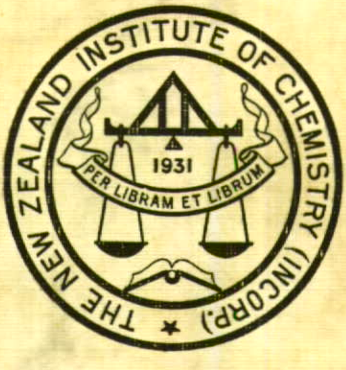
Vol. VI — No. 4 December, 1942

JOURNAL

of the

NEW ZEALAND INSTITUTE of CHEMISTRY



Published by the New Zealand Institute of Chemistry (Inc.)
Wellington, New Zealand

TURNERS LTD, CHCH.

COPY OF ALTERATIONS TO THE RULES OF THE NEW ZEALAND INSTITUTE OF CHEMISTRY MADE ON 22nd MAY, 1942.

Rule 6. The second paragraph to be altered to read:

"The Council shall have the right to alter the above subscription and if it be deemed advisable to differentiate between the subscription of an Associate and that of a Fellow."

Rule 5. The first sentence of the second paragraph to be altered to read:

"Every person desiring admission to the Institute shall apply to the Council in writing, in such form as the Council may prescribe, and shall forward with his application the prescribed fee and such testimonials and evidence of his character as the Council may require."

Rule 8. The words "on the recommendation of a Branch Committee" be omitted from the first paragraph.

Sub-clause (II) to be altered to read:

"Persons who hold a Bachelor's degree in the University of New Zealand or an equivalent degree in a University approved by the Council, provided that the courses taken have included the satisfactory pursuance of not less than three years' study of chemistry including inorganic, organic and physical, both theoretical and practical. Such persons must have been engaged in the practise of the profession of chemistry for a period of at least two years after completing their degrees."

Sub-clause (IV) to be altered to read:

"Persons who have passed an examination prescribed by the Council and have had such practical experience in a laboratory approved by the Council as the Council may require."

The following sentence to be added to the end of the Rule:

"The Council shall consult the Membership Committee and the appropriate Branch Committee on all applications for election as Associates."

Rule 9. Sub-clause (I) to read:

"Associates of the Institute who have reached the age of 25 years and who produce satisfactory evidence that they have been engaged in the practice of chemistry for five years and either

(1) have passed a Fellowship examination presented by the Council;

(2) have carried out original research work of sufficient merit or

(3) have devised processes or inventions of sufficient merit."

Rule 10. The following to be Rule 10:

Honorary Membership.

(1) The Council may elect as an Honorary Fellow any person who has given specially meritorious service to the Institute or to the science of the profession of chemistry and such person shall then be entitled without subscription to all privileges of membership provided, however, that election of Honorary Fellows may be made only by the unanimous vote of the Council after consideration by the Membership Committee.

(2) The Council may confer on visiting scientists honorary membership of the Institute for such period as the Council may determine.

(3) The Council may, on the recommendation of the Branch of which he is a member, elect a Fellow or an Associate to an Honorary Life Membership. The Honorary Life Membership shall entitle such Fellow or Associate to all the privileges of membership and he shall be entitled to hold any office but shall not pay any subscription.

Rules 10 & 11 to be re-numbered rules 11 & 12 respectively.

Rule 13. Rule 12 to be re-numbered Rule 13 and to read:

"The management of the Institute and the custody and control of its funds shall vest in a Council which shall consist of the President, the Vice-President, a delegate from each Branch and the General Secretary-Treasurer. The President and Vice-President shall be members of the Institute elected annually by the delegates of the Branch Committees. The President, Vice-President and General Secretary-Treasurer shall be elected by the Council at the last ordinary meeting of the Council before the first day of December from nominations called for by Council and forwarded to the General Secretary one month before the meeting at which the elections are to take place. These nominations shall be circulated to Branch Committees with the agenda for the meeting. When the office of President becomes vacant the Vice-President shall automatically be nominated for the office of President but when the President is renominated the Vice-President shall automatically be renominated for Vice-President and the term of office of the President shall be for not more than two years. At the election of President, Vice-President and General Secretary-Treasurer, the General Secretary-Treasurer shall not vote. Any casual vacancy in the office of President shall be filled by the Vice-President. Any casual vacancy in the office of Vice-President shall be filled by the holding of an election at as early a date as possible and any casual vacancy in the office of General Secretary-Treasurer shall be filled by Council but the officer so appointed shall hold office only for the unexpired term of his predecessor. The President shall act as chairman of all meetings of the Institute and Council and in his absence the Vice-President shall so act or if none of these officers be present then the meeting shall elect its own chairman."

