NEWS SECTION

SECTION REPORT

Meetings

A Business Meeting of the Section was held on March 14, 1963 at the Indian Institute of Science. The minutes of the previous meeting were confirmed. The Statement of Accounts for 1962 was approved. The members were informed by the Secretary-Treasurer that procedural matters connected with the formation of 'The Electrochemical Society of India' had reached the final stage.

Another Business Meeting of the India Section was held at the I.I.Sc., Bangalore July 4, 1963. After confirmation of the minutes of the previous meeting, the position of the Section in relation to the Electrochemical Society of India was discussed. It was resolved to dissolve the section with effect from January 1964. Financial and other matters arising out of this were then taken up so that there could be a smooth functioning of the ECS of India in place of the India Section, ECS.

GENERAL NOTES

Cathodic Protection in Acid Cleaning

It has been found that cathodic protection is the most effective method for prevention of acid attack on steel during acid cleaning. In order to prevent the attack in inhibited acid solutions containing oxidizing ions, it is necessary to polarize the metal to a less noble potential below —0.5 volt against SCE. An investigation on the protective effects of cadmium, tin and lead as galvanic anodes for cathodic protection indicated tin to be the most favourable material, the efficiency being 70–80 per cent.—J. Electrochem. Soc., Japan, Vol. 30, E101, 102, 1962.

1963 IMF Conference

The Institute of Metal Finishing, London held its Annual Conference at Edinburgh from April 30 to May 4, 1963. Eighteen papers were presented in 5 technical sessions under: aluminium coatings and anodized aluminium, internal stress in electrodeposits, nickel and chromium coatings, organic coatings, miscellaneous electrolytic processes.

Corrosion and Productivity

In the National Productivity Year more consideration may be given to ways in which corrosion is wasteful and at least a partial brake attached to the wheels of production. There is no doubt that corrosion reduction is reflected in greater production, or reduction in production losses. Losses arise through materials contamination by corrosion products, for instance. Such losses are easily measured. What cannot be calculated is the cost of shut-down of plant due to corrosion failure of some sort, and often the subsequent shut-down of other connected plant which is not damaged by corrosion. Even if these corrosion troubles cannot be completely eliminated they can often be avoided.

With the connection between corrosion and production established, a most valuable contribution which the Government could make towards encouraging the increase in productivity it seeks would be to establish a National Corrosion Advice Service or a National Corrosion Laboratory —Corrosion Technology, Vol. 10, 1, 1963.

Seventh International Galvanizing Conference

The French Galvanizing Association in conjunction with the Zinc Development Association will organize the Seventh International Conference on Hot Dip Galvanizing in Paris during June 1964. The technical sessions will be devoted to the theory and practice of hot galvanizing in the jobbing, sheet and strip, wire and tube industries. Original papers on the metallurgy of galvanizing, on the corrosion, performance and properties of the coating will also be accepted. Enquiries should be addressed to the ZDA, London.

Tarnish Inhibitor for Copper

Kygard is the registered trade name of a series of treatments developed by I.M.I. (Kynoch) to inhibit staining and tarnishing of copper and its alloys. These processes utilize benzotriazole which combines chemically with the metal to form an adherent surface film insoluble in water and many organic liquids. Though invisible,

this film is a most effective barrier to agents which cause tarnishing, notably water, oxygen and sulphur dioxide. The inhibitor can be incorporated in carriers, *e g.* wax or paper. Kygard processes are effective for all copper and copper alloy products and at all stages of their life-cycle, *i.e.* during processing, throughout storage and in service. Applications and potential uses include ornamental brassware. external architectural applications like curtain walling, protection of jewellery and finished surfaces of copper and copper alloys.—Electroplating and Metal Finishing, Vol 16, No. 2, 65, 1963.

Bibliography on Corrosion Inhibitors for High Purity Water

The January 1963 issue of Corrosion presents a report of the NACE Technical Unit Committee on corrosion by high purity and related waters in nuclear power and steam generating plants. There are references to 116 papers with abstracts. The compilation covers: ammonia, hydrazine and amines; phosphates; sodium sulphite; various other inhibitors; nuclear applications; general review articles.

The Delhi Pillar

Three papers on the Delhi Pillar have been published in the February 1963 issue of NML Technical Journal: (1) The Delhi Pillar—A Study of the Corrosion Aspects, (2) The Delhi Iron Pillar and its Iron and (3) Some Observations on Corrosion Resistance of Ancient Delhi Iron Pillar and Present-time Adivasi Iron made by Primitive Methods (Also see this Bulletin, Vol. 12, No. 2, 1963).

