JOURNAL OF THE NEW ZEALAND
INSTITUTE OF CHEMISTRY

VOL. XVI APRIL, 1952 No. 2

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JOURNAL OF THE

NEW ZEALAND INSTITUTE OF CHEMISTRY

VOL. XVI APRIL, 1952 No. 2

THE YOUNGER CHEMISTS' INTERNATIONAL PROJECT

A. T. Johns, Department of Scientific and Industrial Research, Grasslands Division, Palmerston North.

The 75th Anniversary Conference of the American Chemical Society was held in New York from 3rd to 7th September, 1951, and was followed by the XIIth International Congress of Pure and Applied Chemistry and the XVIth Congress of the International Union of Pure and Applied Chemistry. Dr. Edwin Brand, Professor of Biochemistry at Columbia University, conceived the idea that this meeting of chemists would be an excellent opportunity for bringing together younger members of the profession from all over the world. Through the Institute of International Education, Dr. Brand was eventually able to arrange for the Economic Co-operation Administration to foot the bill for those countries receiving Marshall Aid and for the Ford Foundation to pay for those from non-Marshall Aid areas. The scheme, which became known by its cable address "YOCHINPROJ," enabled chemists under 40 years of age from all countries outside the iron curtain to attend the conferences in New York and then take part in a three weeks' tour of the United States. The fortunate 265 younger chemists included people from Brazil, Bolivia, Ceylon, Finland, Germany, Crete, Indo-China, Iran, Iraq, Pakistan, Paraguay, Philippines, Taiwan and Thailand, to mention just a few of the nationalities represented. Each member of the scheme was given 100 dollars' worth of books on chemistry which he could select from an extensive list.

We were all accommodated at the Park Sheraton Hotel, where each room had a radio, television set and bathroom. The service was excellent and the only thing we could complain about was the temperature and high humidity which, coupled with the noise of the New York taxi-cabs sounding their horns 24 hours a day, made sleep a little difficult.

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"YOCHINPROJ" were officially welcomed by President Furman of the A.C.S., Donald Shank of the Institute of International Education, Boyd of the E.C.A. and Ford Foundation, and Alden Emery, general secretary of the A.C.S. It was stressed that the purpose of the scheme was not so much to further our knowledge of chemistry but to improve international relations, to broaden our outlook, and above all to see something of the American way of life. This last was to be the main purpose of the three weeks' tour.

The total enrolment for the Chemical Conclave was about 18,300, making it the largest gathering of chemists ever held. Those who associate the United States with operations carried out on a gigantic scale could not have been disappointed on this occasion. Naturally there were many different sections of the conference, and many sessions running concurrently. These were held in the six large hotels close to conference headquarters in the Hotel Statler. The organisation to handle this vast gathering ran very smoothly, though it was more difficult to change from one section to another than one would have liked. It was rather surprising that the chairmen allowed a good deal of latitude in the time taken to deliver a paper, and many exceeded the time limit by a considerable amount. Detailed accounts of the proceedings, the technical sessions, lectures, speeches and dinners are published in three issues of the "Chemical and Engineering News." It was rather difficult to contact anyone you wanted to meet. However, it would have been a great deal more difficult but for a card index in the lobby of the Hotel Statler. There was a card for every person registered for the Conference, and it gave information as to where he was staying, his particular chemical interests, and his home address.

It was rather enlightening to see how much publicity the meetings obtained. The Conference was treated as an event of national importance. There was a welcoming letter from President Truman, an official civic welcome by the City of New York, an unveiling of a bronze plaque by Dr. C. L. Parsons, a former secretary of the A.C.S.; an address by Governor Driscol, of New Jersey, on "Politics in an Age of Science," and a speech by the Vice-President of the United States on the "Chemical Problems of the Farmer." The U.S. Post Office issued 10 million commemorative stamps, of which 2½ million were sold within the first two days. In fact it appeared to be a National Chemistry Week, and the slogan of the Conference, "Chemistry—Key to Better Living," appeared in shops and offices all over the States. The meetings and dinners were heard or seen by radio and television.

The hospitality extended to visitors throughout the visit by companies, institutes and even by individuals was amazing. There were 48 excursions to chemical manufacturers, universities and institutes, that could be made during the Conference. Many of them were all-day trips, so that it would have taken several months to cover everything. The American Cyanamid Company offered free breakfast each morning to any who wished to go to their cafeteria for it. This company also arranged a special programme at the Hayden Planetarium of the American Museum of Natural History. It was a most memorable programme, consisting of a lecture demonstration by Mr. Gale entitled "Chemistry On a Cosmic Scale," and a discussion by Dr. Stearns on "The Contribution of the Physical Chemist to the Astronomer." The method of presentation of movement of the planets and stars across the heavens was a most awe-inspiring spectacle carried out with wonderful showmanship on the part of the demonstrator.

We were privileged to see the first Coast-to-Coast television hook-up in our hotel room. This telecast of the proceedings of the Japanese Peace Conference in San Francisco, relayed over 3,000 miles, came through very clearly. The speeches not in English were translated immediately. We saw a Russian speaking and heard in English what he was saying only about a sentence behind his actual utterance in Russian.

While in New York I visited the National Dairy Research Laboratories at Oakdale, Long Island. The building in which they are housed was once the home of the fabulous Vanderbilts, and is situated in an exclusive residential section of Long Island. We hear so much about how taxation has hit the large estates in England that it was rather surprising to find that the same thing occurred in the U.S. This house consisted of some 80 rooms, a full-sized indoor tennis court, and around the 1,000-acre estate were numerous guest houses. In the days of the first Mrs. Vanderbilt these houses were connected to the main building by artificial canals, and the guests were conveyed by gondola. Those days are gone, some of the canals are filled in, and the tennis court now houses a dairy technology pilot plant section. A large amount of research is done on ice-cream, it being a major industry in the States.

I was interested in the bacteriology section and their organisation for doing analytical work. When they carried out a fermentation they divided their samples into various fractions and sent them to separate laboratories in the building. For example, four samples from an experiment, (1) for lactic acid estimations, (2)

volatile acids, (3) sugars, (4) B vitamins, were sent to different analysts, and the answers came back on a slip of paper in a few days' time; very nice for the bacteriologist.

After New York, "YOCHINPROJ" was divided into five groups for the three weeks' tour. We were allotted to a group according to our interests. At first a number decided that they were in the wrong groups and wanted to change so as to visit particular places. However, it was pointed out that the tours were to broaden our outlook and teach us something of the American way of life, and eventually few changes had to be made. At the various places we visited we were entertained and all arrangements made by the local branches of the A.C.S. Travel was generally by train and Greyhound bus, but one party which went to Florida travelled part of the way by plane.