Paragraphs three, four and five to remain unaltered.

Section (a) paragraph six to read:

"To elect Associates and Fellows Honorary and otherwise and Honorary members of the Institute."

the remainder together with paragraphs seven and eight to remain unaltered.

Rule 14. Rule 13 to become Rule 14 and so on.

Rule 21. The fourth Paragraph to read:

"Each Branch Committee shall consist of a Chairman, Secretary-Treasurer, and four ordinary members who shall be elected by and from the members of the Branch, and one of the members of the Committee shall be elected at the same meeting as delegate to the Council."

Under "Duties of Branch Committees" the following sub-sections to be added:

(e) To cause to be compiled a Roll of Members of the Branch with their addresses and such other particulars as the Council may require, a copy of such roll to be deposited with the General Secretary-Treasurer and all alterations or amendments to be promptly notified to the General Secretary-Treasurer.

(f) To cause to be collected and forwarded to the General Secretary-Treasurer the subscriptions to the Institute of members of the Branch."

The remainder of the Rule to remain unaltered.

Rule 22. Paragraph 8 to read as follows:

"The President of the Institute shall preside as Chairman at every General Meeting of the Institute but if the President be not present the Vice-President shall so act and if none of these officers be present then the meeting shall elect its own Chairman."

The remainder of the Rule to remain unaltered.

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VOLUME VI. DECEMBER, 1942 NO. 4

EDITORIAL

Two speakers at meetings of the Canterbury Branch this year have stressed the fact that the present is the time for the establishment of a University course in industrial chemistry, "chemical engineering," in Dr. Denham's words, and "applied chemistry" in Dr. Page's. There is not likely to be any disagreement about the desirability of such a move. Less unanimity can be expected about what such a course should contain. That will depend on how precisely the objective of the course can be defined. We have heard many addresses in which this problem was approached and attacked, followed in the discussion by a withdrawal not entirely according to plan. In addition to certain engineering subjects whose value to the works chemist is undoubted, we have heard advocated the inclusion of book-keeping, bacteriology, and statistical methods. From recollections of our own brief industrial experience, we have a faint urge to advocate first-aid. Supporters may be found for industrial psychology and economics (and/or social-credit).

We remain, however, unrepentant in the belief that the duty of a University school of chemistry is to concentrate on teaching the fundamentals of chemical theory and practice, and the task of a school of applied chemistry will be much the same. The fact that New Zealand industries are likely to be small and diverse in character only makes that more apparent. Particular needs will be met by the initiative of the individual when he finds his job. We foresee a future in which the works chemist is released from routine work in his laboratory by the increased use of rapid physical methods of analysis. Many of these methods are optical and the University student of to-day should be trained in their use. The high cost of the apparatus is a handicap against which our University colleges are always struggling. Industry could help with grants for modern apparatus, and lay the foundations of its own future progress.

by first preparing the fatty acids, separating the solid and liquid acids as lead soaps by the Twichell separation, forming the methyl esters and finally fractionating these under vacuum with a four foot column. Even this process does not give perfect separation.

Another problem is the determination of the glyceride structure. One method of attack is to treat the fat dissolved in acetone with solid potassium permanganate whereon all the unsaturated links are oxidised to carboxyl groups which are dissolved out with potassium bicarbonate solution. This leaves only fully saturated glycerides. Another line of attack is the fractional crystallisation of fats in ether or acetone solution and analysing the fractions by the first mentioned method.

