News Section

SECTION REPORT

Meetings

A Technical Meeting of the India Section was held on 28th February 1961 at the Indian Institute of Science, Bangalore-12. Mr I. Sven-Nilsson, U. N. Expert (United Nations Technical Assistance Operations, New Delhi), gave a lecture on 'Industrial Electroplating'. The Secretary introduced Mr Sven-Nilsson to the audience. The lecturer pointed out at the outset that there was considerable difference between the electrodeposition usually carried out in a laboratory and that carried out for industrial production. He felt that in India, the laboratory work on electrodeposition was very satisfactory. In the field of industrial application, much remained to be done. The scope for practical electroplating, he felt, was in a way linked up with the raising of the living standards in our country. The yardstick by which rising in the living standards of our people can be judged to some extent by the purchasing power of the people. As the demand for consumer goods increased, good quality plating is necessary for the industrial platers in India. In other words, the quality of plating was very important in a developing economy like that of ours. Quality of the plating was important both from the decoration and corrosion resistance of the article. In this connection, he was glad to note that the Indian Standards Institution had put out a few standards for the guidance of the platers and the consumers. He felt that consistent with the economy to be achieved for industrial plating, the quality should be acceptable to some standard. Giving instances of quality of plating, he mentioned that the common complaint of industrial plating was poor adherence of the electroplate on the basis metal. He explained the mechanism of adherence to the metal deposited and how poor cleaning or lack of cleaning can impair the quality of plating.

Talking about different types of plating, and the proprietory plating baths, the speaker felt that scientific institutions should come forward to help the industries in using modern solutions, which are claimed to give better results. There was considerable room for improving the services offered by the firms selling proprietory materials. In improving the quality, introduction of automatic plating would go a long way. Saving of labour and control of the process would be much better. It was, however, necessary to have a good laboratory for keeping close control of the electrolytes.

Mr Sven-Nilsson felt that there should be better cooperation between the scientific laboratories and industrial platers, so that suitable processes could be evolved for production of corrosion resistance finishes on the consumer goods and export goods produced in India. He was of the opinion that the quality of industrial plating at several places already was upto the mark, and the quality can be further improved if industrial platers adopted standardised processes and effected control over the various steps involved in plating. With a vote of thanks the meeting came to a close.

A Business Meeting of the Section was held on 16th March, 1961, at the Indian Institute of Science, Bangalore, under the Chairmanship of Dr T.L. Rama Char. Minutes of the previous Meeting held on 28 November 1960, was confirmed. The Statement of Accounts for 1960, as approved by the Executive Committee and Auditing Committee was presented to the members, and members discussed the various items of expenditure and income. It was pointed out that under the heading 'Metal Finishing Abstracts Receipts' only Rs. 147.36 was shown, while the remittance under the same heading was Rs. 478.82. It was pointed out by the Treasurer that an amount of Rs. 388.00 was shown as receipts in the last year's (1959) account, and as such the total receipts was Rs. 535.36, as against the payment of Rs. 478.82. The Statement of Accounts for the year 1960 was approved.

The Secretary read out a letter received from the President, Electrochemical Society, regarding the dues of the members. After a lengthy discussion, the members were of the unanimous opinion that the increased dues of $ 20.00 a year and the discontinual of the rebate on dues to our members would be too stiff for Indian conditions, and the possibility of forming an Indian Electrochemical Society should be worked out as early as possible. It was *RESOLVED* that a Committee consisting of Dr T. L. Rama Char, Dr S. Krishnamurthy, Dr S. Soundararajan, Shri. V. Aravamuthan, and Shri R. A. Shah be formed to prepare a preliminary circular letter with regard to the formation of an Indian Electrochemical Society for circulation to members, associates and patrons of the Section, Universities, Electrochemical laboratories, industries and others interested. The members felt that drafting of the circular letter should be finalised by 15 April 1961 so that the circular letter could be posted by third week of April 1961. When things are

finalised, we may approach the ECS for formal permission to secede from the Society With a vote of thanks to the Chair the meeting came to a close

Personals

T. L. Rama Char has been elected as a Vice-Chairman of the Deccan Section of the Royal Institute of Chemistry, London.

S. Soundararajan has been appointed as Lecturer in the Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bangalore.

New Associates: India Section

1. S. P. Verma, Asst. Plant Superintendent, Tata Chemicals Ltd., Mithapur.
2. S. Raghavendra Rao, Lecturer in Chemistry, Karnataka Regional Engineering College, Surathkal (S. Kanara).
3. Dr P. B. Mathur, Central Electrochemical Research Institute, Karaikudi-3.
4. S. Viswanathan, Central Electrochemical Research Institute, Karaikudi-3.