We visited industrial laboratories and plants such as a Salt Manufacturing Company, Atlantic Refining Company, America Viscose Company, Swifts' stockyards and laboratories, Armours' Packing House, Bowman Dairies, Universal Oil Products, Inland Steel Co., Sherwin Williams Paints, Abbotts' Pharmaceutical and Scientific Instrument Companies, to mention just a few of the alternatives on one tour. The outstanding impression in these commercial undertakings was the high proportion of effort put into research. For instance, Smith, Kline and French, pharmaceutical manufacturers, had two floors of their building given over to research and the testing of their products in extremely well equipped physiological laboratories. Two floors were used in packaging, one floor in offices, and about a quarter of a floor to manufacture. The industrial people were most hospitable. We were usually entertained to lunch and given some token of the visit, such as a propelling pencil, cigarettes, cigarette lighters, and at one plant a year's subscription to an American magazine. Another deep impression of the industrial concerns was the extraordinary variety of products from one plant and the part that the chemist plays in developing new products. I will take as an example "Corn Products" at Clinton, which wet mills about 48,000 bushels (27 truck loads) of corn per day. One of the main products is corn starch, but they don't produce just corn starch; they have over 60 grades of it, to suit needs of the manufacturers who use it in producing cotton cloth, rayon, paper, explosives, coloured inks, aspirin pills, and a great many other products. The by-products of corn-refining include corn oil and various feedstuffs. A protein from the gluten is made into fibres and woven into fabrics. People are now wearing corn suits, dresses, socks, stockings, and carrying corn hand-bags. Refined corn oil is used in the frying-pan and in salad dressing. The crude oil is used

by soap-makers. "Steep water" is used in the manufacture of some feeds, in growing yeasts, and as a medium for mould growth in the manufacture of penicillin and streptomycin. The synthetic fibres in general are making considerable headway, and though not superior to wool as yet, may in combination with wool give a better product.

Another example of multiplicity of products is the meat industry, which now relies largely on its by-products for its profits. Firms such as Armours and Swifts can produce over 50 vital pharmaceuticals, such as insulin, adrenalin, thyroid extract and cortisone. Here it is apparent that the chemist is a very vital part of these giant organisations.

In 1938 Congress directed the Secretary of Agriculture to establish four regional research laboratories to search for new and wider outlets and markets for farm commodities, and one of the four laboratories is situated in each of the major farming areas of the United States. I was able to visit two of these laboratories, the Eastern in Pennsylvania and the Northern in Illinois. The four buildings are almost identical and the staff in each consists of about 300 persons. The research programmes depend on the crops in the particular area, but in each case there is a wide variety of scientific disciplines under the one roof and an extensive pilot plant set up. In the Northern Laboratory there is an experimental fermentation plant in which about 500 gallons of anhydrous alcohol or other solvents can be produced per day. Another of the facilities is the semi-works plant for the Synthetic Liquid Fuels Project in which sugars obtained from agricultural residues are converted to liquid fuels. Work is going on in the production of synthetic resins and rubber from agricultural products. Lactose in whey is fermented to lactic acid, which is converted to acrylic resins, and synthetic rubbers are made from methyl acrylate. These rubbers have properties which make them superior to the natural product for certain purposes.

The list of achievements of these laboratories since their foundation is a very impressive one.

We were able to visit a number of universities, among them Chicago, Wisconsin, Illinois, Western Reserve at Cleveland, and California. Such institutions in the U.S.A. benefit in no small manner from generous benefactors, and in some cases income from patent rights. With the State universities money is generously provided, even for magnificent Student Union buildings. The Union building at Wisconsin is remarkable and could be the subject of an article on its own. It has four different places in which to eat, varying from the snack-bar to dining-rooms, and employs

175 full-time employees and 300 student workers to handle 10,000 meals provided per day. There are several ballrooms, numerous lounges, a full-sized picture theatre and a theatre, a ski jump in winter, and countless clubs and facilities for all kinds of activities. The basement is a beer cellar on the German model. There appear to be a great many distractions to discourage concentration on work.

All members of "YOCHINPROJ" were taken to a baseball or football game as part of the tour. I saw University of Illinois play California at football in a stadium at Illinois which is capable of seating 80,000. The charge for admission is approximately thirty shillings each, so it can be seen that college football is big business. Probably the most entertaining part of the afternoon was the preliminaries, the display by the University band of 200 players, and the antics of the cheer leaders. The whole show was expertly organised à la Americaine.

A good deal of university research is financed by the contract system. These contracts are given by the Armed Services and the Atomic Energy Commission for fundamental work which may have no bearing on the field of defence at all. The contracts are for one year, to enable a professor to carry out an approved piece of research work, and provide the funds for him to employ perhaps several people and buy the necessary equipment. It seems that the Armed Services are used merely as the administrative agency for distributing funds for fundamental research, in which the U.S. scientists realise that they are not as strong as in Chemical Engineering and Technology.

There is no doubt that Chemistry and Chemical Engineering have had a tremendous influence on life in America—so much so that the visitor from outside might almost feel that he is in another world. Here I might quote from an article on the Chemical Industry in "Fortune": "Chemicals must now be considered the premier industry of the United States . . . . for the first half of the century the title was held by the automobile industry . . . . . But as of now the Chemical industry cannot be matched by any other in dynamic growth, earnings and potential for the future. . ."

On tour we were entertained by local sections almost every night. On week-ends we visited the homes of American chemists and were treated so hospitably that it was almost embarrassing. Perhaps the most impressive local section dinner was that of the Chicago section of the A.C.S. Their monthly meeting takes the form of a dinner usually attended by 600-800 members, and we were the guests at one of these. As we were finishing dinner,

the treasurer presented the balance-sheet by projecting it on to two screens, one at either end of the room. After formal business, three addresses were given by (1) a doctor, (2) a lawyer, and (3) a clergyman, giving their viewpoints on the effects of chemical research on social life. These speakers were listened to by the audience as they sat at the tables and sipped their wines. The evening finished by a general mix-up in the lobby and the partaking of a punch bowl.

We finished the tour with a reception at the headquarters of the American Chemical Society in Washington, where the officers of the society showed us how they handle their membership of 66,000 and produce all their numerous journals. We returned to New York tired, having seen more than we could absorb, but deeply impressed with the magnitude of the achievements of applied chemistry in the U.S. It was rather surprising and gratifying to find the interest that was shown in New Zealand and how many were keen to come here on exchange visits or under the Fulbright Scheme. It is a pity that we cannot take more advantage of this keenness.

ELECTION TO FELLOWSHIP

L. G. Neubauer, M.Sc. (N.Z.), Ph.D. (McGill), F.N.Z.I.C.

Dr. Neubauer is a Senior Chemist at the Dominion Laboratory. He is dealing with wood problems and is particularly interested in the use of Pinus radiata for pulp and paper manufacture.

He recently spent six months at a newsprint mill in Texas, taking part in tests conducted at the mill with New Zealand-grown P. radiata.

Prior to this he completed his doctorate in Wood Chemistry at McGill University and the Canadian Pulp and Paper Research Institute in Montreal.

Professor S. N. Slater

OUR PRESIDENT FOR 1952:

Professor S. N. Slater

A complete biographical note on our new President was published in the Journal XIV, 79, June (1950). Professor Slater is an enthusiastic researcher, as the following notes on his current work will show:

"The research work with which I am directly concerned falls into two groups. Firstly, we are studying a number of amaroids or bitter principles, particularly picrotoxin and tutin. The former has been studied intensively by many workers, but its complex behaviour still defies complete analysis. We have, however, been able to effect a clarification of relationships between some of its important transformation products and have exposed and rectified many errors of fact and interpretation with which the literature is scattered. The behaviour of tutin resembles that of picrotoxinin very closely, but a fundamental difference has now been established in that tutin is monolactonic only, whereas picrotoxinin is dilactonic. Its investigation, therefore, will now follow somewhat different lines. Secondly we are concerned with the attempted synthesis of various analogues of azulene, particularly the linear and angular tricyclic system in which the rings are respectively 5-, 6-, 7-membered, and the nitrogenous heterocyclic counterpart of azulene itself. We have had some success in constructing the rings system, but their dehydrogenation to the aromatic state is proving extremely difficult."

Together with his enthusiasm for research, Professor Slater is an energetic teacher, and during last year, his first as Professor of Chemistry at Victoria College, he arranged for outside lecturers of merit to lecture in their own fields to the students, and to these lectures members of the Institute were invited.

