School and the Auckland Technical Institute, gaining an NZCS in metallurgy in 1980. He has been employed at DSE since 1978.

Lionel Judson attended Sheffield University and Nottingham Technical College gaining LIM in 1954, AIM in 1969 and MIM, CEng 1974. He spent approximately 20 years in industrial metallurgy before joining DSE in 1967.

'Wide appeal' in upcoming combined conferences

The annual conference of the New Zealand Institute of Chemistry is to be held in collaboration with the New Zealand Biochemical Society at the University of Otago, Dunedin.

Those who have yet to register for this August 25 to 27 meeting are referred to the Programme Outline and Registration Form which appeared in the April issue of Chemistry in New Zealand.

The scientific programme, which has been prepared by the local conference committee under the chairmanship of *Professor Max Shepherd*, should have a wide appeal to all New Zealand chemists and biochemists.

Two overseas guest lecturers have accepted invitations to speak at the Dunedin Conference.

The first is *Douglas Rash* of Monash University, who will deliver a lecture entitled "Catalytic Liquefaction of Brown Coal". The second is *Professor Nelson J Leonard* of the University of Illinois, whose lecture is to be "Stretched-out Versions of ATP: Synthesis, Fluorescence and Biological Activity". Both men are very distinguished chemists, as the following biographical outlines show **Douglas Rash — Lignite Chemistry and Technology.**

Doug Rash, guest lecturer for the lignite symposium, is an associate of the School of Mines, Ballarat, Victoria, where he obtained a diploma of Applied Chemistry.

After working in the research department of Kraft Foods for a little over a year, he obtained his present position as research assistant to the Professor of Organic Chemistry at Monash University, Melbourne, in 1966.

His work has primarily been in the area of synthetic organic chemistry and has ranged in diversity from novel insecticides and anthelmintics with Professor Swan to the hydrogenolysis of strained cyclic hydrocarbons over supported metal catalysts and the conversion of Victorian brown coals to liquid hydrocarbons with Professor Jackson.

Since 1977 the major emphasis of his work has been in the area of brown coal research.

He was elected Fellow of the Australian Institute of Petroleum in 1976 and to membership of the Australian Institute of Energy in 1978.

Doug will review the work of the Monash group in the area of catalytic liquefaction of brown coal in his conference lecture.

Professor Nelson J Leonard

His research "spans an impressive range of heterocyclic chemistry, of molecular rearrangements and of contributions to the organic chemistry of nitrogen. In first class research extending over one third of a century [he] has woven a strong and durable part of the fabric of modern organic chemistry". This is the way one associate sums up the contributions of Professor Leonard, professor of chemistry and biochemistry at the University of Illinois, Urbana.

Professor Leonard received his education at Lehigh, Oxford and Columbia Universities. Upon receiving his PhD in 1942, he went to the University of Illinois as a postdoctoral research fellow for Roger Adams before joining the teaching staff.

He has remained at the University of Illinois ever since, except for leaves for government service and visiting professorships. He has been a member of the National Academy of Sciences since 1955 and a fellow of the American Academy of Arts and Sciences since 1961. He is one of two US chemists who are foreign members of the Polish Academy of Sciences and he is the holder of two honorary degrees.

Together with his students, Professor Leonard has provided many contributions to organic chemical synthesis, described in over 350 publications. More recently, he has directed his organic chemical skills toward the solution of problems of plant physiology, biochemistry and molecular biology.

Professor Leonard received in 1963 the American Chemical Society Award for Creative Work in Synthetic Organic Chemistry, in 1970 the Synthetic Organic Chemical Manufacturers Association Medal, in 1980 the Award for Excellence in Teaching in the School of Chemical Sciences, University of Illinois and in 1981 the prestigious Roger Adams Award in Organic Chemistry of the American Chemical Society.

He has served in an advisory capacity on US government agencies and for the Alfred P Sloan Foundation and he is now a member of the Educational Advisory Board and the committee of selection of the Guggenheim Memorial Foundation.

MONOCLONAL ANTIBODIES WORKSHOP

The conference committee is very pleased with the response from members to this lecture — seminar session. The principle speakers at the workshop will include *Dr John Marbrook* of the Cell Biology Department,

University of Auckland and *Dr Michael Berridge* of the Wellington Cancer and Medical Research Institute.

R E CORBETT SYMPOSIUM

Many offers of papers for this symposium have been received from former associates and students of Professor Corbett. A number of these describe organic chemical research, but some deal with more general topics in chemistry, reflecting the movement of some former students into administrative and management situations.

REGULATION OF CARBOHYDRATE AND LIPID METABOLISM

This post conference symposium will be held on Friday and Saturday, August 27 and 28, at the University of Otago. To date we have been successful in attracting a number of overseas visitors to this meeting, with a number of others still pending. As this report goes to press the program is not finalised, but it already promises to provide a comprehensive coverage of the current state of the field.

Dr Luis Hue (Brussels) and *Dr Simon Pilkis* (Vanderbilt) will both be speaking on the regulation of glycolysis via fructose-2, 6-bisphosphate, a newly discovered compound which is exciting great interest as a key regulator of glucose metabolism in liver.

Drs Tom Soderling (Vanderbilt), *Gerald Van de Werve* (Geneva) and *Willie Stalmans* (Louvain) will be considering the regulation of glucose storage as glycogen and its mobilization.

Dr John Exton (Vanderbilt) will be considering the hormonal regulation of glycogen metabolism and gluconeogenesis in hepatocytes and *Dr Jackie Corbin* (Vanderbilt) will discuss recent work from his group on the cyclic nucleotide-dependent protein kinases, enzymes important in mediating some of these hormone effects.

On the lipid side *Dr Stan Sherrat* (Newcastle) will discuss the use of model compounds to regulate fatty acid oxidation. *Dr Michael Wells* (Arizona) will be talking about lipid metabolism in neonatal animals and *Dr Rosalind Coleman* will discuss triglyceride lipases. *Dr Bob Wykle* (Bowman Gray) will talk on the metabolism and action of platelet activating factor, a newly discovered lipid compound with potent physiological action.

In addition, other local scientists will be talking about their work in both the lipid and carbohydrate fields.

If you wish further information please write to *Dr M.R. Grigor*, Department of Biochemistry, University of Otago.

CONFERENCES

NZIC 1983

The 1983 conference is to be held in Hamilton, August 22 to 26. Planning has begun with the setting up of an organising committee with *Dr Pat Holland* (Ruakura) as chairman and *Dr Carrick Devine* (MRINZ) as secretary.

Suggestions for visiting speakers, plenary sessions etc are solicited. As a joint biochemistry/microbiology conference is slated for May 1983, the committee are also looking for themes or allied professional groups that can help reduce the effect of fewer biochemists in August.

COMO-10

In May of last year inorganic and organometallic chemists from within New Zealand combined with their Australian counterparts in the first joint meeting of specialist groups from within the NZIC and RACI.

A group of inorganic chemists from the Chemistry Department, University of Otago, began planning in 1978 and received go-ahead signals from COMO-8 members at the Perth meeting (May 1978) and from a special NZIC meeting during the Auckland conference, January 1979. This led to the formation of both a national organizing committee and a local organizing committee based at the Chemistry Department, University of Otago.

Official approval to hold a jointly sponsored NZIC/RACI Specialist Conference on inorganic and organo-metallic chemistry in Queenstown in May 1981 was given by NZIC Council in May 1979 and by COMO-10 members at the Sydney meeting in January, 1980. With the help of the NZIC and the National Committee for Chemistry a grant of \$2000 towards running costs was approved by the Royal Society of New Zealand.

The conference itself was held at the Lakeland Inn, Queenstown, May 10 to 14 1981. An attractive accommodation plus fare package for the Australian contingent was organized by the Government Tourist Bureau and attracted 47 conference delegates plus 13 wives and one husband.

New Zealand chemists put their best foot forward with 71 registered participants and 18 accompanying persons. The international flavour was enhanced by six visitors from the USA, two from West Germany and two from Zurich, Switzerland.

This mix of attendees enabled the Australian and New Zealand delegates in particular to exchange ideas about research projects and facilities, undergraduate teaching, employment prospects, funding and a host of related matters on a scale not previously experienced.

Maggie's Place provided a much-used watering hole throughout the conference and late night stayers provided good company and some profit to those who were able to last the distance.

Following an introduction by *Dr M.A. Bennett* (COMO chairman), *Dr A.J. Ellis*, President of NZIC, opened the conference with an interesting commentary on the significance of inorganic chemistry in the New Zealand environment. Further

development of the scientific program exposed three main themes — coordination and bioinorganic chemistry, organometallic chemistry and energy sciences.

Professor Ken Raymond (Berkeley, USA) presented the first plenary lecture. He discussed the coordination geometry and iron exchange kinetics of transferrin and the siderophores (human and microbial iron transfer agents respectively).

With good reason, a whole evening was assigned for the plenary lecture given by *Professor Larry Dahl* (Wisconsin, USA). Dahl kept his audience captivated for almost two hours while he established structure-bonding-reactivity patterns for transition metal clusters containing cores from two to 38 metal atoms.

The next two plenary lectures dealt with energy matters. Problems associated with the photochemical and storage of solar energy were presented as a challenge to coordination chemists by *Dr Wolfgang Sasse* (CSIRO, Melbourne) and an account of the catalytic synthetic fuel processes currently being assessed in West Germany was given by *Professor Oelert* (Cranthol-Zellerfeld). Professor Oelert's attendance was sponsored jointly by the West German government and the Liquid Fuels Trust Board. His subsequent comments on energy prospects for New Zealand received national coverage on TV-1 news.