GENERAL NOTES

Journals on Corrosion

The October 1960 issue of 'Corrosion' (page 38) gives a list of publications, concerned primarily with corrosion, from 8 countries. Australia, Czechoslovakia, England, France, Germany, Holland, Japan and U.S A.

Corrosion Conference in Australia

The First Annual Conference of the Australian Association for Corrosion Prevention was held in Melbourne from October 31 to November 3, 1960. Technical sessions were devoted to practical and theoretical methods of corrosion control. The programme also included plant inspections and social events. The 8 papers presented have been published in Australian Corrosion Engineering, Vol. 4, No. 8-10, 1960.

Foreign Corrosion Reports by NACE

'Corrosion Prevention and Research in Israel' is a short report on corrosion activities in Israel during 1959. This is published by NACE in the October 1960 issue of 'Corrosion'. It also contains a review of the work covering previous years. The December 1960 and January 1961 issues of the Journal give the reports for South Africa and Spain.

French Institute of Corrosion

The Centre Francais de la Corrosion (Cefracor) was recently instituted in Paris. It aims at co-ordinating information on the science, technology and application of corrosion and corrosion proofing. Cefracor is to take up contacts with all French institutions and those abroad devoted to similar ends. It is a member of the European Federation of Corrosion.

Symposium on the Protection of Gas Plant and Equipment

The Institution of Gas Engineers and the Society of Chemical Industry held a Symposium on 'The Protection of Gas Plant and Equipment' in Birmingham during September 1960. The following papers were presented: (1) Sprayed metal coatings in the gas industry, (2) The protection of gas service pipes and fittings, (3) Principles and applications of cathodic protection, (4) Organic protective coatings, (5) The protection of structural steel against corrosion, (6) The electrochemical principles of the corrosion and protection of metals, (7) Cast iron and corrosion in the gas industry, and (8) Corrosion and the gas consumer. Abstracts of the papers can be found in Corrosion Prevention and Control, Vol. 7, No. 11, 1960.

Corrosion Engineering in Japan

The annual losses in Japan due to corrosion have been estimated to be Rs. 130 crores. This is only the cost of renewal of metal, and does not include indifferent losses. The 97th Corrosion Prevention Committee of the Japan Society for promotion of Science is actively engaged with research work on corrosion phenomena and preventive measures. The interest in corrosion engineering has greatly increased in Japan since 1950. Several technical associations have been organized: Metal Finishing Society, Rust Preventing Association, and Coating Society of Japan. Long period exposure tests have been started, and much interest is diverted to hot dip aluminium coatings on iron and steel, and other protective coatings like paints, and metallized and other spray coatings with plastic and ceramic materials. Many kinds of corrosion inhibitors are marketed. They are effectively used for acid pickling, protection of industrial plant from corrosion, cleaning of metals or package. Cathodic protection is widely applied to steel structures. — M. Tagaya (J. Iron and Steel of Japan, Vol. 46, 1493, 1960).

The Controversy about Duplex Nickel

The usefulness of the one-day Symposium on Nickel-Chromium Plating held by the Institute of Metal Finishing, London, during November 1960 was clearly illustrated by the amount of controversy to which it gave rise. One of the

points stressed again and again was the need for specific and, if possible, universal terms of reference when expressing quality and test results. But one basic problem remains: how to determine an adequate compromise between cost, quality and service requirements. A digest of the discussions at the Symposium has been covered in Industrial Finishing Vol. 12, No. 150, 33, 1960.