Electrodeposition of Titanium

The Westinghouse Electric Corpn., Bloomington, Indiana, U.S.A. has developed a process for electrodepositing titanium on other metals — ferrous or non-ferrous. The titanium trichloride solution is prepared by dissolving 20 gms. of pure titanium sponge in 100 c c. of chemically pure hydrochloric acid, 50-100 per cent The operating conditions are: 80-120 F, 60 asf, 6-10 volts, with pure metal anodes for short and carbon anodes for long plating cycles, since titanium anodes corrode rapidly causing sludge formation. There is considerable fuming during electrolysis and adequate ventilation is required. The electrode contacts have to be constantly washed since the solution is quite corrosive. The bath is deep purple, but changes colour in a short time after plating due to formation of decomposition products. Its life is, therefore, quite short and fresh solutions have to be used to build up heavy coatings. The plating speed is 0.0001 inch/30 minutes. Close attention is necessary to obtain a good deposit. — Products Finishing, Vol. 27, No. 4, 130, 1963.

Ferro Alloy Industry in India

The Proceedings of the Symposium on Ferro Alloy Industry in India, organized by the NML, Jamshedpur during February 1962, have been published. The 244-page publication includes 30 papers covering diverse aspects of research work on ferro alloys, their production and properties, sampling and standardization, potential industrial applications, utilization of waste products, and physico-chemical and thermodynamic principles of ferro alloy production.

Design and Production in Metal Finishing

One of the most difficult problems in designing for quality is in metal finishing, as here the design of the component itself has a great effect on the ease of processing, or can, for example, provide for greater service life by eliminating areas where corrosion can start. Similarly a designer can assist finishing by ensuring that a component adequately can be prepared for finishing, and also by reducing to a minimum the variety of finishes required on a component. Design and production is always a matter of teamwork and this is all the more necessary in the metal finishing industry, as it is in design and material selection that many finishing processes are most likely to give less than their best result in adverse conditions. — Metal Finishing J, Vol. 9, 43, 1963.

Electromarking — A versatile finishing technique

Electrolytic marking is now well established as an economical and efficient means of placing identification and inspection marks on metal surfaces. It has the advantages of speed, clarity, permanance, ease of production, and minimum damage to underlying metal or plating. Developments in equipment, techniques and materials now offer the finishing industry a versatile tool for the application of trade marks, names and purely decorative patterns to surfaces with a variety and an ease of operation unapproached by other methods.

The process involves the passage of an electric current between workpiece and an electrode. Continuity of conductance is maintained by use of a pad moistened with a conductive electrolyte. The electrolytic etching, plating or marking action is confined to the desired areas by a

dielectric stencil, previously treated to expose the desired legend or pattern. There are many variations in technique, but in practice the availability of well designed equipment has reduced the operation to a very simple one which can be carried out by unskilled personnel after only brief instruction. In the February 1963 issue of Industrial Finishing a paper describes this technique under principle, types of mark, stencil simplicity, consistent results and improved equipment.

Symposium on Stress Corrosion Cracking

A Symposium on Stress Corrosion Cracking and Hydrogen Embrittlement was held in Sweden in October 1960 under the auspices of the Corrosion Committee of the Royal Swedish Academy of Engineering Sciences. The proceedings have been published as Bulletin No. 25, 107 pages, 1961, and distributed by Almqvist and Wiksell, Stockholm. The titles of the 9 papers, together with abstracts of 6 papers, have been published in the Nickel Bulletin, Jan-Feb. 1963.

ECS Meeting in Pittsburgh

Pittsburgh was the venue of the meeting of the Electrochemical Society from April 15 to 18, 1963. Technical sessions covered electric insulation, electronics — optical masers, semiconductors and luminescence, electrothermics and metallurgy, theoretical electrochemistry and industrial electrolytic. The March 1963 issue of JECS gives the abstracts of the 195 papers.

AES Annual Convention

The 50th Annual Convention of the American Electroplaters' Society was held in Atlantic City, N.J. from June 24 to 29, 1963. There were 15 papers covering various aspects of electrodeposition and metal finishing. In addition the programme included a Symposium on testing of electrodeposits, and a panel session on practical problems in industrial plating.

Metallic Corrosion Congress

The National Association of Corrosion Engineers, U.S.A. sponsored the Second International Congress on Metallic Corrosion which was held in New York during March 1963. One hundred and fourteen papers were presented by authors from Australia, Brazil, Canada, Denmark, East Germany, Finland, France, India, Italy, Japan, Poland, Rumania, South Africa, Sweden, U.K., U.S.A., U.S.S.R. and West Germany. Technical Symposia were divided into different sections: atmospheric corrosion, electrochemical processes, evaluation tests for stainless steels, inhibitors, metallurgical factors, oxidation, passivity, protective coatings, pitting and crevice corrosion, salt water corrosion, stress corrosion cracking and soil corrosion. The programme included plenary lectures by distinguished corrosion scientists. Extended abstracts of the papers have been published in book form by the NACE (December 1962, 146 pages, $3).