VICE-PRESIDENT AND WAIKATO CHAIRMAN: Dr. H. E. Annett

Born 5th September, 1884, Dr. Annett was educated at Tiffins School, then at S.E. Agricultural College, Wye, Kent, under Sir Daniel Hall and Sir John Russell, where he obtained the Wye Diploma with Honours in Chemistry. He was the first student to obtain B.Sc. in Agriculture of London University. Subsequently he was appointed research assistant to Sir John Russell. In 1907 he joined the Indian Agricultural Service. Whilst on study leave during 1912-13, Dr. Annett worked at University College, London, under Ramsey and Collie, on inorganic and advanced organic chemistry, and also with Bayliss and Plimmer on physiological chemistry, with special reference to proteins and enzymes. During this period he found time to work at Copenhagen with Sorenson on pH and with Jorgensen on fermentation, and to tour German laboratories. By examination in bacteriology and fermentation he was granted a Fellowship of the Royal Institute of Chemistry. After returning to India, Dr. Annett took charge of most of the Agricultural Colleges and Research Institutes in turn, carrying out special work on sugar production from both canes and palms.

In 1916, when Turkey came into the war, supplies of medicinal opium and morphia failed, the Indian opium being too low in morphia for medicinal use. The reason for this had eluded investigators up till this time. The problem being urgent, Dr. Annett was recommended from England to take up the work. He says: "Fortunately the solution proved simple, and within a few months Indian opium of high morphia content became available."

The work was continued and led to the investigation of the amounts of other alkaloids and meconic acid in opium and the various factors affecting alkaloid content, both environmental and non-environmental. It led to a fuller knowledge of the function of alkaloids in plant life. Apart from the value of the results to the troops, the work is reputed to have brought a profit of at least £2 million to the Indian Government. Mainly as a result of this opium work, Dr. Annett was awarded the D.Sc. degree of the London University.

In writing to the Editor, Dr. Annett gives the following description of his work in New Zealand:

"In 1925 I came to New Zealand on holiday, and was so attracted to the country that, in spite of attractive offers to me in India, I decided to retire on proportionate pension. I returned to New Zealand early in 1927 and took a job on Mr. J. M. Ramstead's farm at Matangi for a year, to get experience of farming. At this time Woodman's researches at Cambridge on the high feeding value of young grass were attracting attention, and I gave an address at Hamilton on the application of this work to New Zealand and its great possibilities. This led to my taking a farm at Matangi, where I put into operation grassland farming on highly intensive lines. Manurial trials on the field scale were carried out and showed the value of lime and potash in this area. It is interesting to note that only recently has the value of potash on our light soils in the Waikato been recognised. The value of nitrogenous manures for the production of winter and early spring grass was established and here again this is now being recognised by other workers. In the first five years my farm was in operation several thousand farmers came to see the work. Later my farming operations were extended and I was an original director (honorary) of the Waikato Land Settlement Society, which settled 30 families of unemployed on the land during the depression years. For five years I was in charge of I.C.I. agricultural advisory work in New Zealand, but when the depression caused them to cut down their work and turn to propaganda, I was not interested. Subsequently I was in charge of 2500 acres at Tokoroa, where by the aid of cobalt large and spectaclar increases in carrying capacity were brought about. In the war years I was appealed for from the Army by the D.S.I.R. to take charge of gas mask manufacture, and was then made advisory officer to the dehydration factories. After the war I hoped for a rest, but was asked to give help at the new Soil Fertility Research Station at Hamilton. I agreed to do this if I was allowed to take up work on soil moisture in relation to pasture growth, of which little was known in New Zealand. This led to our experiments on spray irrigation for pastures.

"Droughts in summer have caused a loss in production in New Zealand of about £70 million over the last 18 years. There have been losses in meat and wool as well. I tried to get spray irrigation going as long ago as 1932. As a result of the work at the Research Station many hundreds of farmers have now put in spray irrigation plants and the movement is spreading rapidly. It has been said that spray irrigation promised the biggest advance in grassland farming since the coming of rotational grazing.

"The work at the Research Station on soil moisture has, however, also given us knowledge, which was long overdue, concerning soil drainage, evaporation, and the use of moisture by the pasture.

"The irrigation plant on my own farm has been wonderfully successful, and attracts many visitors.

"I have had many compensations for my lack of leisure, not the least of which has been the opportunity I have had of meeting so many of our young research workers, whose work, I may add, fills me with admiration. I feel deeply grateful that they should feel I am fitted to become their Vice-President, though at a time when I feel I can hardly do them justice."

Finally it might be mentioned that, having studied and worked at Rothamsted in England, and with his wide agricultural experience in India, Dr. Annett is well fitted to be a member of the governing body of Massey Agricultural College and the Dairy Research Institute.

AUCKLAND CHAIRMAN

MR. GEORGE LAMBERT started his chemical career as a lab. boy in the Thames School of Mines in 1928. Taking a University School of Mines Scholarship, he did one year's mining course at Otago University College. He joined the staff of the Dominion Laboratory in 1930 and completed his degree in Chemistry at Victoria College (B.Sc. 1931, M.Sc. 1933). After six years at the Dominion Laboratory, Mr. Lambert returned to Thames as Assistant Director of the School of Mines. In 1938 he rejoined the Dominion Laboratory on Coal Survey staff, and in 1940 transferred to the metallurgical section. Mr. Lambert took up his present position of metallurgist and works manager in 1946 with the newly-formed company of Hayes Metal Refineries Ltd., manufacturers of non-ferrous foundry ingots.

Mr. Lambert has given freely of his time to Institute activities, as the following list shows:—Wellington Branch Committee, 1939-42; Wellington Branch Chairman, 1943; Wellington Branch Delegate, 1942-43; Auckland Branch Committee, 1947-49; Auckland Branch Secretary, 1950-51; Auckland Branch Chairman, 1952.

ENCYCLOPEDIA OF CHEMICAL TECHNOLOGY. Edited by R. E. Kirk and D. F. Othmer. Vol. 7, Furnaces to Iolite. 982 pages. 1951. New York: Interscience Encyclopedia Inc. Subscription price $25.00. (Australasian agents: Angus & Robertson, Sydney.) This volume follows in the tradition of its predecessors reviewed in this Journal, and a printing schedule of one volume for every seven months has been maintained. Major articles in the present volume deal with Hormones, Hydrocarbons, Iodine and its compounds and preparations, Heterocyclic compounds, Glass, Gas warfare agents, Insecticides, and Hydrochloric acid.

MANAWATU CHAIRMAN

DR. R. M. DOLBY was born in 1906 and entered Victoria College in 1925 as a Junior University Scholar. He was awarded a Sir George Grey Scholarship and graduated M.Sc. in 1928 with first-class honours. He was on the staff of the Dairy Research Institute as Assistant Chemist in 1928-29. On being awarded an 1851 Exhibition Scholarship he went to King's College, London, where he continued his work in physical chemistry and graduated Ph.D. in 1931. He returned to the Dairy Research Institute as Chemist, a position he still holds. He has published a number of papers on the chemistry of cheesemaking, rheology of butter, and on other subjects connected with dairying.

WELLINGTON CHAIRMAN

MR. MASKILL SMITH was educated at Whangarei High School, where he gained Junior and Senior National Scholarships. He attended Auckland University College from 1932 to 1936, graduating with first-class honours in physical chemistry.