Corrosion Symposium in France

The Societe de Chimie Industrielle organized a Conference on Corrosion in Paris during November 1960. The topics for the papers presented were: metals and anticorrosive materials; corrosion inhibitors and chemical surface treatments; combined surface protection and methods of control The December 1960 issue of Industrial Finishing gives a brief account of the Conference.

Corrosion in the Chemical Industries

A two-day Symposium on 'Corrosion in the Chemical Industries' was held by the Sydney Branch of the Australian Association for Corrosion Prevention in the University of N.S.W. Kensington during October 1960. There were 17 papers covering: materials of construction, corrosive media and methods of handling, and corrosion in chemical equipment. The Publication of all these papers in 'Australian Corrosion Engineering' has commenced with the November 1960 issue.

Indian Science Congress

The forty-eighth session of the Indian Science Congress was held at Roorkee, U.P. from Jan. 3 to 9, 1961. The programme covered sectional meetings, symposia, popular and special lectures, visits to institutions and other places of interest, and social functions. An exhibition of scientific and laboratory equipment was arranged. Delegates from many foreign countries participated in the deliberations. Several papers on electrochemistry and allied branches were presented. The following were amongst the topics for the symposia: co-operation between the instrument industry and the scientists; role of impurities in metals and inorganic compounds; ferroalloys; science, technology and social changes in India; standardization of engineering education in India.

Symposium on Redox Processes

A Symposium on Redox Processes was held in the Dept. of Chemistry, University of Allahabad, on Feb. 1 and 2, 1961 under the auspices of the Chemical Research Committee, Council of Scientific and Industrial Research, India. There were 52 papers under the following sections: electrode processes, reactions in solution and analytical applications. Scientists from the U.S.S.R. and, U.S.A. contributed 4 papers. The programme included special lectures and social functions. The organizers have plans to publish the proceedings. T. L. Rama Char (India Section) and K. I. Vasu, Bangalore presented a paper on Electrolytic Reduction of Aqueous Tungstate Solutions'.

Corrosion Societies

Clearly more and more importance is being attached to the ravages of corrosion. A good number of organizations, bent on understanding and obliterating the phenomenon, have sprung up in the post-war years. Amongst the additions to the ranks of corrosion societies are the Corrosion Prevention Association in New Zealand, and the South African Corrosion Council.

Corrosion at the Barcelona Congress

The growing importance of corrosion problems is apparent from the time allotted to them at Scientific Congresses. The 32nd International Congress of Industrial Chemistry, held at Barcelona during October 1960, had a section on corrosion and also organized a 'Corrosion Day' under the auspices of the European Corrosion Federation. Twelve papers were read at the sectional meetings, dealing with a variety of subjects ranging from the corrosion protection of ships' hulls and the corrosion behaviour of titanium to various aspects of cathodic protection, corrosion in the potassium industry, corrosion of glassed steel, localized corrosion of cast aluminium in an acid medium etc.

Corrosion and Metal Finishing Exhibition, 1960

The Corrosion and Metal Finishing Exhibition held by 'Corrosion Technology' from November 29 to December 2, 1960 at Olympia, is believed to have been the largest exhibition of its kind in the world. A report on the Exhibition is given in the December 1960 issue of Corrosion Technology. Visitors came from 25 countries. In the opening address the President of the Society of Chemical Industry dealt with the cost of corrosion, Delhi and Dhar Columns, new finds of corrosion—resistant iron, and corrosion as an ally. Two symposia were organized, one by the Plastics Institute, and the second on 'The Influence of water movement on Corrosion' by the Corrosion Group of the SCI. The 160-page Catalogue and Buyer's Guide of the Exhibition can be purchased from Leonard Hill House, London.

Gold Plated Cars at the Motor Show

One of the most striking features of the Motor Show recently held in the U.K. was the display of two motor cars, by the Ford Motor Co, both of which had been completely gold plated by Harris Plating Works Ltd, London. The operation involved the plating of something like 550 parts of almost every conceivable size and shape manufactured from a wide range of materials including aluminium, stainless steel, Mazak, brass and steel. This called for different techniques to ensure a uniform finished appearance. Extreme care was necessary in handling the components to ensure a blemish-free finish as well as to avoid damage to the soft gold plating, and the final polishing operation could only be carried out by the firm's most skilled operators.—Metal Finishing J., Vol. 6, 495, 1960.