In the final plenary lecture, *Professor Peter Vollhardt* (Berkeley, USA) demonstrated that the transition metal assisted formation of C-C bonds could lead to the selective formation of polycyclic organic molecules including some natural products.

Shorter section lectures were given on a range of topics and much of the scientific content of the conference was displayed on almost 70 posters. These were organised into two sections and authors maintained the exceptionally high standard. One poster was so popular that it disappeared from its board while the author was dining in the Skyline Restaurant overlooking Queenstown.

On the final day of the conference, the fifth RACI Inorganic Chemistry Award was presented to *Professor B.O. West* (Monash). The COMO-10 Chairman, *Dr Martin Bennett*, read the citation and *Professor West* then delivered the G.J. Burrows lecture in which he emphasized the usefulness of electrochemistry as a tool in the synthesis and characterization of metal compounds which incorporate both organic and chelate ligands.

The success of COMO-10 can be attributed to many factors and in their report to the RACI the Australians praised the venue, facilities, social events and accompanying persons program (arranged by *Mrs Judy Robinson*).

Our own thanks must also extend to the Government Tourist Bureau, to many members of the Chemistry Department, University of Otago, for their encouragement and in many cases extensive help (*B. Mangan*, *Dr R.F. Smith*) and to *Miss Shona McKane* for her cheeful and efficient secretarial help throughout the conference.

Prof D.A. Buckingham

Chemistry and the Undersea World 1982

This symposium was held in Auckland on March 25 with the aim of promoting interest in marine science and showing the important role of chemistry in this sphere.

Dr Patricia Bergquist of University of Auckland led by illustrating the value of chemical taxonomy in establishing biological relationships and showed how chemistry is providing clues to an understanding of a number of biological processes; the synchronisation of spawning and defence mechanisms, for example.

The theme of chemical ecology was developed by *Dr John Faulkner*, Scripps Institute, California with particular reference to sponges and their protective mechanism against the group droid nudibranches, which feed on sponges.

Dr Murray Munro, University of Canterbury, described work on the microbiological screening of algae from Kaikoura and also discussed the potential for modifying biological activity by chemical means. He also discussed halogen compounds found in seaweeds.

Dr Tom Miller of Auckland Hospital, gave a lively account of the testing and investigation of Seatone, the preparation based on *Perna canaliculus*, the green-lipped mussel and its use in the search for a rheumatism treatment. It appeared from a test program on rats that Seatone had a positive effect.

Dr Roger Grace used photographs to show the place of diving in marine science, especially scuba exploration on both amateur and professional levels.

The afternoon session, took the theme of chemistry and the marine environment. *John Goodrum*, Crusader Industries, described marine corrosion and fouling prevention from a commercial point of view and was followed by *Dr Roger O'Brien*, Shell-BP-Todd Oil Services, who related some of these problems to a major current undertaking, the Maui environmental engineering project, especially protecting the platform both above and below sea level from corrosion.

The final two speakers took the meeting into the realms of oceanography and geochemistry. *Dr Keith Hunter*, University of Otago, reviewed surface chemistry and the removal mechanisms of elements in the ocean, comparing the various biological cycles which affect the residence times of some elements with the inorganic and colloidal processes which influence others, for example iron and aluminium.

Dr Robin Falconer, a consultant marine geophysicist to Fletcher Challenge, discussed the role of marine chemistry in characterising Chatham Rise phosphorites and preparing for the possible recovery and use of these phosphate-rich minerals.

A range of displays of photographs and other material illustrated topics within the compass of the meeting and contributed to the overall success of the symposium.

Included in the program was a sea-food lunch of Orange Roughy and a period of refreshments at the end of the day. Organised jointly by Auckland Branch of NZIC and the Chemistry Department, University of Auckland and administered by the University Centre for Continuing

CONFERENCES

Education, the symposium attracted some eighty participants representing many occupations and different facets of the profession.

Michael J. Taylor

Cosmetic Seminar

Although his membership of the society was uncertain, your roving reporter attended the Fourth Annual Cosmetic Seminar of the Society of Cosmetic Chemists, April 22 to 24, at the Chateau on Mt. Ruapehu and listened and looked as some 19 people presented their material to the 100 plus registrants. Wives, friends and associates attended most of the sessions, at least for the first day.

There were times when he fell asleep, when the worst of the speakers read from the published material in a flat monotone and showed invisible material on the screen, but for most of the time he was fascinated by the breadth of knowledge available to our comparatively small industry.

The most outstanding event was an unscheduled performance organised by a French parfumeur who happened to be

visiting New Zealand at just the right time. It was not a lecture, or a demonstration, and the Frenchman said nothing — what he did do was to show slides, while from his tape recorder a beautifully modulated voice, with electronic music accompanying it, told us what the slides were all about — French perfumes of course!

To a common industrial chemist, accustomed to working with materials reacting in fairly predictable ways in beakers, mixers, reactors or what have you, the mixture of chemistry, physiology, bacteriology and a non-protein diet which was served up to us by an undoubtedly very competent beauty therapist from Sydney was different, to say the least.

Three judges who, in a surprise move unknown to all but a select few, had to choose the recipients of prizes for the best speakers, must have been bemused too because they did not give her the first or second prize, but nominated her for a special award.

I am a little hazy on the exact title of the award, but it should have been for bravery in coming all the way from Sydney and raising questions about the pH of soap in a gathering which included quite a lot of

chemists who knew something about pH. (I hereby recommend the prize idea to the organisers of the next NZIC conference.)

You may find it hard to believe that a day and a half was long enough for 18 papers (and a theatrical interlude) covering everything from manufacturing, to product development to historical reviews, but by running a rigid schedule the organisers fitted it all in very well.

Free samples were distributed with great abandon, the French perfume packaging was sighed over by those who can buy little except "made in New Zealand" material; and the support of suppliers of raw materials ensured that the food and drink was of the highest quality and that the quantity exceeded everyone's capacity.

The society, whose qualifications for membership are fairly broad, is obviously filling a need and like a similar well-known society in the paint and coatings field it has a large measure of support from the industry, especially those who are on the supply side.

C.L.H.S.

COUNCIL NEWS

A meeting of the standing committee of council was held by telephone on April 23. The following new members were elected: member, *Cresswell, Kevin John*, Rangitaiki Plains Dairy Co. Edgecumbe; graduates, *Bosma, Grant*, Pavroc Holdings, Christchurch, *Farr, Lynette Mary*, Chem Div DSIR Christchurch; re-admitted as member, *Sims, Ritchie John*, Anac Ltd, Auckland.

Other items agreed upon were that *D.J. Hogan* would be acting general secretary while *Dr Rogers* is overseas. *Shanahan, Winder, Tomlin and Co.* were reappointed as the Institute's auditors. The registrar was instructed to prepare a working paper spelling out the pros and cons of joint husband and wife subscriptions.

The industrial chemist and the American Chemical Society.

NZIC president *Stan Simpson* has forwarded an ACS report on industrial chemists. The report is published in part below. It is noteworthy that current concerns of the NZIC are also shared by the world's most important professional chemistry body and the editor would welcome comment from New Zealand industrial chemists.

A presidential conference on industrial chemists and the ACS was held November 9 to 11, 1979 in St. Louis, Missouri to explore and define ways to make the ACS more responsive to the professional and technical needs of the industrial chemists.

Three important findings of the conference were:

Most colleges and universities are not educating BS chemists to fill industrial needs;

ACS is not communicating effectively enough with its members (or non-member chemists), either about ACS programs and services, or about trends in industrial chemistry;

Many industrial chemists need, and

want, to increase their value to their employers, while improving their professional status as chemists.

These and other conclusions of the conference were translated into the following recommendations:

1. ACS should help schools educate BS chemists that more effectively fill industrial needs by:

- modifying the CPT (Committee on Professional Training) curriculum to give greater emphasis on topics such as industrial chemistry, polymer chemistry, patents and chemical engineering for chemists;

- informing college faculty of industrial needs via audio-visual courses and internships;

- encouraging colleges to establish and expand chemistry co-op programs;

- defining and implementing ways that college placement offices and chemistry departments can improve career counseling and career guidance programs.

2. ACS should promote more effective communication, both among chemists and between the society and industrial chemists, by:

- providing more non-technical programs at national, regional, and local levels (e.g., career planning, information and assistance; seminars on economic and social topics);

- publishing fact sheets and/or an ACS member handbook that describe current ACS programs to members;

- encouraging member participation in divisions that are oriented toward industrial chemists (the Industrial and Engineering Chemistry Division is one example of several such divisions).

3. ACS should help industrial chemists increase their value to industry by:

- promoting industrial chemistry at national and regional meetings (e.g., more

papers, symposia and discussion groups on application and utilization topics that are informational and educational and not merely descriptions of new contributions);

- establishing active local section programs on applied chemistry;

- having Chemical and Engineering News publish more review and skill-related articles to aid the bench chemist;

- making the ACS industrial interface more visible;

- helping local sections build and maintain a library of continuing education material for member use.