After a few weeks at Training College, and commencing a B.Com. course, he joined the staff of the Dominion Laboratory in Wellington. He was stationed at the woolpack factory in Foxton for just on a year, carrying out investigations on methods of processing New Zealand flax fibre, after which he returned to Wellington to investigate some methods of decorticating New Zealand flax.

As assistant chemical engineer, he was engaged in the development of a gas-producer suitable for heavy vehicles during the early years of the war. Later he assisted in the design of vegetable dehydrating plant, and assisted in the design, construction, and operation of the Hastings factory. Since that time he has been consultant to the Marketing Department on problems associated with their factories.

In 1947, Mr. Maskill Smith was appointed chief chemical engineer to D.S.I.R., and is now in charge of the laboratory situated at Gracefield, Lower Hutt. Although a converted store, this laboratory incorporates the latest ideas in laboratory layout, and when completed should be a very convenient and efficient research tool. Besides settling itself into position, this section of the department is engaged in problems of food technology, fuel technology, utilisation of minerals and coal, and other problems in the field of chemical engineering.

In 1939 Mr. Maskill Smith visited Australia to study methods of testing petroleum fuels and in 1947-47 he spent seven months in the United States as Scientific Liaison Officer.

CHRISTCHURCH CHAIRMAN

DR. ROSA STERN was born in Vienna and graduated Dr. Phil. (Ph.D.) from Vienna University. After graduation she joined the staff of a large Austrian industrial firm and was made Chief Chemist in 1930. Research work she did on the industrial application of amylases and proteases was embodied in a number of patents. Dr. Stern left Austria because of political events and obtained a position on the staff of the Wheat Research Institute, Christchurch, where she worked mainly on the biochemistry of breadmaking, publishing several papers on the subject. Dr. Stern resigned from the Wheat Research Institute in 1950 and became the consulting chemist to three industrial firms in Christchurch.

OTAGO CHAIRMAN

MR. C. L. CARTER will be well known to members, being a foundation member and now a fellow of the Institute. He is also an associate of the Royal Institute of Chemistry.

This is the second occasion 1919, and his interests lie mainly in the field of natural products, his latest contribution being a paper on the chemical constitution of Karakin.

In 1949 Mr. Carter was granted refresher leave to he has been elected chairman of the Otago Branch, and he has also served as its secretary for eight years. He joined the staff of the Chemistry Department, University of Otago, in study for four months at the University of Edinburgh under Professor E. L. Hirst, who is well known for his work on Vitamin C. In 1950 Mr. Carter was promoted to the rank of Reader in Chemistry, and was acting head of the Chemistry Department during the absence of Professor F. G. Soper overseas.

RESEARCH NOTE

"The isolation of d-14-methylhexadecanoic acid from the external tissue fat of ewe carcases.

By R. P. Hansen, F. B. Shorland and N. J. Cooke.

(Received 24/12/51.)

Examination of the external fatty tissues of ewe carcases has revealed the presence of substantial quantities of branched-chain fatty acids. From a hydrogenated sample of the fat it has been shown that one of the main branched-chain fatty acid constituents is d-14-methylhexadecanoic acid. The constants, including X-ray analysis, saponification equivalent, C-methyl, melting point, optical rotation and combustion analysis agree very closely with those required for the natural "d" acid isolated from wool grease by Weitkamp (J. Amer. Chem. Soc. (1945), *67*, 447) and for the synthetic "d" acid prepared by Velick and English (J. Biol. Chem. (1945), *160*, 473). X-ray diffraction analysis of this acid conforms with the value of Nunn (J. Chem. Soc. (July, 1951), p. 1740) for a sample provided by Weitkamp.

Dr. B. B. Marsh, having obtained his Ph.D. at Cambridge for work on the chemistry of muscular contraction and its relation to fluid retention and volume of muscle fibres, has now returned to the D.S.I.R. and is at present engaged in Meat Research at the Dominion Laboratory. During his period overseas, Dr. Marsh spent six months aboard the "Balaena," a floating factory, in the Antarctic, studying problems associated with whalemeat.

Professor F. G. Soper is now back in New Zealand, having visited universities and places of chemical interest in the U.S.A. and Great Britain on a Carnegie grant.

Mr. J. R. McGimpsey has resigned his assistant lectureship at the Chemistry Department, Otago University, and has accepted a position with Dairy Products Ltd., Edendale. Mr. McGimpsey's successor will be Mr. F. A. Johnson, from Canterbury University College.

Mr. J. T. Linzey, who took up a position with Nilcrom Porcelains (Aust.) Pty., Melbourne, towards the end of 1950, is now back again with McSkimming & Son Ltd. in Dunedin.

THE TWENTY-FIRST ANNUAL REPORT

For the Year Ending 31st October, 1951.

Council has pleasure in presenting to members a record of activities for the year ending 31st October, 1951.

OFFICERS FOR THE YEAR:

President: P. R. Parr.
Vice-President: Professor S. N. Slater.
Delegates: Auckland, A. W. Mackney.
Waikato, Dr. H. E. Annett.
Manawatu, Dr. C. R. Barnicoat.
Wellington, A. P. Oliver.
Canterbury, F. H. G. Johnstone.
Otago, O. H. Keys.
Hon. General Secretary-Treasurer: W. G. Hughson.
Assistant Secretary: A. P. Oliver.
Editor of the Journal: S. G. Brooker.
Registrar: H. K. Palmer.

MEMBERSHIP:

Membership figures for recent years are as follows:—

	1948	1949	1950	1951
Auckland	76	88	95	77
Waikato	—	—	—	24
Manawatu	—	—	—	31
Wellington	132	137	147	133
Canterbury	55	54	60	65
Otago	44	55	54	52
Overseas	40	36	44	47
	347	370	400	429

MEMBERS OVERSEAS:

A large number of our members have been fortunate enough to gain scholarships of various kinds. The profession and the Institute also benefit from the action of Chemists who have studied overseas at their own expense or have worked in other countries for a period.

During the year, leave of absence was granted to Miss M. P. Bartrum, P. G. Harris, W. I. Taylor, R. L. Blakley, W. B. Healy, O. K. Sewell, J. L. Mangan, G. W. Vivian.

REGISTRAR:

Mr. H. K. Palmer has continued as Registrar to the Institute, and has been of the greatest assistance to all office holders.

NEW BRANCH:

The Waikato Branch was constituted by Council in February, 1951. The new Branch rapidly won its spurs by organising a very successful Conference the first year of its existence.

I.C.I. PRIZE:

This is the third year of award of the Imperial Chemical Industries (N.Z.) Ltd. prize of 25 guineas for the best contribution to Chemistry judged on work published over the past five years. The prize was won by Mr. E. P. White for his work on Alkaloids.

MORCOM GREEN AND EDWARDS PRIZE:

This is the first year of award of this prize of £25 for original work in Pure or Applied Chemistry. The prize was won by Mr. I. K. Walker for work on the spontaneous combustion of wool.

INSTITUTE COMMITTEES:

All Sub-Committees of Council submitted Annual Reports to the Annual General Meeting, and a brief summary of these is as follows:—

CONFERENCE, 1951:

Conference, 1951, was held at Hamilton under the chairmanship of Mr. N. T. Clare, from August 20-22. This successful series of meetings was jointly organised by the Waikato Branch and the New Zealand Section of the Royal Institute of Chemistry.

EMPLOYMENT COMMITTEE:

Eleven circulars were sent to members on the Register, advertising a total of 119 vacancies.

EXAMINATIONS COMMITTEE:

During the year 23 candidates sat a total of 47 papers for the Laboratory Assistant's Certificate Examination. It should be pointed out that the Institute is providing a service which is of direct benefit to a wide variety of employers without being of much immediate benefit to the Institute.