Training Course in Storage Battery Technology

The Second Course of training in Storage Battery Technology was held by the CECRI, Karaikudi for seven weeks commencing from February 1, 1961. It was mainly intended to provide training to technical personnel representing battery manufacturers, large consumers of batteries, and organizations engaged in the testing of batteries according to ISI specification.

Metal Finishing — some Developments to Watch in 1961

The President of the American Electroplaters' Society has predicted a few significant developments in the field of metal finishing during the year 1961. Improved processes for plating on aluminium alloys will be announced. Manufacturers will call to the attention of the consumer the good quality and permanence of the plated finish they will offer on their new products. The year should be one for commercial exploitation of new processes for electroless plating. Electroless copper, palladium and cobalt will be available as well as new immersion or displacement coatings of platinum and gold. Finally, the uses of plating for prevention of stress corrosion cracking, hydrogen embrittlement and corrosion fatigue, known for some years to the laboratory man, should begin to reach commercial application soon.—Plating, International Issue, Vol. 48, No. 1, 77, 1961

Electrolytic Machining

An electrolytic machining process that can shape parts from the toughest alloys in as little as one-tenth the time required by conventional machine tools has been developed at Battelle Memorial Institute, Columbus, Ohio, U.S.A. in research supported by the Steel Improvement and Forge Co., Cleveland. The process removes metal without arcs, sparks or high temperatures by passing direct current between the workpiece anode and an electrolyte. Because its effectiveness is not dependent on the hardness of the metal, the process offers a solution to the problem of machining the harder, higher-strength metals. To produce a part, a rough forging or piece of metal stock (anode) is placed between shaped electrodes (cathode), and electrolyte is pumped under pressure into the space between the electrodes and the workpiece. As the electric current dissolves the workpiece to the desired shape, the electrodes are moved in simultaneously.

For some applications the big advantage of the process is not the time saved, but the absence of mechanical damage to the surface of the workpiece. Because there is no tool pressure on the work, very thin sections can be shaped without deformation, and lightweight machines and clamping systems can be used. Also, the shaping process produces no metallurgical change on the surface as conventional machining does. According to Dr C. L. Faust the Battelle process differs from others which use the electrolytic metal removal principle in that: (1) it can produce complete parts in addition to sinking cavities, (2) it uses no rotating cutting wheels, (3) power is supplied through a simple rectifier instead of complex electronic circuits.

Current requirements range up to 1500 amp/sq. in of workpiece at 3–12 volts, to achieve a penetration rate of 0.05-0.1 inch/min. The shaped electrodes, which are not subject to wear, can be made of any electrically conductive material. The electrolytes, selected according to the metal to be machined, are solutions of readily available commercial chemicals.—Battelle Tech. Review, Vol. 9, No. 12, 15, 1960.

Symposium on Light Metal Industry in India

The National Metallurgical Laboratory held a Symposium on 'Light Metal Industry in India' at Jamshedpur from February 14 to 17, 1961. 27 papers were presented covering various aspects of light metals — beryllium, titanium, aluminium, magnesium, light alloys; production, physical metallurgy, application in nuclear engineering, corrosion resistance. There were contributions from France, Japan, Switzerland, U.K., U.S.A. and West Germany. The programme included lectures, visits, film shows and social gatherings. Abstracts of the papers have been published in NML Technical Journal, Vol. 3, No. 1, 1961. The NML is publishing the proceedings of the Symposium. K. G. Sheth, J. Sundararajan and T. L. Rama Char (India Section) presented a paper on 'Corrosion of

Aircraft Aluminium Alloys in Acid Solutions and its Prevention by Inhibitors'.