4. ACS should help industrial chemists be and feel, more professional by:

- increasing ACS public relations, promoting the value of chemists and chemistry, especially those in industrial positions;

- broadening the awards program to include more industrial chemists;

- providing data to chemists (quickly) to help them refute media distortions;

- strengthening the employment guidelines, particularly by gaining greater management support and commitment;

- promoting the idea that reliable chemistry can be performed by both PhDs and non-PhDs.

5. ACS can help chemists and increase the desirability of ACS membership to industrial chemists by:

- establishing effective age-graduated dues, multiple-tier memberships, and portable pensions;

- providing informational resources to small chemical businesses;

- organizing group buying of consumer items at discounts;

- following up on the recommendations made by this conference and by sponsoring additional conferences in the future aimed at aiding the industrial chemist.

Among the many specific problems

COUNCIL NEWS

discussed at the conference three major concerns evolved. These might be classified broadly as professionalism, communication and education of chemists. The ACS was seen as one vehicle which could be used to correct deficiencies in all of these areas.

Professionalism — an overwhelming viewpoint of the attendees of the conference was that the ACS should take stronger positions in promoting the value of chemistry as a profession. It was stated that the Society should do more in the areas of:

- public relations — improving the public image of chemists, especially industrial chemists;

- industry relations — getting employers to encourage members to have greater ACS involvement and to work with the ACS to upgrade the professional status of chemists;

- member relations — providing chemists with the tools and professional support required to permit them to increase further their value to both the chemical industry and society;

- communication and education — discussion of these points follows.

Communication — several problem areas were defined:

- national and regional meetings stress too much "discovery" and not enough "utilization", which limits the usefulness of such meetings to many in-

dustrial chemists. The cost of attending national meetings also is a deterring factor;

- ACS publications in general and Chemical and Engineering News in particular, do not contain enough articles and papers on applied chemistry;

- not enough industrial chemists know about the Industrial and Engineering Chemistry Division, or other industrial-oriented divisions of the Society;

- local sections have too few meetings on utilization topics that would draw the interest of bench chemists;

- ACS is not effectively describing its programs and services to industrial chemists.

Education — many colleges and universities are not producing chemists at the BS level that satisfy industry requirements. That was a general conclusion of the conference. In a subsequent article in Chemical and Engineering News (November 26, 1979), Alan L. McClelland expressed several thoughts that echoed the feelings of the conference delegates, such as "it is the chemical engineer, rather than the chemist, who is being trained to meet the needs of the industry". And "academic training in chemistry at all degree levels must be heavily oriented toward preparing people for industrial careers".

A number of suggestions were made at the conference to help correct this situa-

tion, particularly at the bachelor's level. Moreover, it was believed that ACS can and should, be an important element in introducing necessary changes. Some of these suggestions follow:

- make academia aware 1) of the needs of the chemical industry and 2) that BS chemists could be very desirable employees, if trained and educated properly;

- modify both the course content and course requirements for an accredited BS degree;

- promote programs that would give industrial experience to BS students;

- help establish industrial internships for college faculty.

Summarizing, the American Chemical Society was seen to have necessary and important roles in the development of chemists throughout their careers.

There are vast number of industrial chemists — members and non-members — who need a society to help set standards in the education of chemists; to provide programs and services that individual employers cannot; to cultivate positive interfaces between industry, academia and individual chemists; to be a spokesman for the chemical profession; to promote the value of chemists and chemistry; in essence, to provide a structure and format for chemists to communicate with each other and with other elements of our society.

BRANCH NEWS

Auckland

The April meeting of the branch was addressed by *Dr Robin Mitchell* of Plant Diseases Division, DSIR. Dr Mitchell discussed some current aspects of his research into the chemistry, biological significance and biochemical function of several bacterial toxins which may cause disease in a wide range of plants.

The annual Graduands Function was held at the University early in May. *Dr George Clark* chaired the function and as well as congratulating the graduands present, certificates were presented to recent members and fellows. *Professor Eric Hansen*, Acadia University, Nova Scotia, gave a short address with the title *Life is Just a Bowl of Free Energy*. This was a light-hearted and entertaining discussion of such aspects of life as marriage, sex and "boy meets girl, etc", in terms of chemical reactivity, collision theory, activation energies and catalysis.

The Falkland Islands situation was also presented in a similar light. With the added assistance of the catalysts administered in the earlier refreshment session, Professor Hansen's presentation ensured that the evening ended with the audience in a fine state of mellow equilibrium.

Waikato

Dr Garth Harris gave a talk to the first meeting of the branch for 1982 in March. He described the functions of the Energy and Research Development Committee and discussed some of the types of research being carried out under its aegis.

Manawatu

Dr D. John Faulkner of the Scripps In-

stitute of Oceanography, La Jolla, California, addressed the March branch meeting on Natural Products of Marine Origin.

From a description of how a marine sponge operates, Dr Faulkner discussed the isolation and characteristics of many unusual compounds that he and his co-workers have isolated from various different types of sponges that they have collected from many seas.

Although NMR techniques predominated in his description of his work, he also described problems associated with the synthesis of some of the compounds (especially nitrogen-containing ones), the measurement of the biological activity of the compounds, as well as aspects of electron microscopy (for the location of active compounds in the sponges) and mass spectrometry (for molecular weight determinations).

At a branch meeting in April, *Dr David A.D. Parry* was presented the ICI Prize for excellence in research by *Mr R.H. Arbuckle*, executive director of ICI. Dr Parry then addressed the meeting on his work, undertaken over the past six to seven years, on Connective Tissue — Structure and Function. He described the structure of the many different types of collagen fibrils that he, *Mr Alan S. Craig* and his other co-workers have isolated from tissues of a large variety of animals and fish. The interaction between the structure of these fibrils, their physical properties, their functions in various tissues and their relationship with other tissue components were discussed in detail by Dr Parry.

Wellington

In March, *Dr Murray McEwan* addressed

a large audience on the very interesting topic of planetary exploration. He summarised many results gained from the space craft investigations of the planets of the solar system as far out as Saturn, including results from the recent Voyager missions to Jupiter and Saturn.

Some aspects of chemical processes occurring in the planetary atmosphere were also discussed. The talk was well illustrated with photographs of the planets and their satellites. Dr McEwan is currently reader in chemistry at the University of Canterbury.

Dr Ken Markham gave an interesting discussion on flavonoid natural products and their scientific and economic interest at the April meeting of the branch. The talk covered examples of the use of flavonoids by plants as phytoalexins and by man for medicinal and sweetening purposes. Examples were given of the usefulness of comparative flavonoid biochemistry as an aid in the classification and in evolutionary studies of plants. Dr Markham is currently the leader of natural products section and group leader, Chemistry Division, DSIR, Gracefield.

Canterbury

The March meeting of the branch was addressed by *Professor R.D. Gillard* (University College, Cardiff). In his talk entitled *The Pauling Point and the Nyholm Equation*, he looked in an entertaining way at the relationship between the input into research and the results obtained.

Two local teachers recently returned from exchanges overseas shared their impressions with a good turn out of teachers (and others interested in chemical educa-

BRANCH NEWS

tion) at the April meeting. Mr Alan Wooff (Christchurch Boys High School) spent 1981 at Milburn High School, a coeducational high school in New Jersey. He highlighted the fact that chemical education in the US had not progressed much beyond Chem Study — largely because US chemistry teachers at high school level were not widely involved in the evolution of chemistry teaching, unlike their New Zealand counterparts.

Dr Selwyn Maister (Christchurch Polytechnic) spent last year at Norwich City College, Norwich. He spoke particularly about the teaching of A Level chemistry in tertiary institutions in Britain and commented on the difficulties created when different institutions compete for the same students. Comments of both speakers indicated that chemical

education in New Zealand was in a generally healthy state.

In May, the speaker was Dr John Walker (Botany Department, University of Canterbury). In his address Early Maori Medicines: Antibiotics from New Zealand Plants he looked at early folk medicine and mythology in New Zealand and went on to review his current research into antibiotics from our unique native plants.

Otago

At the meeting in April the speaker was the branch chairman, Professor David Buckingham, who gave an address entitled The chemistry of water and hydroxide coordinated to metal ions.

The branch held its dinner meeting in May in the Medical School common room. The speaker was Emeritus Professor J.

Robinson.

The 1981 recipient of the Otago Branch award to the best student in Chemistry IV at the Otago Polytechnic is Miss Jacqueline A. Smith. Miss Smith is with the MRC Autoimmunity Research Unit at the Medical School.

The Dunedin City Library has agreed to allow a display on behalf of the NZIC to be set up on the main concourse of the ground floor of the new library building. The display which will be presented on August 16 to 27, will precede and run concurrently with the annual conference. This follows the comprehensive exposition organised by Professor Buckingham last year which not only brought the NZIC to public notice, but also explained the relevance of chemistry to the community.

RESEARCH BODIES

BRANZ

Ron Humphreys has been appointed to coordinate and develop the Association's interests in building controls — a topic that will be examined in depth over the next two years by a new governmental appointment: reviewer of building controls.

Dr John Duncan described BRANZ research on surface reactions of galvanised steel sheet, including ESCA studies and paint adhesion assessments, in a talk to Wellington Division of Australasian Corrosion Association in April. He discussed the macroclimatic factors in the New Zealand atmosphere responsible for the degradation of painted metal claddings in a subsequent paper during a seminar on coil-coated metal strip. This seminar which was chaired by Dr Rob Whitney was organised by BRANZ in Wellington later in April.