FOOD PARCELS:

All Branches realise the continuing need of persons on the Royal Institute of Chemistry Benevolent Fund List, and collections are still a regular Branch activity.

JOURNAL:

Publication of the Journal is in the capable hands of Mr. S. G. Brooker, Editor, and his Auckland Committee. Exchanges with overseas Journals are increasing yearly. A notable step forward has been the acceptance of the kind offer of the Auckland Institute and Museum to house the considerable Library which the Institute is gradually building up.

MEDICAL ADVERTISEMENTS COMMITTEE:

No cases have been brought to the attention of the Committee this year, but continued vigilance by all members is requested.

MEMBERSHIP COMMITTEE:

This Committee, consisting of three Fellows of the Institute, scrutinises and reports on all applications for admission to the Institute.

PATENTS COMMITTEE:

The function of this Committee is to keep watch on the Patent Journal for matters affecting members.

PROFESSIONAL STATUS COMMITTEE:

This Committee is interested in all matters affecting the status of our members in the community, especially in regard to Union Membership.

SALARIES COMMITTEE:

The Committee is preparing to conduct a further salary survey. Members are urged to reply fully and promptly to circulars which will be sent to them.

STANDARDS INSTITUTE:

Eight of our members act as Institute representatives on various Committees of the Standards Institute.

STANDARD METHODS OF ANALYSIS:

Several projects are nearing completion and quite a number have already been published in the Journal.

FINANCE:

In common with most other bodies, the Institute is feeling the impact of rising costs. Expenditure on the Journal has steadily increased over the past few years, while the salary of the Registrar has also been increased to compensate him both for the general increase in salary rates since his appointment as well as for the additional work necessitated by the growth of the Institute. Other expenses show a rising tendency and in particular the Institute will have to meet heavier travelling expenses due to the increase in the number of members of Council consequent upon the formation of the two new Branches. After giving careful study to the problem, Council has decided to increase subscription rates for the coming year to £3/3/- for Fellows and £2/2/- for Associates.

UNESCO:

During 1951 a Sub-Commission for Science was established. Mr. B. E. Swedlund represents the Institute on the Sub-Commission.

A science abstracting committee has been investigating the effectiveness and coverage on the abstracting of N.Z. articles.

RULES:

An Auckland Sub-Committee is considering the revision of the Rules and Regulations of the Institute.

AMERICAN CHEMICAL SOCIETY DIAMOND JUBILEE:

Dr. V. Armstrong and Mr. W. G. Hughson were delegates to the Jubilee, while Mr. Hughson represented the Institute at a gathering of Secretaries of all Chemical Societies. Professor F. J. Llewellyn, Dr. A. T. Johns, and Mr. J. Vaughan were present as guests of the American Chemical Society Younger Chemists' Project.

LIFE MEMBERSHIP WITH COMPOUNDED SUBSCRIPTION:

As from November, 1951, members attaining the age of 50 years may have their subscription compounded. Those interested are invited to enquire from the Registrar.

THANKS:

Council's thanks are again due to that large proportion of our membership which ensures that our Institute remains a live and active body in the community. We again thank Mr. Joiner for inscribing all membership and examination certificates.

For and on behalf of the Council,

P. R. PARR, President:

A. P. OLIVER, Acting Hon. General Secretary.

REGULATIONS COVERING PRIZES AWARDED BY THE INSTITUTE

1. I.C.I. PRIZE:

The prize of twenty-five guineas has been donated by Imperial Chemical Industries (N.Z.) Ltd., and will be known as the I.C.I. Prize.

The conditions of the award are as follows:—

1. The prize shall be awarded to the member of the Institute who, in the opinion of the Council, has contributed most to the development of some branch of chemical science, this contribution to be judged by research work published or accepted for publication during the five years immediately preceding the date fixed for the closing of nominations.
2. Branch Committees shall be invited to submit nominations to the Council by a date to be fixed by the Council, nominations to be accompanied by copies of the papers presented in support of the nomination. The Council itself may also nominate candidates. Branch Committees shall invite nominations from individual members of their Branch of the Institute.
3. If in the opinion of the Council there is no candidate among those nominated who has sufficient merit, the Council may refrain from making the award.
4. The prize shall be presented at a meeting of the Branch to which the prize-winner belongs.
5. A member to whom the prize has been awarded shall not be eligible for nomination for a further award until five years have elapsed.

2. MORCOM GREEN, EDWARDS PRIZE:

Donated by Messrs. H. H. Edwards, F.N.Z.I.C., and Morcom Green.

1. *Name:* This prize shall be referred to as the "Morcom Green, Edwards Prize."
2. The value of the prize is £25.
3. The prize is offered for the encouragement of original work by young chemists in pure and applied chemistry and shall be open to any member of the New Zealand Institute of Chemistry actually living in New Zealand, who has not attained the age of 35 years on the 1st of June in the year of the award.
4. Application for the prize shall be made to the Secretary of the Applicant's Branch not later than the 15th day of May.** The Branch Committee, having promptly ascertained that the application is in order and that all relevant documents are attached, shall forward the application to the Hon. General Secretary-Treasurer to be in his hands not later than the 1st of June.**
5. (i) The President and the Vice-President shall consider the applications and shall submit a report thereon together with their recommendations to the August meeting of Council. They may appoint one or more assessors to assist them if necessary.
   (ii) The candidate will be assessed on:—
   (a) Work he has published.
   (b) Processes he has designed or developed.
   (c) The product he produces.
   (d) By any other means appropriate to his circumstances.

   Special consideration will be given to work done during the year prior to the application.

6. There shall be no award made if in any year no suitable candidate is forthcoming. In this case the monies shall be retained for the purpose of awarding an additional prize when circumstances warrant.
7. An applicant may, upon request, sustain his application for one year, after which fresh application must be made.
8. The prize shall be awarded at the Annual Conference of the Institute.

3. INDUSTRIAL CHEMICAL ESSAY PRIZE:
Regulations governing the Industrial Chemical Essay Prize:—

1. The New Zealand Institute of Chemistry shall offer periodically a prize for an Essay dealing with Industrial Chemistry in New Zealand. (Note:—The prize is at present awarded every second year and closes 30th of June, 1952, 1954, etc.)**
2. The Prize shall be open to all members and local members not more than 30 years of age on the 1st of June in the year of the competition.
3. The term "Industrial Chemistry" is to be understood in its widest sense. The Essay may deal with a single industry or with a group of industries or with any consideration affecting chemical industry as a whole in New Zealand.
4. The Essay shall be restricted to a length of from 6,000 to 8,000 words and shall be submitted in a form suitable for publication.
5. The Institute shall have the right to publish the winning Essay if deemed desirable, and unsuccessful Essays shall be eligible for re-submission if not previously published or abstracted.
6. The Essay, in completed form, must be received by the General Secretary-Treasurer not later than the 30th of June** in the year of contest.
7. The Essays shall be judged by a committee of examiners set up by Council for the purpose. The President of the Institute and the Editor of the Journal shall be ex officio members of this committee.
8. The Award shall be made by Council after consideration of the report of the committee of examiners and the presentation of the prize shall be made, whenever possible, at the annual conference of the Institute.
9. No award shall be made if, in the opinion of the committee of examiners, there is no entry of a sufficiently high standard of merit.
10. While the Essays are to be judged primarily as contributions to the development of chemistry in New Zealand, a reasonably high standard of literary work, and particularly of clarity of expression, will be required.
11. The value of the prize will be such sum as Council may from time to time determine, and it shall be spent on books or instruments to the satisfaction of Council. (Note:—The value of the prize is at present £25.)
12. Due notice drawing attention to the Essay competition shall be given in the Journal.