European Meetings on Corrosion

The 15th meeting of the European Federation of Corrosion is scheduled during the 1961 European Congress of Chemical Engineering to be held in Frankfurt a. Main from June 9 to 17, 1961. Correspondence concerning the meeting should be addressed to DECHEMA, Frankfurt a. Main 7, West Germany

Pure and Applied Chemistry International Congress

The 18th International Congress of Pure and Applied Chemistry will be held in Montreal, Canada during August 1961. Some 70 sectional lectures will be delivered on the various aspects of the following four divisions: Physical Chemistry; Applied Chemistry, including Electrochemistry, Structure of Metal Surfaces and Metallurgical Processes; Analytical Chemistry; Organic Chemistry.

Corrosion in Action

The film 'Corrosion in Action' was produced by the International Nickel Co. of Canada Ltd., to help engineers, metallurgists and students to gain a better understanding of the basic causes of corrosion. The publication 'Notes on the Film—Corrosion in Action' (18 pages), issued by the Mond Nickel Co. Ltd., London, re-tells the story of the film in note form, using still pictures taken from scenes in the film. The matter is divided into 3 parts: anode and cathode processes; the origin and characteristics of corrosion currents; passivity and protective films.

Cathodic Protection

The January 1961 issue of 'Corrosion' contains 6 papers on various aspects of cathodic protection: (1) Techniques and Economics of Combined Cathodic Protection and Cleaning for Heat Exchangers, (2) Pipeline Cathodic Protection Economics, (3) Unusual Problems Encountered in Cathodic Protection, (4) Automatic Control of a Platinum Anode Cathodic Protection System, (5) Methods and Experience in Underground Cathodic Protection and (6) Design for Prevention of Pipe Line Corrosion based on Survey of Ground Potential Distribution.

New Method to Plate Steel with Aluminium

A new Vapour deposition technique for plating steel with aluminium has been developed at Wright Air Development Division of Wright Patterson Air Force Base, Ohio, U.S.A. Liquid triisobutyl aluminium, an organometallic compound, is introduced to the plating chamber as a vapour which is decomposed by heat at 500°F. Aluminium atoms are released and adhere directly to the suspended base metal. The technique may make practical the use of complex steel shapes and fasteners in oxidizing environments at 500 to 1,000°F and lessen the danger of galvanic corrosion.—Corrosion, Vol. 17, No. 1, 43, 1961.

Seventeenth Annual Conference of the NACE

The National Association of Corrosion Engineers, U.S.A., held its 17th annual meeting at Buffalo, N.Y., from March 13 to 17, 1961. Technical sessions covered: refining industry, inhibitors, missile industry, protective coatings, chemical industry, oil and gas production, corrosion principles, elevated temperature, general corrosion, cathodic protection, plastics, utilities, pipeline general, high purity water and marine. The programme included educational lectures, roundtable discussions and a corrosion show. The January 1961 issue of 'Corrosion' gives the abstracts of the 81 papers presented.

Conference on Defence Problems in Electrochemistry

A Conference on 'Defence Problems in Electrochemistry' was held by the Electronics Research and Development Establishment (LRDE) at Bangalore on March 13, 1961. The object of the Conference was to discuss some of the pressing defence problems pertaining to Electrochemistry. The following topics were covered: (1) Increasing the output of dry cells by the use of better grade of manganese dioxide, (2) Optimisation of constructional technique for achieving maximum size and weight reduction in defence batteries, (3) Scope for adoption of mercuric oxide type primary batteries for reducing size and weight, (4) Problems connected with the development of a field type light weight secondary battery for defence application, (5) Scope for application of alkaline type secondary batteries like the silver-zinc for maximum size and weight reduction, (6) Tantalum capacitors, (7) Plating through holes in printed circuitry, and (8) Photo-conductive cells. There were representatives from the Defence Services, LRDE, ILE, ADE, CSIR, IISc, government departments, industries and scientific societies (India Section). The following members of the India Section, ECS participated in the Conference: K. S. G. Doss, H. V. K. Udupa and V. Aravamuthan (CECRI); T. L. Rama Char (IISc and India Section), S. Ramaswamy (Mettur Chem. and Ind. Corpn); R. L. N. Sastry R. C. Misra and R. Raman (LRDE). The participants also included Patrons of the India Section. The delegates were entertained at lunch by Amco Batteries Ltd., Bangalore.

—T.L.R.