Dr Hugh Baber spent a week in Australia visiting the fire research and testing facilities at the Experimental Building Station at Ryde, Sydney and the CSIRO in Highett, Melbourne. The opportunity was also taken to renew contact with various Australian manufacturers who are planning to utilise BRANZ fire resistance test facilities.

Dr Wayne Sharman was in Melbourne early May, attending the NCRB/CSIRO conference on Building Maintainability and Operational Efficiency — Research and Practice. He also visited CSIRO Divisions of Building Research and Chemical Technology in Melbourne.

Dr Rob Whitney visited Dunedin and

Alexandra. He gave talks on the work of the Materials Division of BRANZ to building industry meetings in both centres.

DRI

Dr Owen Mills is leaving for a year's study leave at the Department of Food Science, Swiss Federal Institute, Zurich, to further investigate protein-flavour compound interactions.

Dr Robert Norris is going for a year's leave in July to work at the English Milk Marketing Board on milkfat utilization. His wife, Gill, is completing a doctoral degree at Massey University with Dr Ted Baker on the x-ray structure of azurin.

The director, Peter Robertson and two of the assistant directors, Bob Lawrence and Wayne Sanderson, are to attend the 21st International Dairy Congress in Moscow in June. They will each make a number of visits to European and/or American dairy research and industry centres.

Dr Kevin Marshall, an assistant director, is to attend a course at the Massachusetts Institute of Technology in June.

Peter Hobman, head of the whey products section, is to accompany a dairy industry group on a European tour culminating in the International Dairy Equipment Exhibition in Paris. He is to attend the ADSA meetings in University Park, Pennsylvania.

Ramsay Southward and John Higgins of the casein and related products section, are visiting the Research and

Development Center of New Zealand Milk Products (Inc.) at Petaluma, California. They are collaborating with Dr Neil Walker (head of research), who was previously head of the flavour section of the Institute, on the commercial realization and production of recently developed milk protein products.

Prof Jim Harper, who is working in the whey products section at the Institute on a three year DRI Fellowship, is to visit the United States in June and July.

Dr Bob Keen, head of the flavour section, recently travelled to Venezuela to adjudicate in a dispute between a buyer and seller of approx. \$1,200,000 worth of whole milk powder. The exercise involved the tasting of nearly 1000 samples of milk powder.

WRONZ

Dr Peter Ingham, as New Zealand delegate, attended ISA meetings on flammability testing in West Germany during April and May. He travelled via the United States, making visits to Boeing in Seattle and 3M and Henkel Corporations in Minneapolis to discuss problems. He also took the opportunity to visit the Wool Bureau in New York.

Travelling with him for part of the journey was Dr John McLaughlin (Canterbury branch secretary) who attended the Biennial Carpet Cleaning Conference in Aachen, West Germany. While passing through the UK, Dr McLaughlin visited the International Wool Secretariat in Ilkley, Yorkshire.

UNIVERSITY NEWS

Auckland

Next year is the centenary of Auckland University which will be marked by various celebrations, including a centennial program of events in the period May 6 to 9 1983.

The Department of Chemistry will be holding open house for reunions of former students during that weekend and is at present compiling address lists. To make sure that you are on the list please contact the Department: Auckland 737-999 Ext 8345.

Auckland graduates in all fields are also invited to write to the Registrar of the

University to be included on mailing lists for centenary activities.

Prof. Allan Odell, of the University of Auckland has taken up a contract to investigate the mechanics of the Mobil process using Tritium labelling.

Prof. P. Le Quesne, of North-Eastern University, Boston, is spending part of a sabbatical at his alma mater, the University of Auckland.

Prof. Neil Waters and assoc. Prof. Joyce Waters are visiting Prof. Boris Kamenar in Yugoslavia. Prof. Kamenar was visiting professor at Auckland last year.

Waikato

Prof Ken McKay attended the 10th Organometallic Conference in Toronto. On his way home he visited a number of universities in Canada and the UK, taking a special interest in how they were coping with restricted funding and the likely effect of safety legislation on teaching and research.

Dr Chris Sissons has received further funding to extend his BP Energy Prize research on extremely thermophilic cellulases.

Massey

Dr David A.D. Parry and Mr Alan S. Craig (Applied Biochemistry Division, DSIR, Palmerston North) will be attending a Connective Tissue Association of Australia and New Zealand Meeting at Monash University (near Melbourne) on August 26 to 29. Alan Craig was awarded a Fibrous Proteins Merit Award from Massey University to go towards payment of his expenses for this trip.

Recent departmental seminars presented by the staff included those given by *Dr R.R. Brooks* on Geozoology, *Dr K.W. Jolley* on NMR Studies of Wheat Starch Pastes and *Dr G.R. Hedwig* on Interaction of Calcium Ions with Phospholipase A₂.

Victoria

Dr S.I. Smedley and Prof J.W. Tomlinson have been awarded a contract with the Building Research Association to study the corrosion of metal fasteners in treated timber and they are currently searching for a suitably qualified research officer.

It is expected that the results will be of value in evaluating the durability of nailed and bolted joints in timber structures exposed to wet conditions.

Dr Peter Tyler has been appointed junior lecturer in the Chemistry Department for one year. Dr Tyler completed his studies for the PhD at Victoria in 1979 and then spent two years at the University of Montreal, where he worked on the synthesis of a complex macrocyclic antibiotic — Boromycin.

Canterbury

During April, *Dr Nicholas Payne* (University of Toronto) visited the Department and spoke on P-31 nmr and X-ray diffraction studies of chiral platinum and rhodium complexes.

Other visitors in April included *Prof John B Fenn* (Yale University, Newhaven Conn.) who lectured on the oxidation of carbon monoxide on platinum and Canterbury graduate *Dr Don Hastie* (York University, Toronto) who spoke about the use of tunable diode lasers for trace gas detection.

Otago

Prof E.G. McQueen of Clinical Pharmacology retired from the Department of Pharmacology earlier this year. His position will be filled by *Associate Prof I.R. Edwards* from Leicester University Department of Clinical Pharmacology and Medicine.

A meeting of Clinical and Experimental Pharmacologists to mark Professor McQueen's retirement was held in Dunedin from May 9 to 11. Topics presented at the meeting included aspects of toxicology and clinical pharmacology. Several invited speakers from overseas were present.

A recent visitor to the Biochemistry Department was *Dr Tim Stewart*, an Otago

graduate who recently left the Institute for Cancer Research in Philadelphia to take up a position at Harvard. His field of work is the introduction of genetic markers into mice. In March, *Dr Tom Brittain* from Auckland, also visited the Department. His interests are in the rapid reactions of carbon monoxide with haemoglobin.

GOVERNMENT DEPARTMENTS

Ruakura

The spectrochemical laboratory has installed a Plasmascan emission spectrometer with the aid of a Golden Kiwi grant. This instrument has an inductively coupled torch and a microcomputer controlled spectrometer scanner and data handler. *Dr Max Sutton* and *Mike Lowe* are investigating its applications to multielement analysis on agricultural samples.

Applied Biochemistry Division DSIR

John Birch recently completed his PhD degree at Massey University Food Technology Department with *Prof E.L. (Ted) Richards* on the Thermal Degradation of 1-amino-1-deoxyketoses and their role in Flavour Development. He is now involved in a variety of odour studies in the organic chemistry group of the division.

Dr Laurie Kennedy has returned from 18 months overseas study leave. He was working on biosynthetic aspects of glycogen with *Prof Whelan* at the Biochemistry Department, University of Miami.

The Division recently organised and sponsored The Seventh Biennial Nitrogen Fixation Workshop at Massey University. Thirty five participants from DSIR, MAF, the universities and industry in New Zealand, as well as representatives from Australia, discussed topics ranging from taxonomy, bacteriology, biochemistry, genetics and factors affecting the process of biological nitrogen fixation. A special session was held on the topic: Extension of Aids to Pacific Countries.

Mrs Karen Clark, the assistant advisory officer, is shifting to Rotorua to take up a position at the Forest Research Institute. Her husband, *Tom Clark*, is finishing a PhD degree in biotechnology with *Drs I. Maddox* and *R. Chong* at Massey University on Microbial 19-Hydroxylation of Steroids and he will also be working at the Institute.

Chemistry Division Gracefield

Miss S.K. Vintiner has recently joined the forensic section after graduating in biochemistry from Victoria University of Wellington.

Dr R. Furneaux from the applied chemistry section, is visiting the USA and Canada for four months to work with *Prof. F Shafizadeh* at the University of Montana and to attend an International Carbohydrate Symposium in Vancouver.

Miss C. Sheppard is on a private visit to the UK during which she will visit organisations involved in GLC/MS investigations.

J.E. Patterson from geochemistry division visited several research institutes in

Dr Laurie Melton of the Nutrition Department is on leave for one year. He will be working with *Prof Peter Albersheim*, a biochemist, at the University of Colorado. Studies to be undertaken concern structural investigations of plant cell wall polysaccharides.

Australia to discuss inductively coupled plasma and mass spectrometry for inorganic analysis.

G.J. Dougherty of the applied chemistry section has recently attended the Aviation Fuels and Lubricants conference held in Richmond, NSW.

Dr C.D. Stevenson has recently returned from Korea after five weeks as a WHO consultant conducting a course in water quality analysis.