Mr. Brooker then went on to show characteristic differences between animal and vegetable fats. He instanced mutton tallow and cocoabutter which have practically identical composition of fatty acids. In the vegetable fat the fatty acids are evenly distributed in the glyceride molecules whereas in the animal fat the distribution is very irregular. The result is that the cocoabutter has a lower melting point but is much harder than the tallow. It has been found that animals actually do convert saturated fats to unsaturated ones without decomposing the molecules completely.

Fats have not yet been synthesised satisfactorily, partly because the fatty acids wander, and partly because the double bonds react with the reagents.

Turning to the practical side Mr. Brooker outlined the requirements of good margarines or shortenings and how these are obtained. Beef tallow is too hard, but when some of the higher melting point fats are removed by seeding and pressing a satisfactory fat for margarine manufacture is obtained. Cottonseed oil, a one time waste product, can be made to form an internal ester with beef stearine to give a suitable fat.

Catalytic hydrogenation is a much used method of hardening liquid fats. The continuous process, popular in England, has certain disadvantages. The batch process, as used in the U.S.A., gives better selectivity in hydrogenating the more unsaturated fats before the less unsaturated fats are affected.

Mr. Brooker then dealt with fat spoilage. Fatty acids splitting from the glycerides are not objectionable unless the acids are odorous but losses occur. Oxidation rancidity caused by the formation of peroxides followed by further oxidation to aldehydes and acids is very objectionable. Ketone or perfume rancidity is easily removed.

Mr. Brooker then described the Abel Vacuum process for treating butter to improve its texture and keeping qualities. The butter is beaten up in a box under vacuum which gives a much more even distribution of the water and salt, and, by removing air, reduces the volume by 8 percent.

Numerous exhibits caused considerable interest and amply demonstrated points made by Mr. Brooker in his paper. A lively discussion followed.

Professor F. G. Soper, Professor of Chemistry at Otago University, and Chairman of the Wool Research Association of New Zealand, delivered an address on "Modern Developments in Wool," on August 10th.

He opened his address with a brief account of the research work that is being carried out in England on wool. Due to the large increase in the amount of synthetic staple fibre being manufactured it became necessary for research to be undertaken to overcome the disadvantages ordinarily present in woollen goods and to devise methods to make them more attractive. In New Zealand the Wool Research Association acts largely as a service laboratory to both the producers and the manufacturers.

Modern chemistry has made great advances in the elucidation of the structure of wool. It is known that the fibre consists of an outer scaly layer enclosing a bundle of needle shaped crystals. Both these materials consist of long polypeptide chains which are cross-linked by disulphide and also by ammonium salt links. X-ray photographs show one pattern for alpha keratin in the natural condition, and a different pattern for beta keratin when the fibre is stretched. It is believed that the polypeptide chain in alpha keratin folds back upon itself in the form of inverted "C's," and when stretched it opens up to form a saw-edged shaped chain in beta keratin. Thus wool and other hair fibres have the unique property of behaving as molecular springs.

Wool, when heated and stretched, may be given either a temporary or a permanent set, depending largely on the time and pH. In the case of a permanent set the cross-linkages between the polypeptide chains are reformed in a more permanent form, for then the fibre is unaffected by reagents such as acids and alkalies which ordinarily hydrolyse wool. In this way wool is also unique in that no other fibre can be stretched and fixed in that form.

Wool has a further advantage over other fibres in that the friction between the fibres is great, due to the scaly surface. Hence looser yarns may be made having the same similar type. (c) The occurrence of the Al ion in either 4-fold or 6-fold co-ordination or both. The classification of the silicates was dealt with and it was shown how the various structures were arrived at by linking together the co-ordinating tetrahedra in various ways. Special attention was drawn to the important amphibole group minerals and the falsity of previous formulae was illustrated. Analyses of amphiboles and micas were discussed. Attention was also drawn to the very important group of minerals, the feldspars, and it was shown why isomorphism exists between albite and anorthite (the plagioclases) and not between albite and orthoclase, on account of the difference in size between the sodium and potassium ions.

The purely structural classification of silicates, it was shown, naturally challenges comparison with the older classifications, and the failure of the chemical classification was due, not to the difficulty of the material dealt with, but to the falsity of the principles on which it was based. On the one hand, the dual role of aluminium can only be detected by X-ray methods, and on the other, the chemical classification always attempted to refer all silicates to some corresponding silicic acid. Actually the silicic acids have no existence.