NOTE: **CLOSING DATE.—Council has fixed 30th June for this year and 31st May for future years.

LIST OF NEW ASSOCIATES ELECTED 19th FEBRUARY, 1952

Raymond Kevin GARLICK, B.Sc., C/o Dunlop N.Z. Ltd., Lane Street, Woolston, Christchurch.

Cecil John MATHIESON, M.Sc., C/o N.Z. Forest Products Ltd., Penrose, Auckland.

Arthur David WILSON, M.Sc., Dairy Products Ltd., Edendale, Southland.

Paul Robert JACOBSON, M.Sc., C/o I.C.I. (N.Z.) Ltd., 16 The Terrace, Wellington.

Mrs. Maria LONSKA, M.Sc. (Charkow), S. W. Peterson & Co. Ltd., 165 Vivian Street, Wellington.

Miss Margaret Annie WARD, B.Sc. (Lond.), S. W. Peterson & Co. Ltd., 165 Vivian Street, Wellington.

William Sefton FYFE, M.Sc., Chemistry Department, Otago University, Dunedin.

Arthur John BECKWITH, M.Sc., A.R.I.C., Chemistry Department, Canterbury University College, Christchurch.

Terence George MACARTNEY, M.Sc., 48 Totara Road, Riccarton, Christchurch.

Dr. Hugh Robinson WHITEHEAD, M.Sc. (Leeds), D.Sc. (Leeds), A.R.I.C., The Dairy Research Institute, Massey College, Palmerston North.

Denis James HOGAN, B.Sc., Dominion Laboratory, Government Building, P.O. Box 1290, Christchurch.

William Rest MUMMERY, D.I.C. (Lond.), F.R.I.C., Dairy Research Institute, Massey College P.O., Palmerston North.

William Edwin ANDERSON, B.Sc., Woolston Tanneries Ltd., P.O. Box 577, Christchurch.

A.N.Z.A.A.S., SYDNEY MEETING, 20-27th AUGUST, 1952

The tentative Programme for Section B is as follows:—

THURSDAY, 21st—

9.30 a.m.—Presidential Address: Professor A. K. Macbeth, C.M.G., M.A., D.Sc., F.R.I.C. (University of Adelaide).

11.15 a.m.—Discussion: "The Social and Industrial Responsibilities of Australian Chemists."

2.00 p.m.—Concurrent Sections—

Symposium: "Co-ordination Chemistry." Chairman: Dr. F. Lions.

Symposium: "Natural Products." Chairman: Dr. G. M. Badger.

FRIDAY, 22nd—

9.30 a.m.—Inspection-tours of local chemical industries. Details of these excursions, which will occupy the morning only, will be set out in the Section Programme to be issued to members, and will also be displayed at the entrance to the Chemistry School. Tickets for these excursions will be available from the Section Office in the Chemistry School.

MONDAY, 25th—

9.00 a.m.—Section Committee.

9.30 a.m.—Concurrent Sections—
Symposium: "Physical Methods in Organic Chemistry." Chairman: Dr. A. L. G. Rees. Research Papers.

2.15 p.m.—Liversidge Lecture.

6.00 p.m.—Social Evening: The Section will be guests of the N.S.W. Branch of the Royal Australian Chemical Institute at an evening of relaxation, dancing, entertainment and refreshment on board a ferry cruising on Sydney Harbour.

TUESDAY, 26th—

9.30 a.m.—Symposium: "Current Chemical Research in Australasia." A summary of work in progress by representatives from all States.

2.00 p.m.—Research Papers.

This programme is still subject to slight alterations. A complete time-table, including titles of papers and names of speakers, will be issued to all members of the Section and will be displayed in the vestibule of the Chemistry School.

In the meantime, authors of papers are requested to submit titles *and abstracts*, not later than 1st May, to the Hon. Section Secretaries (Dr. F. H. Reuter, Applied Chemistry Department, N.S.W. University of Technology, and Mr. H. C. Freeman, Chemistry Department, Sydney University).

LABORATORY ASSISTANTS' CERTIFICATE EXAMINATION

We publish below two of the papers set in the recent examination:—

THEORETICAL CHEMISTRY

Time: Three (3) hours.

Attempt questions 1, 2 and 3, *and any THREE others.*

Give formulae, equations and diagrams wherever you can make your answer clearer by so doing.

Ten minutes are allowed for reading the paper, and THREE HOURS for answering the questions.

H = 1 O = 16 Cl = 35.5 Mn = 55 Fe = 56

The use of logarithm tables or slide rules is permitted.

1.—100 ml. of a mixture of hydrogen, carbon monoxide and carbon dioxide was added to 100 ml. of oxygen in a eudiometer. After sparking the volume was reduced to 112.5 ml., and the addition of caustic potash caused a further contraction of 50 ml. The residual gas was completely absorbed by alkaline pyrogallol. All measurements were made at room temperature and atmospheric pressure. Calculate the percentage composition by volume of the mixture. (10 marks.)

2.—Calculate the weight, in pounds, of pyrolusite, containing 60% by weight of manganese dioxide, which would be required to liberate sufficient chlorine from hydrochloric acid to make 10 pounds of anhydrous ferric chloride from metallic iron, assuming that 10% of the chlorine is wasted. (12 marks.)

3.—It is suspected that there has been carelessness in filling the bottles of these reagents:—Dilute sulphuric acid, dilute hydrochloric acid, and dilute ammonia solution. Each of these may have been contaminated with either or both of the other two. Describe briefly what tests you would perform to test each reagent in turn for the presence of either in both of the others. (18 marks.)

4.—Write balanced equations for the following processes, with a very brief note in each case of the conditions required to bring about the reactions. Each step of a process is to be given separately if the process is of more than one step.

(a) The preparation of chemically pure nitrogen. (4 marks.)
(b) The manufacture of acetylene. (4 marks.)
(c) The preparation of invert sugar. (4 marks.)
(d) The manufacture of soap. (4 marks.)
(e) The Solvay process for manufacturing sodium carbonate. (4 marks.)

5.—(a) Define, and give one example of each of the following (not one of the substances given in (b)):—
Acid, Base, Salt, Acid Salt, Basic Salt, Basic Oxide, Amphoteric Oxide. (14 marks.)

(b) Classify each of the following under one of the above types, and give its formula:—
Borax, Baking Soda, Washing Soda, Alumina, Quicklime, Plaster of Paris. (6 marks.)

6.—What are the chemical differences between vegetable and petroleum oils? What tests would you use to distinguish between them, and to detect a small amount of either (about 10%) mixed with the other? (20 marks.)

7.—What do you understand by "hardness" of water? Describe the types of hardness, and the methods used to remove hardness. State which methods are used in industry for treating very large quantities of water. (20 marks.)

8.—What is an ion? What sorts of substances form ions in aqueous solution? Give some representative formulae or equations. (4 marks.)

Write ionic equations for the following reactions:—

(a) Caustic soda solution and ammonium chloride solution are mixed, and then boiled. (4 marks.)
(b) Dilute sulphuric acid is added gradually to a cold solution of sodium carbonate. (4 marks.)
(c) Silver nitrate solution is mixed with a cold solution of sodium chloride, and then aqueous ammonia is added. (4 marks.)
(d) Caustic soda solution is added gradually to a solution of zinc sulphate. (4 marks.)

ELEMENTARY PHYSICS

Time: Two (2) hours.

Attempt FIVE questions only.