Dr T.M. Seward recently returned from Japan where he attended a symposium on hydrothermal reactions and also lectured to a number of universities. He has also been invited to deliver a lecture at an international conference on gold to be held in Zimbabwe.

Dr P. Rothbaum was in Australia recently for two weeks to visit several CSIRO divisions.

Dr J.V. Brewerton, group leader for food chemistry is visiting food research institutes and the World Health Organization during a one month visit to USA, Canada, UK, Switzerland and Australia.

Institute of Nuclear Sciences

Dr Graeme Lyon has returned from five months at the US Geological Survey at Menlo Park. He worked with *Dr Alfred Truesdell* of the USGS, and *Dr Dave DesMarais* of NASA-Ames and designed and constructed a new gas analysis system. The method will allow stable isotope analysis of hydrogen and methane from geothermal gas samples, using gas chromatography, in-line oxidation and vacuum distillation for separation and purification of samples.

Chemistry Division Christchurch

Dr Lewis Pannell is at present overseas visiting Japan, Hawaii and the United States. Though travelling privately, he took the opportunity to visit the Shimadzu plant in Kyoto, Japan to look at mass spectrometry equipment. While in Hawaii, he will be attending the 30th Annual Conference on Mass Spectrometry and Allied Topics in Honolulu (June 6 to 11).

In the US he plans to visit a number of major centres to look at toxicological laboratories making extensive use of mass spectrometry. Among the institutions he will visit are the National Institute of Health (Washington) and John Hopkins University (Baltimore).

Peter Henschel is planning to visit forensic science laboratories in Australia during June and July.

Dr Bill Swallow is still overseas at the Chester Beattie Institute for Cancer Research in London. He is expected back in late September.

ROCKLABS-PROCHEM AWARDS ANNOUNCED

The prizewinning entries in the Rocklabs-Prochem 1981 Golden Jubilee award competition were recently announced.

The award was instituted by *Dr Ian Devereaux* of Rocklabs as a way of commemorating the Golden Jubilee of the Institute in 1981. It was intended to recognize the contribution made to chemistry in general and the practise of chemistry by the numerous ingenious and practical inventions that are devised to solve a particular problem, and which often deserve wider recognition.

An award for this type of chemical endeavour is rare, and the Rocklabs award is believed to be the only one of its kind in Australasia. The conditions of entry were deliberately left as wide as possible and it was specifically stated that useful and practical ideas down to the technological level of a bent pin were welcomed.

The response to the award was most pleasing, both in the large number of entries received from throughout Australia and New Zealand and in the wide range in technological level of the entries. This together with a uniformly high standard of presentation from all entrants, made the job of the judges (*Ian Devereux*, Rocklabs; *John Rogers*, hon general secretary, NZIC; *Neil Waters*, Chemistry Department, University of Auckland and *Bill Denny*, Medical School, University of Auckland) very rewarding but exceedingly difficult.

It was finally decided that two first prizes of \$600 would be awarded to the entry from *AG Clark*, *J Gellen* and *D Thompson* from Victoria University of Wellington for a simple but effective device for providing multi-component gradients for chromatography and to the entry of *MD Lowe* and *MM Sutton* from Ruakura, Hamilton, for a sophisticated capillary discharge atomic spectral lamp which provides major improvements in the level of detection of certain elements by atomic absorption spectroscopy.

In addition, three entries were highly commended by the judges, receiving awards of \$200. These were from *JE Paterson*, Chemistry Division, DSIR for a mercury detector based on the photacoustic effect, from *CA Anderson* and the mechanical workshop staff of CSIRO, Division of Textile Industry, Victoria, Australia, for a press used for solvent degreasing of wool samples under pressure and from *RS Bryant*, *BG Pound*, *RM Sharp* and *GA Wright*, Chemistry Department, University of Auckland, for an accurate, compact and robust three-electrode corrosion rate meter.

In further recognition of the high standard of entries, the judges awarded certificates of merit to an additional five entries. These were from *PD Cradwick* and *RC van der Klip*, NZ Fertiliser Manufacturers' Research Association, Otara, Auckland, for a deformation and strength tester for granular materials, from *AG Charleston* of the same organization for a simplified mercury displacement method of measuring granule density, from *G Chandler*, Forest Research Institute,

Rotorua for an effective thermometer clamp, from *NT Clare*, Hamilton, for simple devices for the safe filling of pipettes and from *D Collett*, Government Chemical Laboratories, Perth, Western Australia, for an accurate and energy-efficient hot air bath for the heating of liquid samples.

The judges noted that the quantity and quality of the entries proved that originality and ingenuity are alive and well in Australasian chemistry.

In fact, many of the entries seemed suitable subjects for patent protection. While patents had been taken out on a few, there were others for which no protection had apparently been sought prior to publication. The judges would like to draw the attention of the New Zealand entrants (and that of any other would-be inventors) to the fact that the Development Finance Corporation of New Zealand exists for the purpose of arranging financial support for the development of potentially-patentable inventions.

NZIC PUBLICATIONS AVAILABLE

The following publications are available from the Institute through the registrar, in Christchurch.

Chemistry in a Young Country Ed. P.P. Williams (\$12.50).

Index to Chemistry in New Zealand 1968-1981 (\$2).

Environment and Industry — A Pollution Report, by New Zealand Scientists, published 1973 but still relevant (\$1.95).

Chem NZ — a chemical education quarterly, available free to members of the Chemical Education Group;

Chem 13 News — a Canadian Chemical education journal, nine issues per year for \$7.50;

Education in Chemistry — Royal Society of Chemistry publication, six issues per year at about \$90 pa, depending on inflation and exchange rate;

Monographs for Teachers — a RSoC series, some back issues available, few new titles recently, have become increasingly removed from the school syllabus but could be of interest to university teachers and students, prices in the \$5 to \$10 range;

Industrial Chemistry Bulletin — RSoC — approx \$75 pa for monthly bulletin, if there is sufficient interest in this new publication an approach for a bulk order could be made to RSoC;

Standards Association of New Zealand offers its 1982 catalogue to SANZ members at \$6.40. NZIC is a member and orders could be channelled through the Registrar;

Chemical Processes in NZ, Ed.J. Packer \$13 to NZIC members, available from the Secretary of the Auckland Branch NZIC PO Box 5139 Auckland.

NEW PHOSPHATE ISLAND FOUND

Chemists who have had associations with agricultural chemistry or the fertiliser industry, will be aware of the very great importance to New Zealand of the phosphate rock supplies from Ocean, Makatea, and particularly Nauru Islands in the Pacific Ocean.

The first two of these are now exhausted and Nauru has a very finite life leading, in the eyes of some, to possibly grave difficulties in future procurements of the phosphates on which New Zealand's export primary industries are dependent.

While this is too grave a view of the situation, since there is abundant phosphate available from many other sources, it is interesting and perhaps reassuring to know that a new phosphate island has been found in the Pacific, the first major find for half a century in this area. The island is Mataiva in the Tahiti group.

The main phosphate deposit is in a lagoon under very shallow sea-water which will necessitate washing of the mineral to remove salt. The deposit is at least 15 million tonnes of very high grade material and perhaps up to 20 million tonnes.

The product will contain about 36 per cent P₂O₅, which is higher than almost any other available material excluding Nauru and recovery is expected to be relatively easy using bucket and suction dredges.

Not only is the grade very high, but the phosphate is low in other deleterious ingredients such as silica and fluorine and would appear to be able to be easily fitted into the New Zealand phosphate industry infrastructure.

While no final decision has been made to proceed with the development of the island, the consortium partners which hold the rights to the deposit are at an advanced stage of the study and trial and other investigational work is in progress and projected in New Zealand and overseas.

BECKMAN TO SET UP OWN FACILITY

As a result of worldwide corporate policy, Beckman Instruments has decided to set up its own direct sales and service facility in New Zealand for all products of the analytical instruments group previously handled by Watson Victor.

Watson Victor will continue to handle the products emanating from the process instruments and electronic medical instruments divisions of Beckman.

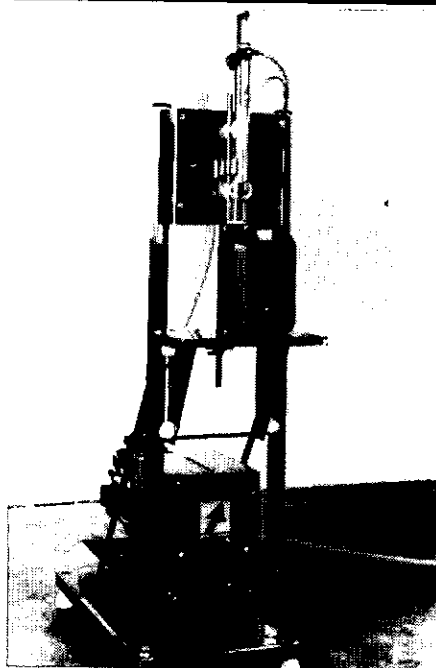
This new policy becomes effective July 5 and both companies will co-operate during a brief transitional period.

NEW OCCA COMMITTEE

Sixty-nine members (40 percent of the total membership) were present at the annual general meeting of the Auckland section of Oil and Colour Chemists' Association in March. The executive officers were confirmed as: chairman *R.A. White*, immediate past chairman *W.G. Paul*, secretary *L.R. Smith*, treasurer *A. Foster*, publications secretary *A. Macdonald*.