The August meeting was addressed by Mr. S. H. Wilson on "The Hot Spring Region of New Zealand: An Unexplored Field for the Chemist." As explosive activity dies away, the weakening vulcanism manifests itself as fumaroles, geysers, and hot springs. The study of hot spring phenomena is the study of the effects of the magmatic steam as it finds its way to the surface from the cooling magma. It has been shown by Allen and Day that the great variety of the surface effects may be largely explained by the differences in the amount of ground water heated by the magmatic steam. The characteristic geyser basins of the alkaline areas are found in well defined drainage basins, whereas the very different sulphate areas occur on mountain slopes, or in shallow depressions.

Fundamental research on New Zealand's hot spring region is justified by the light it can throw on problems of vulcanology. For applied research there is justification in the danger of further disastrous volcanic outbreaks, in the possibility of the utilisation of volcanic steam for power and chemical products, and for the development of the region as a health resort and tourist attraction.

Some account was given of work carried out by the Dominion Laboratory on problems of the hot spring region. Mention was made of the measurement of temperatures, and flows of water and steam, and of magmatic constituents found in the waters. Methods were demonstrated for the collection and analysis of gases from hot springs and fumaroles. It was pointed out that a very large amount of work was still waiting to be done, and indication was given of some of the lines along which investigation is required. There is plenty of scope for fundamental research, and such investigation in a field for which New Zealand is so favourable, is a duty we owe to international science, but it has been neglected by our University Colleges. The requirements of applied research cannot be satisfactorily met by the casual investigations of branches of the Department of Scientific and Industrial Research, and there is a definite need for a Vulcanological Observatory. Finally, reference was made to the general lack of appreciation of our hot spring areas. Much more could be done to increase their attraction for tourists, and many neglected areas should be made accessible. All the scattered areas could well be under one administration as a National Park. Such a project would considerably facilitate scientific investigation and control.

The September meeting was addressed by Sir Theodore Rigg, the President of the Institute. This address is referred to elsewhere.

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CANTERBURY BRANCH.

An address of considerable interest was given in September by Dr. R. O. Page, under the title "The Chemist in New Zealand Industry." Dr. Page said that his train of thought had been stimulated by Dr. Denham's lecture earlier in the year, and he proposed to go further than the previous speaker and get perhaps further from the facts. Dr. Denham's main point had been how badly off we are for raw materials. It seems that a chemical industry might be based on clays, but the greatest hope lies in agricultural raw materials, such as the developement of pulp. For this an alkali and chlorine industry is needed. Cheap hydroelectric power is important for the necessarily small chemical industries we can develop, as power is cheaper to transport than industrial products. The reclamation of waste products, such as rubber, oil, paper, and especially metals, with all of which we have been so prodigal, must be actively pursued. In the freezing industry there could be greater use of glandular products, the demand for casein should increase, and nicotine can be obtained from waste tobacco leaf. A revival of kauri-gum is probable; canning and food production, especially by dehydration, promise well, and fruit juices can be made from the large amounts of waste fruit available. Surplus carbohydrate crops may be converted to alcohol, if only in glut years.

There are already well-established industries based on local raw materials, and co-operative research associations have been set up in the wheat, leather, dairy, and wool industries. More are required, especially in metallurgy and building. These will provide openings for chemists. The problem is to provide a type of chemist fit to run these small chemical and semi-chemical plants; and the problem of training personnel is a difficult one. A graduate entering a large industrial laboratory abroad learns easily the special adaptation of his knowledge. In New Zealand we cannot have special University courses in leather, brewing, dyestuffs, etc. The State can help by providing technical libraries in the main centres. The Universities should make more contacts with industry, but most important is the introduction of a course in applied chemistry—chemical engineering with more chemistry and less engineering than is usual overseas. Students need practical experience parallel to that required for the B.E. degree, and a course of at least four years is essential.