1.—Outline briefly the conditions which must be fulfilled in the construction of a reliable beam balance, indicating clearly the factors on which the sensitivity depends. How may the sensitivity be determined experimentally?

A body is weighed first in the left and then in the right hand pan of a balance, the respective weights being 9.842 g. and 9.833 g. Calculate the ratio of the lengths of the arms of the balance and the actual weight of the body.

2.—Briefly describe some of the methods available for measuring temperature and the approximate ranges of their application. What are the main sources of error to be investigated and allowed for in a mercury thermometer. Explain why it is necessary to record the barometric pressure when calibrating a thermometer at the boiling point of water.

3.—Describe with aid of a sketch, the optical arrangement of a photographic camera, pointing out the function of each component. Why is a single convergent lens not generally used?

If the photographic plate in a camera is set 7½ cms. from the lens when photographing a distant object, calculate the distance between the plate and the lens which will sharply focus an object which is only 45 cms. from the lens. How big will the image on the plate be if the object is 8 cms. high?

4.—Find the rating in kilowatts and the resistance of an electrical heater which, used on 200-volt mains, raises the temperature of 3 kilograms of water from 20°C. to 80°C. in 6.3 minutes, heat losses being neglected. (Assume 1 calorie = 4.2 Joules.) Would it be possible to run two such heaters from a power point which is connected to the mains through a 15-amp. fuse? Describe the wiring of the 3-pin plug and socket which connects the heater to the mains.

5.—Answer THREE ONLY of the following:—

(a) Explain the use of a concave mirror by a dentist and a convex driving mirror in a car.

(b) Explain why two colours which match by artificial light don't always match in the daylight.

(c) Explain why the melting of a block of ice, floating on water at 0°C. doesn't cause any change in the level of the water.

(d) Explain why a spark is often seen when an electrical circuit is opened but not when it is closed. Describe one way of reducing the spark.

(e) Explain why a moving coil galvanometer comes to rest more quickly when the terminals are short-circuited.

6.—Discuss the process of conduction in electrolytic solutions and state Faraday's Laws of Electrolysis. If the density of nickel is 8.8g. per c.c. and its electrochemical equivalent is 0.00030g. per coulomb, calculate the time that will be required to deposit a layer of nickel 0.10mms. thick on a piece of metal which has a surface area of 500 sq. cms., using a current of 1.5 amps.

BOOKS RECEIVED

CHEMISCHE TECHNOLOGIE: Anorganische Technologie I and II. Pp. 609 and 644. Edited by Karl Winnacker and Ernst Weingaertner. 1950. Munich: Carl Hanser Verlag. Paper boards, 33 and 37 DM.; linen, 37 and 41 DM. As these were the first books to come to us from the rapidly-growing stream of post-war German chemical literature, we examined them with more than usual interest. They are the first two of a five-volume set. Vols. 3 and 4 will deal with organic technology and 5 with metallurgy and general topics. The first chapter of Vol. 1 is a 170-page survey of process principles and unit operations; then follow chapters on water, oxygen and liquid air, inert gases, potash salts industry, boron compounds, salt and alkalies, chlorine and fluorine and their inorganic compounds and per(oxy) compounds. Vol. 2 deals with sulphur, phosphorus and nitrogen and their inorganic compounds, carbide, calcium cyanamide, silicon carbide, mortars and cement, ceramics, glass, chromium and manganese compounds, mineral pigments, solid adsorbents and bleaching agents. With such a wide coverage no great amount of detail can be expected, but the Editors have done well. The chapter on inorganic pigments, for instance, contains a well-illustrated section on the use of the electron microscope in their examination. A good feature is the wealth of diagrammatic illustrations, flow sheets and phase diagrams. Yields of the various processes are given in many cases. The printing and binding are excellent, but the reviewer was disappointed that more space was not given to recent wartime German work. Most of the references are pre-war and such processes as, e.g., the manufacture of hydrogen peroxide by the autoxidation of certain organic compounds are dismissed in a few lines. Many of the references, particularly to patents, are undated. Nevertheless, the five volumes will make a useful addition to the general literature on industrial chemistry.

HETEROCYCLIC COMPOUNDS, Vol. 2. Edited by Robert C. Elderfield. 571 pages. New York: John Wiley & Sons, 1951. $15.00. This volume is on the same lines as Volume 1 (see this Journal, *15*, 18 (1951)) and deals with polycyclic compounds having a five or six-membered ring containing one oxygen or sulphur. The Editor states in his preface: "Inasmuch as the chemistry of important polycyclic oxygen compounds has never been adequately treated in its entirety in a single volume, it appears to be desirable that this material be presented in considerable detail." This aim has been achieved and it is evident that the series will be an excellent one. Whether many chemists can afford it at the price asked, which is an increase over Volume 1 of more than two-thirds on a page basis, is another matter.

Volume 5 of Dr. W. Theilheimer's *SYNTHETIC METHODS OF ORGANIC CHEMISTRY* (S. Karger, Basle, 1951. 62 Swiss francs) is in English and contains abstracts of papers published in 1948 and 1949, with a few references to 1950. It completes the first series, and contains a cumulative subject (but not author) index and elaborate cross-references to previous volumes, which accounts for its increased size and price. Vol. 6 will start a new series. It is therefore time to take stock. The series has been in demand, as there have been two reprintings of Vol. 1 as well as an English translation, and in the reviewer's opinion such confidence is justified, and each volume makes the series more useful. The printing and binding are good, but there are a few misprints.

CHEMISTRY OF CARBON COMPOUNDS. Edited by E. H. Rodd, D.Sc., F.R.I.C. Volume 1A: General Introduction and Aliphatic Compounds (first part). Pages 1-778. 1951. Amsterdam: Elsevier Publishing Co.; London: Cleaver Hume Press, 32a South Audley Street. £7. This volume is the first of a series which marks something of a landmark in the literature of organic chemistry. The work is planned in five volumes and this binding represents the first part of Volume 1. (How many actual books there will be has not yet been disclosed.) The advisory committee consists of Sir Robert Robinson (Chairman), Sir Ian Heilbron, and Profs. Cook (Glasgow), Haworth (Sheffield), Hirst (Edinburgh) and Todd (Cambridge), which should be sufficient to assure the reader of an authoritative work. A point of particular interest to us is that the team of 23 authors of this part includes two New Zealanders now at Cambridge in Dr. I. D. Morton, who contributes to one chapter, and Dr. W. E. Harvey, who contributes to three. The work is a triumph of British scholarship and we would like to have seen it printed and published in Britain. The general plan of the work follows that of Richter's four-volume treatise, the aliphatic section of which was last published in English in 1934. The treatment is, however, rather fuller; e.g., metal and metalloid compounds of the alkyl radicals are given 42 pages as against 18 slightly larger pages in Richter. The volume opens with an introductory section of over 200 pages, including long articles on Stereochemistry by Prof. E. E. Turner, Reaction Mechanisms by Prof. E. D. Hughes, and Free Radicals by Profs. Hey and Waters. The remainder of the book deals with the first section of the aliphatic compounds which will be concluded in Vol. 1B. The printing and binding are good, but some mistakes were noted. The statement on page 507, under (7), that "Ketones are formed by addition of water to acetylene hydrocarbons of the type RC ⋮ CH . . . " is misleading and is in fact contradicted in the next sentence. On page 685 the formula for ethyl sulphuric acid is incorrect, and lacunae were found in the index. The publishers will no doubt include a list of errata in a future volume, and a full index is promised in Volume 5. The price of each book is based on the number of pages, and on this one there was a discount of £1 on prepublication orders. Similar discounts will be available on future volumes, which will be issued at the rate of about one every ten months. The complete work at the advanced subscription rate will cost over £30, but every organic chemist will want a set.