At the sessions on inhibitors, T. L. Rama Char and K. G. Sheth (India) presented a paper on 'Inhibition of the Corrosion of Aluminium in Hydrochloric Acid Solutions'. The NACE has made arrangements for the publication of the proceedings of the Congress.

19th NACE Conference

The 19th Annual Conference of the NACE was held in New York during March 1963. Technical Sessions covered: aerospace metals, cathodic protection, chemical industries, cooling water, elevated temperature, general corrosion, high purity water, corrosion inhibitors, marine corrosion, general pipeline, plastics, protective coatings and refining industry. A corrosion show was arranged. Titles of the papers presented have been given in the March 1963 issue of Materials Protection.

Industrial Finishes Exhibition

The Second International Industrial Finishes Exhibition was held in London during May 1963. There were more than 90 exhibitors with a wide range of products. Sixteen papers were presented at the Technical Convention. A review of the exhibits and title of the papers have been published in the May 1963 issue of Industrial Finishing.

Temporary Corrosion Preventives

A Symposium on Temporary Corrosion Preventives was arranged by the Melbourne Branch of the Australasian Corrosion Society at Melbourne in March 1963. The following papers delivered at the Symposium have been published in the May 1963 issue of Australasian Corrosion Engineering: (1) A general review of temporary corrosion preventives, (2) The use of temporary corrosion preventives and (3) VPI 260-A vapour phase corrosion inhibitor.

New Process for Perchlorates

Greater purity coupled with reduced power consumption, fewer processing stages and a cheaper plant, are some of the main benefits offered by a new process for the manufacture of per-

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D. G. Foulke (Plating, **50,** 406, 1963). Sixty-three references to papers published in 1962 and 8 references to 1961.

36. Electrolytic oxidation of strong cyanide wastes —

M. C. Dart, J. D. Gentles and D. G. Renton (J. Appl. Chem., **13,** 55, 1963). A method for the continuous destruction of solid cyanide waste, on a laboratory scale, by electrolytic oxidation is described. The only products of the process are gaseous-ammonia, carbon dioxide and hydrogen; and solid-sodium carbonate containing 0 05 per cent cyanide and 0.26 per cent sodium oxalate; 1 kwh. of electricity destroying 111-143 g of hydrogen cyanide.

37. Electrolytically regenerated manganic sulphate for the oxidation of aromatic hydrocarbons, II. Oxidation of xylenes to tolualdahydes —

R. Ramaswamy, M. S. Venkatachalapathy and H. V. K. Udupa (J. Electrochem. Soc, **110,** 202, 1963). A two-stage process for the oxidation of xylenes to tolualdehydes is described which consists of the oxidation of manganous to manganic sulphate in the cell and reacting the latter with xylene outside the cell. The low current efficiency for the in-cell oxidation is explained on the basis of anode potentials.

38. Improvement in the electrolytic preparation of iodoform —

R. Ramaswamy, M. S. Venkatachalapathy and H. V. K. Udupa (J. Electrochem. Soc, **110,** 294, 1963). Use of lead dioxide anode with a graphite substrate in the electrolytic preparation of iodoform is described.

39. Electrolytically regenerated periodic acid for the oxidation of starch to dialdehyde starch —

R Ramaswamy, M. S. Venkatachalapathy and H. V. K. Udupa (Indian J. Tech., **1,** 115, 1963). The preparation of dialdehyde starch by electrolytic oxidation of tapioca starch using iodic acid as the electrolyte has been studied. Twelve tables, 3 figures and 16 references.

— T. L. R.

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chloric acid. The method evolved by Merck of Darmstadt is a continuous one, the chlorine which is dissolved in dilute perchloric acid being converted to the acid in a highly pure form in a single stage. Performance figures show a current efficiency of 60 per cent, a 40 per cent product containing no more than 0.1 and 0.02 per cent respectively of hydrochloric acid and chlorine.— British Chemical Engineering, Vol. 8, 300, 1963.

Corrosion Congress in Europe

The Third Congress of the European Federation of Corrosion was held in Brussels from June 4 to 7, 1963. Seventythree papers were presented by authors from various parts of the world (Austria, Belgium, Czechoslovakia, East Germany, France, Holland, Hungary, India, Italy, Poland, Switzerland, U.K., U.S.A., West Germany) in 6 sessions: (1) Fundamental studies. (2) Protection by metallic coatings, (3) Protection by inorganic coatings, (4) Protection by organic coatings, (5) Inhibitors and passivating agents, and (6) Cathodic protection. A paper on 'Thiourea as an Inhibitor for the Corrosion of Aluminium and Its Alloys in Hydrochloric Acid Solutions' was presented by T. L. Rama Char (India).

— T.L.R.