The October meeting was addressed by Dr. H. E. Annett, who is at present working in Christchurch. He said that he has been out of direct contact with chemistry for some twelve years, and would deal with investigations he carried out on the Indian opium poppy. Prior to the entry of Turkey into the Great War, almost all medical opium came from there and the Balkans. Opium had been exported to China from India under an agreement, the amount being equal to one day's Chinese consumption in six, and the quality high. From 1907 on, it was agreed to reduce this export by 10 per cent, per year, and the Government looked with envy at the Turkish medical opium trade. The supply position became serious during the war, and production from the Indian poppy had to be started without delay. The solution of such a problem requires chemical work, and the estimation of minute amounts of morphine, but also an appreciation of the botanical side. Five botanists at Cawnpore produced pure strains on which the work was based. Different variables were studied, such as the effect of the age of the capsule on the morphine content. Lancing is carried out about 16 days after the petals fall, and each capsule is lanced usually four times, but, occasionally– seven or eight times. He found that the earlier lancings contained most of the morphine. Nitrogenous manures increase the growth and the quantity of latex, but not the percentage of morphine in the latex. Climate has no effect on alkaloid production, but there is a seasonal variation.

The problem of producing opium of the necessary morphine content was solved by paying a bonus to those village producers who kept separate the rich early lancings.

Dr. Annett also described work on the production of sugar from palms. Before 1902 India imported a million tons of sugar each year; now she is an exporter.

Branch Notes.

The Canterbury Branch has now been able, through the enthusiasm and generosity of the 1941 chairman, Mr. L. W. Ruddle, to follow other branches in establishing an Institute Prize in Chemistry at Canterbury College. The prize is given at Stage II, and particular stress is laid on practical work. The first prize winner was Mr. R. K. Hughes, and it is with great regret that we report his death, after a brief illness, on November 2nd. Arrangements are in hand for the prize volume, which has been augmented in value by Mr. W. S. Hughes, to be presented to the Chemistry Department Library as a memorial.

OTAGO BRANCH

Mr. J. A. Bruce discussed the utilisation of subterranean heat, power, and chemical resources in thermal areas.

In his introductory remarks the lecturer covered the possible scope of employment of natural heat energy. He referred to much experimental work that has been done, and considered that New Zealand is a country in which natural heat utilisation could be carried out as a profitable social experiment.

The lecturer said the present world war should remind everyone that the rehabilitation of our returned airmen, sailors, and soldiers is a problem of magnitude. Scientific planning will be found to be just as necessary for healing the scars of war as is the scientific planning for destruction, and it is here that the chemist should play his part.

The appropriate utilisation of thermal region resources opens up a field for scientific planning in relation to rehabilitation affording ample scope for chemist, geologist, physicist, agriculturalist, and engineer. A research institute could logically follow in time to study geothermal and related problems in post-volcanic areas as well as in areas of active vulcanism.

Thermal resources in post-volcanic areas have been successfully harnessed and applied in a large scale to industrial, agricultural, and medical purposes in Iceland, Italy, and California. The Maoris and Icelanders have long recognised the value of thermal waters, especially for cooking, bathing, and washing. The Indians of North America believe that the geyser region of California was the last creation of the "Great Spirit," and they came hundreds of miles to bring their sick and wounded to the thermal areas high up in the mountains near Castiloga. Uses of heat are many and varied and are adaptable to most branches of science and industry. For example, soil warming in some European countries is one of the recent steps forward in market gardening practice. By means of it growers can get better crops of vegetables, strawberries, tomatoes, flowers, etc., and, at times when these crops bring the best prices. Heat can promote plant growth, and its use in conjunction with artificial sunlight is important in shortening the growing time of the plant.

In conclusion the lecturer described a comprehensive plan for a model settlement with a research institute which could be established in one of the safer post volcanic thermal areas in New Zealand. The unfailing power and heat, and possibly chemical resources could afford opportunity for developing a rational scheme over a period of years.

Mr. Bruce illustrated his lecture with numerous lantern slides and diagrams tracing the history of natural heat utilisation in Italy, Iceland, and California. Particular reference was made to the work of Sigurdsen in Iceland, J. B. Grant in California, and the work of Conti and Lardarel in developing the boric acid industry in Tuscany by extracting this substance from natural steam.

The Processing of Amateur Movie Films.