CONFERENCE — 1952

Conference this year is to be in Wellington. The Conference Committee has held its first meeting and has suggested that Conference be held over the three days 26th, 27th, 28th August, which means that it will be mid-week. The committee has also recommended raising the Conference Fee to £1/5/-. All members are urged to fill in and return promptly Conference circulars to assist the committee in making YOUR CONFERENCE a success.

ITEMS FROM THE MINUTES OF COUNCIL MEETING Held at Wellington, 19th February, 1952.

The President, Prof. S. N. Slater, in the chair, extended a hearty welcome to Dr. H. E. Annett, Vice-President.

LOYAL RESOLUTION: "That this meeting of the Council of the New Zealand Institute of Chemistry places on record its deep regret at the death of His Majesty King George VI. That it also record its loyal adherence to his successor, Queen Elizabeth II, and respectfully expresses its sincere good wishes for her continued happiness and good health during her reign."

CONFERENCE, 1952.—Branches are asked to inform the Conference Secretary (Mr. A. Metson, Soil Bureau, Wellington) of any Overseas visitors likely to be in the country at Conference time.

The Employment Committee, with power to co-opt, was asked to review the manpower situation in chemistry.

EXAMINATIONS.—In view of the fact that the University would no longer grant certificates of proficiency, and the Institute would therefore have to set its own examinations for the Associateship, the Examinations Committee was asked to draw up draft regulations for the Associateship theoretical examinations for circulation to Branches.

The issue of *Laboratory Assistants' Certificates* to the following was approved:—

Ian A. Morrison, Rukuhia Soil Research Station.
Thomas M. Loftus, Wallaceville Animal Research Station.
Alan P. Underhill, Soil Bureau, Wellington.
Ronald D. Woolf, Dominion Laboratory, Wellington.

It was decided that the regulation governing the Laboratory Assistants' practical qualifications be taken to mean that, provided the candidate has had three years' experience in an approved laboratory, this period may be wholly or partly before registration as a candidate for the examination.

PUBLISHER OF THE JOURNAL.—Legal opinion is that the Institute, through the Council, should remain the publisher.

SALARY SURVEY.—Council agreed with the suggestion from Dr. Dixon that the survey be postponed for a few months until industry has an opportunity to bring slafaries into line with those set out in the latest Government classification list. Dr. Dixon is consulting with the Association of Scientific Workers.

INSTITUTE PRIZES.—Closing date for this year to be 30th June, and 31st May for future years. This year candidates are to be free to choose their own subjects for the Industrial Chemical Essay. Branches are asked to consider the following regulation: "The essay should not exceed 8,000 words and shall be submitted in a form suitable for publication."

INTERNATIONAL UNION OF CHEMISTRY.—The Government is to be requested to pay the Annual Subscription to the International Union of Chemistry.

FIJI CHEMISTS.—The Hon. General Secretary was asked to write to the Fiji chemists whose premises no doubt suffered in the recent hurricane.

RULES.—In view of the fact that the M.Sc. degree now may not include a thesis, the question arises as to whether two years' post-graduate practical work (after B.Sc) should not be insisted on, even though M.Sc. be obtained. The Examinations Committee is to be asked to look into this point.

A report on recommended amendments to the Rules prepared by the Auckland Rules Committee will be circulated to the Branches.

THE SOUTH AFRICAN CHEMICAL INSTITUTE has advised that the President of the New Zealand Institute has been elected an Honorary Member of the South African Institute during his term of office. The Rules Committee has been asked to see how this Institute can reciprocate.

OVERSEAS VISITOR: In view of the fact that Pro. E. A. Guggenheim is at present in Australia, the President and Secretary were authorised to arrange a visit to New Zealand if possible, and to spend up to £30 on the project. Branches are also to be asked if they will contribute.

NOTES

Notice is drawn to the conditions for the award of Institute Prizes, published elsewhere in this issue. Particularly, you are reminded that the "Industrial Chemical Essay" prize is being offered this year, closing date being 30th June.

Dr. J. K. Dixon, chief chemist of the Soil Bureau, D.S.I.R., has returned from an extensive trip overseas, during which he visited Great Britain, Holland, Scandinavia and the U.S.A., collecting information regarding fertilizers, compost production and similar problems. During this period he contacted scientific research centres as well as industrial organisations.

Mr. L. R. L. Dunn, senior chemist in charge of the Mineral and Clay section of the Dominion Laboratory, has also recently returned from an extensive tour.

Dr. F. B. Shorland will leave New Zealand in May for a tour of duty taking him through the United Kingdom, European Continent and the U.S.A. He will represent the Institute of Chemistry at the second International Congress of Biochemistry to be held in Paris on July 21-27 next.

The September and October meetings of the Canterbury branch dealt with "Some Freezing Works' Aspects of Skin Protein," a subject discussed in two sections by Mr. A. H. Swaney of the Canterbury Frozen Meat Co. Ltd.

Prior to the Annual General Meeting, members of the Canterbury branch gathered for a buffet tea to mark the completion of 10 years' service as Hon. Secretary and Treasurer by Mr. F. H. G. Johnstone. Tribute was paid by many speakers to the various aspects of the Secretaryship so capably filled by Mr. Johnstone. At the conclusion of the formal business of the meeting Mr. J. Vaughan gave a most interesting account of his recent visit to the U.S.A. under the "Younger Chemists' Project" of the A.C.S. Mr. Vaughan illustrated his talk with a number of colour slides, and his account of the Project events was enjoyed by an appreciative audience.

On November 16th, Mr. and Mrs. R. M. Allison (Canterbury Committee member) became the proud parents of twins at two days' notice (i.e., that they were twins, not parents).

At the final meeting of the Otago branch Dr. G. A. Bottomley addressed members on the "Oxidation of Sulphites." He stated that there are three chief ways the oxidation is accomplished. The reagents used are (a) oxides and peroxides, (b) volumetric oxidising agents such as permanganate, dichromate, iodine, (c) molecular oxygen. Investigation showed that what appeared at first sight to be a simple oxidation reaction was in reality very complex. The two oxidation products are sulphate and dithionate, the proportion of one to the other varying considerably according to the reagent method used. Dr. Bottomley dealt mainly with his own experiments using the third method, and the catalytic effect of very dilute solutions of inorganic salts as shown by plotting reaction rates. Organic materials inhibit the oxidation.

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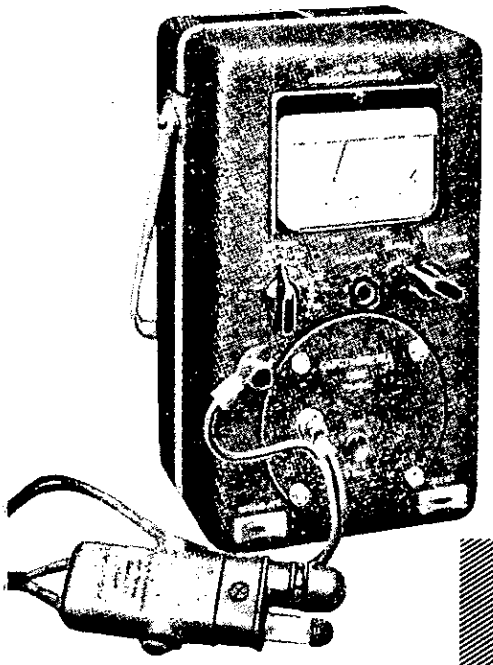

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