Six members continued for their second year on the committee: *J. Goodrum*, *R. Groves*, *W. Koedyk*, *R.A. Ness*, *L. Oliver* and *R. Spargo*.

There were six applicants for the five remaining places and in a ballot the following were elected: *P. Taylor*, *M.F. Newton*, *B. Harper*, *P. Walters* and *G. Lock*.



NEW COMPACT FILLING MACHINE

A compact filling machine from Britain, thought to be at least 15 percent faster than other equipment, dispenses liquids including oils and foaming types into containers of up to 200-litre capacity.

The machine fills 11 five-litre containers a minute with foaming liquid and can deal with up to 175 litres of non-foaming liquid per minute. Containers are filled from the bottom by means of a special nozzle to

NEW HP GAS CHROMATOGRAPH

Hewlett Packard has introduced a new gas chromatograph which claims to have operational simplicity, an innovative oven design for qualitative capillary performance and chromatographic excellence.

Special features of the HP 5790A gas chromatograph include push-button control, digital display, RS-232C compatible, built-in diagnostics and a direct approach to interfacing for recorders, integrators and data systems.

Its chromatograph controller permits the operator to select and modify analysis parameters at a push of a button. Setpoint and actual values are shown on the digital displays.

Other controller capabilities include: storage of eight GC analysis methods for fast and accurate setup; memory protection; keyboard lock for security; stopwatch for elapsed time and its reciprocal to simplify the calculation of flow rates; valve control for splitless capillary operation or automating a single valve; and diagnostics continuously monitor the instrument and provide accurate, trouble-shooting information.

The HP 5790A's "oven-within-the-oven" accommodates fused silica capillary columns for accurate thermal control, making retention time reproducibility of ± 0.005 minute possible.

The oven is calibrated to ± 0.05 degrees C of absolute temperature at 130

degrees C for accurate correlation of multi-instrument data. The equipment's variable-speed pump is equipped with a counting device set to deliver the required number of strokes to fill each container. Alternatively, the machine can be fitted to a weigh scale for filling large drums by weight.

Of stainless-steel construction, the equipment can be quickly stripped down completely for cleaning without the use of tools. Operation is by compressed air so that the filler is safe for use in hazardous areas or for handling liquids with a low flash point. Standard CETOP pneumatic components are used throughout.

The machine's adjustable platform accommodates most sizes of container. For in-line use, the platform can be removed and the filler positioned next to a conveyor. Filling commences only when a sensor has detected that a container is in the correct position. The nozzle then descends to the base of the container and, contrary to conventional filling procedures, remains in position until the container is full. As the nozzle is withdrawn upwards, it is automatically cleaned of drips by a nylon brush.

The machine is manufactured by Turbo Tools of Hull, represented in New Zealand by Gilbert Lodge and Co, Auckland.

NEW FLAME PHOTOMETRIC DETECTOR

A new flame photometric detector (FPD) for Hewlett-Packard's HP 5880A gas chromatograph, provides enhanced sensitivity and overall system inertness that is said to add capability in applications

degrees C for accurate correlation of multi-instrument data.

It also features proportionally-controlled intake and exit vents for smooth, near ambient operation. Temperature control from near ambient 425 degrees C in 1 degree C increments and temperature programming with 0.1 degree C resolution are said to enhance oven performance.

Rapid cool-down and re-equilibration increase sample throughput for maximum efficiency. There are automatic repetition of runs at specified intervals and display of run time and cumulative elapsed time between runs.

Five detectors are available: single or dual FID, dual NPD, TCD, FPD, and ECD.

The HP 5790A can be interfaced to recorders, integrators and data systems. Remote start and system read signals allow for easy central control.

The equipment's bi-directional serial communication capability allows the operator to monitor and control the GC from an external RS-232C compatible device. Instrument setpoints, system status, stored analysis methods and run times can all be monitored and modified.

Accessories include compatibility for automatic liquid sampling, purge and trap sampling for volatiles, valving for gas and liquid sample injection, valving for multi-column analysis, heated collection vents, nickel catalyst tubes and effluent splitters.

The HP 5790A is available in New Zealand through Northrop Instruments and Systems.

for the energy and petrochemical markets.

The HP 5880A FPD produces a sensitive and specific response to sulphur or phosphorus-bearing compounds with little or no response to other sample components. This specificity greatly reduces the time required for cleaning up complex sample matrices.

Up to four different detectors can be mounted on one instrument, allowing the chemist to choose the exact requirements needed to meet specific analytical problems.

Significant redesign of the heated transfer line provides three operational improvements on the HP 5880A FPD: reduction of the internal diameter of the transfer line minimizes the residence time of the sample in the line; a glass lining, instead of a metal lining, reduces sample interaction with the transfer line; the transfer line has been brazed externally with brass to provide even distribution of heat.

Other new features include a redesigned detector board that supplies a variable high voltage and the FPD signal and a new flame ignition (piezoelectric) device provides a simple, reliable method for lighting the flame.

Using the HP 5880A gas chromatograph, fused silica columns can be inserted through the transfer line directly to the base of the detector jet.

The new flame detector is available through Northrop Instruments & Systems, Wellington.

ACCURATE MEASURING PUMPS

Measuring chemicals for the treatment of water, blending liquids, dispensing critical and costly materials requires a pump to perform with extreme accuracy and reliability. The Mono MPL-Q Range is ideally suited.

All the MPL-Q Range are positive stroke metering pumps and are available as single units or ganged assemblies with a full range of pump heads in a variety of materials, to meet a wide range of demanding operating conditions.

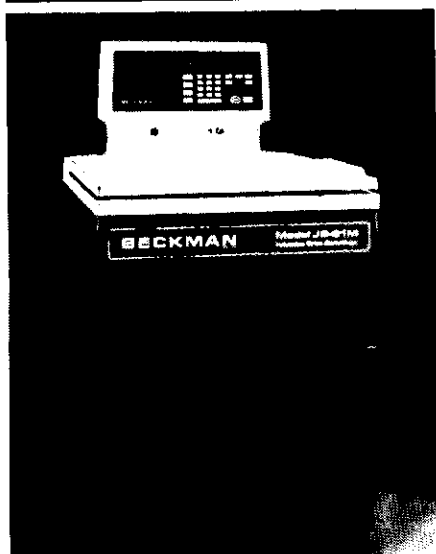
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HIGH SPEED CENTRIFUGE

Beckman Instruments, has introduced a new high-speed refrigerated centrifuge, the Model J2-21M, an advanced version of the J2-21.

New features of the J2-21M include microprocessor control, which makes centrifugation more automated and more flexible. The system has storage space in its memory for 10 programs, so that runs can be repeated time after time; a choice of nine acceleration and 10 deceleration rates; and, automatic temperature compensation after keyboard entry of the

name of the rotor to be used. Operating parameters and actual conditions are shown on a digital display.

The drive, adapted from advanced ultracentrifuge technology, has no brushes to wear out or replace. A frequency-controlled induction motor provides the high torque and power to accelerate rotors. Other J2-21M features include diagnostic signals, automatic partial vacuum, sturdy components and such safeguards as rotor imbalance detection, over-temperature protection and electronic doorlock.

Like the J2-21, the J2-21M accepts 11 rotors, from versatile fixed-angle and swinging bucket rotors to the Elutriator Rotor for harvesting living cells. The J2-21M reaches a maximum speed of 21,000 rpm and generates forces to 51,500 g.

PLOTTER WITH MANY FEATURES

An A4-size plotter for engineering and laboratory applications incorporates, as standard, features which, according to the British manufacturer, are normally found only on equipment offered at twice the price.

Chief of these refinements are writing speeds of 120 cm/sec in the Y-axis and 60 cm/sec in the X-axis and high sensitivities in 18 calibrated ranges from 0.05 mV/cm to 20 V/cm.

Variable range potentiometers provide overlapping ranges in the amplifier inputs to both axes. All range controls can be locked to ensure constant calibration.

Calibrated range to range accuracy is plus or minus 0.2 per cent.

The general-purpose model, complete with cover, is 390 mm wide x 460 mm deep x 160 mm high and weighs 9 kg. It is fitted with standard IEC connectors. The equipment can be operated at ambients of 0-50°C and be run off standard power supplies. It accepts normal fibre-tipped pens.

The plotter is manufactured by Bryans Southern Instruments of Mitcham, Surrey, England. Local agent is E.C. Gough, Christchurch.

ALFA PRODUCES NEW BROCHURE

Alfa Products, Thiokol/Ventron Division has available a revised and updated brochure entitled Homogeneous Catalysts.

The 16 page brochure, with over 90 references, reviews the applications of the company's expanded line of soluble organometallics and transition metal salts which are useful in single phase reactions.

Among the compounds available are derivatives of chromium, cobalt, iridium, iron, manganese, molybdenum, nickel, osmium, palladium, platinum, rhodium, ruthenium, titanium, tungsten, vanadium, and zirconium.

These catalytic reagents have attracted interest in a number of industrial processes which are described in the brochure, including hydrogenation, hydroformylation, oligomerization, oxidation, carbonylation and hydrosilylation.

VALVE WITHSTANDS ARDUOUS CONDITIONS

The latest rotary valve designed by a British firm for the bulk handling of powders and granules, wood chippings, coal and other loose products, has throughput rates up to 160 m³/h and is said to be of robust construction to withstand arduous service conditions.