C. C. Roberts

After a short introduction the lecturer proceeded to deal with amateur films. He said the treatment of amateur films differs from that of the standard professional sizes in that it entails a reversal of the image from negative to positive and not the printing of a positive copy from a negative original. Where many copies are not required the reversal process offers the advantages of cheapness and finer grain, while no printer is needed. Besides which it has been applied very successfully to several colour processes.

Film for reversal is similar to ordinary film, but it has a thin coating of emulsion. With care, plates can be reversed though thickly coated, but double-coated stock does not reverse well.

Exposure is the same for ordinary film, though there is less latitude. After exposure, development in a fine developer gives a negative image of silver, leaving unchanged silver bromide on parts unaffected by light. Now, instead of dissolving the silver bromide with hypo the silver image is removed in a bath of potassium bichromate or permanganate and sulphuric acid. The film is then washed and cleaned in a 10 per cent. solution of sodium sulphite. The silver bromide left on the film is now exposed to light and developed in an ordinary M.Q. developer giving a black and white positive. A wash, a hypo bath to remove any unchanged silver bromide, a final thorough wash and drying completes the process.

Control can be introduced at a number of points, a short first development or short second exposure helps to compensate for over exposure in the camera and vice versa. The Kodak plant has a very ingenious device by which the brilliance of the lamp making the second exposure is controlled by a photo electric cell as each frame passes the lamp. Ordinary reduction and intensification can also be used. No compensator however can take the place of correct camera exposure.

Colour Films

Dufaycolor is probably the simplest colour film and can be successfully processed by the amateur. A panchromatic emulsion is exposed behind a réseau or pattern of blue, green, or red actually printed on the film. The latest image is developed and reversed. On projection, the separate small patches of colour are blended by the eye, giving an excellent colour rendering.

The most remarkable colour film in general use by amateurs is Kodachrome. It has three separate emulsions on the one film: (1) An "ordinary" emulsion sensitive only to blue, and dyed yellow to prevent blue penetrating it. (2) A coat of plain gelatine. (3) An ortho emulsion sensitive to yellow. (4) A red gelatine layer. (5) A panchromatic emulsion which is sensitive to red. All these layers amount to a thickness of less than a thousandth of an inch.

After exposure the film is developed and reversed, the original filter dyes being removed, and then developed with a dry coupling developer, the colour being peacock blue. The top two layers are bleached, rehalogenised, re-exposed, and developed with magenta coupled developer. Then the top layer only is bleached, rehalogenised, re-exposed, and redeveloped with a coupled yellow dye. Finally all the silver is removed leaving a positive film in natural colour, grainless and very transparent since it is purely a dye image.

The new Agfa film is similar, but dye-forming substances are incorporated in the emulsions themselves, so that only one second developer is needed and the amateur can do the work himself if he chooses.

The lecture concluded with some excellent Dufay colour slides, home processed movie films, chosen to illustrate points in the lecture, and a Kodachrome film. The reversal process itself was demonstrated, using gaslight paper printed from a positive lantern slide.

Current Research at the Chemistry Dept., Otago University.

Co-operation between the Otago Branch and Otago University has always been active, and for a long time a "Current Research Evening" has been an annual feature which this year drew a record attendance.

A wide range of subjects was covered by the various speakers, and the formidable list of questions at the conclusion of the meeting showed appreciation of the quality and quantity of the research undertaken.

The speakers were:—Dr. S. N. Slater, "Phthioic Acid and Analagous Products with Tubercular Activity"; Mr. L. C. Baker, "The Growing of Crystals"; Mr. W. A. MacGillivray, "Micro-estimation of the Alkaloids of Ergot"; Mr J. H. Holmes, "The Production of Phthalic Anhydride"; Mr O. H. Walker, "The Production of Caffeine."

CATALYSIS—D. H. MacLean.

The topic for the theoretical lecture of the year was "Catalysis."

Catalytic reactions can be considered in two main classes:

(a) Homogeneous catalysis where the reacting substances and the catalyst itself are all in one phase.

(b) Heterogeneous catalysis, where there is more than one phase in the system. The most common examples in this class consist of the catalysis of gaseous reactions by solids as in the contact process for sulphuric acid and the synthetic ammonia process.

Negative catalysis in some cases is attributed to a poisoning effect, but this explanation is by no means general. Many reactions are known to consist of reaction chains, and the effect of a negative catalyst is to break the chain.

Enzymes are catalysts produced within the living cell, and they are usually fairly specific in their action. The most efficient working temperature is somewhat critical as well as the pH of the media in which they operate.

The catalysis of gaseous reactions by solids (contact catalysis) is usually due to adsorption. Langmuir pointed out in 1916 that adsorption of gases is chemical in nature since surface atoms have a free electrical field about them which leads to the sharing of electrons as in a covalent linkage. He termed this process "chemisorption." The thickness of adsorbed films is of the order of one molecule. A likely explanation of the enhanced activity of the molecules after adsorption is their orientation in a particular manner favourable to reaction. A theory that a molecule, instead of being attached at one point only, is attached at two or more points, has been postulated. The molecule would then be in a state of strain and would react or decompose easily, but certain objections have been raised to this theory. No surface is ideally smooth, and the suggestion that the active centres occur at the peaks is borne out by the fact that catalysts lose their activity on excessive heating due to a sintering effect. Only a certain proportion of the adsorptive centres are catalytically active.

Promoter action is associated with an increase in the adsorptive capacity of the surface, but usually the catalytic activity increases in far greater proportion. Poisons, on the other hand, operate in virtue of the fact that they are adsorbed and cover up the active centres.

A number of aspects of the oxidation of sulphur dioxide by contact catalysis were mentioned. The reaction is exothermic, and the optimum temperatures for practicable rates of gas flow is approximately 400°C. The most virulent poison for a platinum catalyst is arsenic, which is permanent in its effect. It is found that the sulphur trioxide formed has a retarding effect in the presence of a platinum catalyst owing to its preferential adsorption which leaves only a restricted area of active surface available for the reacting gases. About 1924, vanadium pentoxide started to come into use on the commercial scale, and it has the advantage of being immune to arsenic poisoning. In 1926, a new form of platinised mass, namely platinised silica gel, was first used on the factory scale. It is claimed that this mass is also immune to arsenic poisoning.

In contact sulphuric acid plants, the design of the converter is very important in making the most efficient use of the contact mass. In the most modern types of converter the mass first encountering the gases is at a high temperature to give a high velocity reaction, after which the temperature falls along a smooth temperature gradient until the last portion is at the optimum temperature of 400°C. It is important also that the temperature over any horizontal cross section should be constant. With the aid of diagrams it was shown how these conditions have been ingeniously achieved.

Branch Notes.

We were pleased to hear that Mr. G. A. Holmes, leader of the party of agricultural experts to Britain, has arrived safely.

We welcome Mr. L. Osgerby from Auckland, and Mr. P. A. Ongley, from Wellington.

CORRESPONDENCE

51 Washington Avenue, Brooklyn,
Wellington, S.W.1.
5th October, 1942.

The Editor,
Journal the New Zealand Institute of Chemistry.

Dear Sir,—In the Journal for September of this year there is a summary of an address on "The Metallurgy of Iron and Steel" by Professor T. Leech, in which it is stated that "New Zealand has enough iron ore, including ironsands, to supply both Australia and New Zealand for 500 years." This would appear to be a gross exaggeration, and in the interests of the public, and to preserve the good name of the Journal, I would suggest that it be referred to the Director of Geological Survey for comment, with a view to publishing a correction in the next issue.

I would also suggest that there be a general disclaimer in every issue of the responsibility of the Editor for the accuracy of statements and figures in summaries of papers forwarded by the sections for publication.

Yours faithfully,
(Sgd.) W. DONOVAN.

[This letter has been referred to Professor Leech for comment, but no reply has yet been received. The Director of the Geological Survey is unable to comment fully until he knows Australia's annual consumption. The suggestion in the latter part of Mr. Donovan's letter has been adopted. Ed.]

The Institute as a whole is not responsible for statements and opinions appearing in this Journal.

Correspondence should be addressed to Dr. H. N. Parton, Canterbury College, Christchurch.

The address of the Hon. Secretary is P.O. Box 250, Wellington.