Designated the Derion 450 airlock and blowing seal, the unit is fitted with a positively located rotor to give a constant and close running clearance between the end covers and bore and to eliminate sideways movement.

Standard devices are produced from cast iron and mild steel but stainless steel can be specified for such applications as food processing and coatings of tungsten carbide are available if abrasives are to be handled.

The valve is manufactured by Westinghouse Brake & Signal Co. of Chippenham, Wiltshire. Local agent McKenzie & Holland, Naenae, Lower Hutt.

THE ECONOMIC ANSWER TO MANY PUMPING DUTIES

Mono B Range pumps are suitable for a wide range of industrial applications, including pumping of batter mixes, light creams, and gelatine in the food industry, small batch transfer of hair oils, shampoos, and light creams in the pharmaceutical industry, transfer of highly sensitive photographic emulsions, and polyelectrolyte dosing of sewage sludge.

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THE SCEPTICAL CHEMIST

For the majority of Technical Institute students examinations are an accepted annual hurdle; whether they be internal and examined by the Institute concerned, or external with national examinations set under the supervision of AAVA.

Whether the exam is internal or external is usually of little immediate consequence to the student as percentage passes are similar. At present, students studying towards the Chemistry option of the New Zealand Certificate in Science are required to pass external examinations in both their initial (Stage 3) and final (Stage 5) years, assuming UE standard at entrance.

The Education Department, through the Authority for Advanced Vocational Awards (AAVA) has proposed that all examinations at stage 3 level become internally examined. Such a change would considerably boost finances as external examiners' fees are substantial, while internal examiners receive no remuneration. Students would pay the same exam

fees which in recent years have risen faster than the price of milk.

The only group to support the proposed change sees it as a move towards autonomy for individual institutes, with a resulting increase in prestige. Those of us whose concern is to protect existing standards, see prestige as the result of high standards being maintained nationally; this will not be possible with only one year of external examination especially when the erratic standard of first year students is considered. This problem alone should override any financial consideration.

This sceptical chemist hopes that employers of NZCS Chemistry technicians will not consider this a trivial matter and voice their concern accordingly.

Anon.

Should anyone be interested in contributing to this column anonymously or otherwise, please forward their contribution to Dr Mike Kingsford, 9 Egremont St, Belmont, Auckland 9.

BOOKS

Essential Ideas in Physical Chemistry

D E Wilson,
Hodder & Stoughton, 1981
180 pages, NZ\$12 approx., paperback.

This is a British book at senior school level. It completes a set of volumes in which Dr Wilson, formerly head of chemistry at Manchester Grammar School, has attempted to concentrate on the essential ideas of the three main branches of chemistry.

Three chapters are devoted to atomic and molecular structure, bonding and states of matter, followed by chapters on energetics, reaction kinetics, physical and chemical equilibria, and finally, electrochemistry.

There are abundant clear diagrams and a good number of worked examples. Each chapter is followed by a selection of questions, including essay topics, problems and short answer questions.

The style is that of a straight forward didactic approach. Facts and ideas are set out clearly and concisely, but there is little to engage the interest except when viewed as an organised selection of basic material of physical chemistry.

In other words, this is a book to revise with rather than to study and learn from. Its main value in New Zealand will lie with teachers looking for a source of examples and methods of calculation and a resumé of elementary physical chemistry.

MJ Taylor

Dr Taylor is an associate-professor in chemistry at Auckland University.

New Zealand Medicinal Plants

SG Brooker, RC Cambie and
RC Cooper

Heinemann Publishers, Auckland, 1981,
pp 117. \$38.95, hardback.

Although very important for natural product chemists and scientists interested in possible physiological effects of components of New Zealand plants, this book is far from the usual type of text reviewed here — it is presented rather as an attractive show piece more likely to catch the botanist's eye.

It updates an earlier edition published as a handbook 20 years ago by our recently retired editor and Dr Cooper, a New Zealand plant expert.

Although hardly polemical, the predecessor apparently has led to misuse and consequent misunderstanding in some cases and it is the authors' objective to correct the records on New Zealand plants which have been used for medicinal purposes and to add all relevant new material revealed by their diligence in the intervening period. Professor Cambie has joined the team to add authority to the chemical data provided. The trio are to be commended for their efforts.

The book gives notes on 100 native and introduced plants which have been used by Maori or Pakeha. Mainly the flowering plants are dealt with, but surprisingly brief sections on members of lower botanical orders and conifers precede them.

Each entry provides the classification, common and Maori names and then

botanical, medical, pharmacological and chemical notes. Not surprisingly, data are not provided on the efficacy of the uses described; indeed the authors prominently warn on possible dangers associated with the use or prescription of the materials noted.

For the plant natural products chemist, there are in many cases welcome comments on various extractives, but no chemical details are provided; instead there is an invaluable set of 414 references to mainly original sources.

One learns, for example, that the colouring matters of Coprosma bark are anthraquinone derivatives and that New Zealand species contain the iridoid asperuloside and while even many chemists will find these statements a little bald, the references will set researchers on their way.

The many photographs, paintings and line drawings make the book a beautifully illustrated compendium of high quality, but why do publishers continue to produce "wide" rather than "tall" books? Perhaps to keep them from book-shelves and on coffee tables; this one deserves the privilege.

Perhaps while providing this invaluable collection of data the authors do as great a service in highlighting the challenge which remains. There are approaching 2000 vascular plants in New Zealand and the great majority are found only here; of the active constituents of the relative few which have found genuine medicinal use, only a very few have been isolated and examined chemically.

FJ Ferrier

FJ Ferrier is professor of organic chemistry at Victoria University of Wellington.

The Biosynthesis of Secondary Metabolites

R B Herbert

Chapman and Hall, London, 178 pages,
UK price £6.50.

This is an excellent introduction to a fascinating area of metabolism. Secondary metabolites are found mostly in plants and microorganisms and include such diverse compounds as alkaloids, terpenes, antibiotics, etc. To quote the author "they represent the termini of branch (railway) lines of metabolism".

The author is an organic chemist and the book is strong on the chemical principles underlying biosynthetic processes. Thus the introduction includes a discussion of chirality and enzyme action followed by a review of the basic biochemical reactions involved in biosynthesis. The second chapter provides a clear summary of the techniques used to study these processes with a valuable section on use of both radioactive and stable isotopes.

Subsequent chapters deal with specific families of secondary metabolites and include the polyketides, terpenes, steroids, alkaloids and antibiotics. I have a minor complaint about Chapter 5 (The Schikimic Acid Pathway) in as much as the author departs from the conventions for designating the A and B rings of flavonoid compounds. Nevertheless this book will

be great value to all chemists and biochemists concerned in any way with natural products and/or secondary metabolism.

J R L Walker

Dr J.R.L. Walker is reader in plant biochemistry, Botany Department, University of Canterbury.

Pharmacy in New Zealand Aspects and Reminiscences

Reg Combes

249 pages, 1981 Ray Richards for the
Pharmaceutical Society of New Zealand.

It is unfortunate that pharmacists in New Zealand, following their British counterparts, have pre-empted the name that rightly belongs to those who practice chemistry in its true sense.

To make things worse they use it in their less professional activities which gives the public the impression that they are more interested in selling cosmetics than in the accurate dispensing of drugs.

Nevertheless this should not blind us to the fact that 1981 was not only the Golden Jubilee of the NZIC, but also the centenary of the Pharmaceutical Society of New Zealand, to whom we offer our belated congratulations.

Such an occasion demands a book of history and Reg Combes has prepared this and done it well. From the point of our readers it is good that he is one who appreciates the distinction between pharmacists and chemists.

It is a history in which he plays a greater part than his modesty permits to say. In 1943 a deputation of pharmacists met A.H. Nordmeyer to discuss certain aspects of pharmaceutical benefits. Combes records that the minister was surprised at the reasonable way the deputation put its case, he does not say that he led the deputation and in his own words, "undermined" the honorable gentleman.

The reviewer was interested in the parts of the book dealing with well-known chemists. We knew that J.A. Pond (1846 — 1941) practised as a public analyst and consultant in Auckland for many years, including being government analyst from 1882 to 1911 and at one time established a factory for making butter boxes in Auckland, but we learn from this book that he was a member of the first elected Pharmacy Board, and ran a pharmacy in Auckland, specialising in homeopathic medicines — including "Bragg's Charcoal Biscuits".

He also fought in the Maori wars. His biography must be written before it is too late. Dr Roy Gardner is one that is also mentioned. Like many famous chemists, he started life as an apprentice in a pharmacy and received a DSc in chemistry for his investigations into the chemistry of native plants.

These are only some aspects of a very interesting book, even if some chapters relate more to the mechanics of pharmacy than matters of general interest. It is pleasing also to read a work that tends to bring chemists and pharmacists together.

S G Brooker

Stan Brooker is a retired industrial chemist, ex-editor of *Chemistry in New Zealand* and currently an honorary lecturer at the Chemistry Department, Auckland University.

LETTERS

Dear Sir,

The caption to the photograph on page 38 of Chemistry in a Young Country gives a rather misleading impression.

The Littrow spectrograph illustrated was acquired by the Dominion Laboratory in 1938, so was in use long before 1950. Wilson and Fieldes had been publishing from their findings since 1940. This photograph was first published in 1940 (N.Z.J.Sc.Tech. 21B.232. 1940.) and 1950 was actually the year the installation shown was completely redesigned for relocation.

H.J.Todd.

Dear Sir,

Time was when there were annual complaints about the quality of 35 mm slides used to illustrate lectures at NZIC conferences. The journal published cautionary articles instructing the do's and don't's of slide presentation of data. Organising committees annually drew the attention of intending participants to these articles.

Slide illustration of lectures has gradually been replaced by the now ubiquitous overhead projector. For a time this resulted in a big improvement in data presentation. Alas the rot has set in again now that lecturers have discovered they can photocopy pages of data onto transparencies. This is a simple process for the lecturer but results in an unreadable jumble of unintelligible data for the audience.

There were many examples of this at the Jubilee Conference, including some horrendous examples from eminent overseas speakers. Professor Cadogan was of course an honorable and spectacular exception.

It is time again for conference organising committees to issue guidelines, indeed warnings, about the necessary standards for presentation of illustrative material by conference lecturers.

Denis Hogan.
NZIC Registrar.

The above letter from Denis Hogan was received before the April issue was posted and its similarity to last issue's Sceptical Chemist reinforces how important the presentation of material is.

A publisher's handout that arrived in my mail is relevant to this question, the book, Presentation of Data in Science by Linda Reynolds and Doig Simmonds, appears from the blurb to be an excellent library reference book. The authors are from the Royal College of Art and the Royal Postgraduate Medical School respectively and the publisher is Martinus Nijhoff.

A member of our editorial committee has compiled the following notes for the preparation of lecture illustrations.

These brief notes are intended as a guide to assist in the preparation of illustrative materials for lectures and apply equally to slides or overhead projections.

Preparation

1. In preparing material upon an A4

sheet, keep lettering within a 240 by 180 mm boundary. If a smaller working area is used, maintain dimensions of three to two. A landscape (horizontal) format should be used to suit the screen.

2. If the full dimension is used, use 24pt (6.5 mm) characters.

3. Letraset, headliners or stencil are most suitable. Avoid typescript and do not use handwritten material.

4. Avoid unnecessary uppercase lettering and underlining.

5. Limit the number of words to between 10 and 12.

6. Use tables only if the information cannot be shown graphically.

7. Keep numeric data to a minimum.

8. Consider your draughting and photography sections — allow plenty of time.

General

1. Illustrations prepared for publications may be unsuitable for lecture material.

2. Illustrations must be independent comprehensive units.

3. Do not use too many slides, they can illustrate a lecture but cannot replace it.

I cannot resist adding to this list a quotation culled from an article on the presentation of research results published in Chemistry International, the news magazine of IUPAC no less: "Another don't: never, never utter a systematic IUPAC name, it is bad taste."

Editor.

PEOPLE



C.J. Wilkins

A. May

Earlier this year, Professor C.J. Wilkins retired from the University of Canterbury after a career spanning 37 years in the Chemistry Department.

Educated at St Andrews College, Professor Wilkins graduated MSc from Canterbury in 1938, then took up a John Edmond Fellowship at Otago. He went overseas to work with Professor Emeleus at Imperial College, London, where he completed his PhD.

He returned to New Zealand and was appointed lecturer at Canterbury in 1944. He was made senior lecturer in 1948, reader in 1959 and appointed to the second chair (in inorganic chemistry) in 1965.

His research interests have varied widely and colleagues consider him to have been one of this country's most influential inorganic chemists. Initially interested in the chemistry of non metal compounds especially silicon halides, he developed an interest in the chemistry of transition

metal complexes — especially those of molybdenum. He has also long been interested in determination of molecular structure particularly by the gas electron diffraction method.

His other major interest has been investigating West Coast minerals, particularly the heavy detrital minerals which have accumulated in the blacksands of Westland's beaches.

Professor Wilkins has been active in establishing links between Japanese and New Zealand academic chemists. He spent time at the University of Tokyo in 1973 and again in 1976 to further research interests in the electron diffraction field.

Contact with both undergraduate and research students has always been important to him — he feels it provides a central theme to university work. Colleagues comment that many of his past students now play important roles in industry, teaching and the universities.

In retirement, Professor Wilkins plans first to complete writing a series of papers related to his work on molybdenum complexes, then perhaps take the opportunity to travel again.

Alan May is now working in Western Australia as a senior process engineer involved with project and engineering design work for Greenbushes Tin. He had previously worked in the copper-cobalt industry in Zambia and until 1980 worked as project superintendent for the process chemistry of the uranium leach extraction process at the Rossing Uranium mine in

South West Africa.

Greenbushes Tin has a large pegmatic orebody containing tantalum, niobium, tin, lithium, beryllium and other ores. Mine and process plants are being developed to recover these metals, though the present economic climate has slowed the program. Despite this the process problems are mainly chemical and provide scope for a lot of interesting work.

Dr Tony Herd is currently on industrial leave from the Auckland Technical Institute. This 12 weeks leave is to enable tutors to renew their acquaintance with current industrial and research practice. Basing himself at the Fertiliser Manufacturers' Research Association laboratories in Otara, he has visited a number of other laboratories, including those of NZ Starch Products, the Environmental Health Laboratory and Wellcome NZ.

David Quah, formerly with East Coast Fertiliser Co, Napier, has joined the Wood Technology Department of NZ Forest Products, in Auckland.

Dr Nigel Eggers, has transferred from the Pharmaceutical Section of Chemistry Division, DSIR, in Lower Hutt, to the Food Section in Auckland.

Miss Jan Siegers of Chemistry Division DSIR Auckland who received the Auckland Branch award for top chemistry five student at ATI, has also been awarded the Institute's prize for the top NZCS student in the country for 1981.

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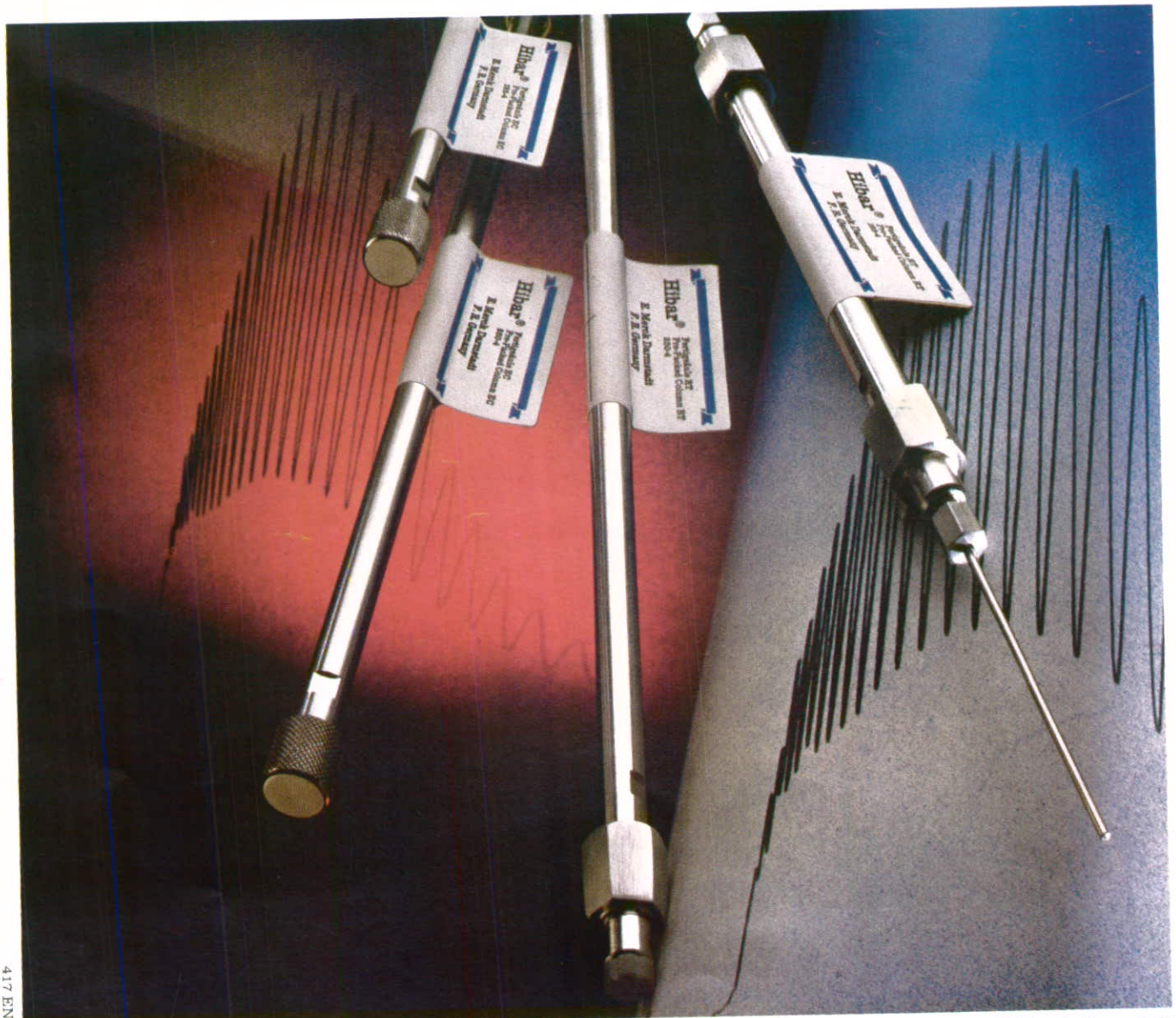
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