NEWS SECTION

SECTION REPORT

Meetings

The Tenth Annual Meeting of the Section was held on October 19, 1961 at the Indian Institute of Science, Bangalore with Dr. T. L. Rama Char in the chair due to the unavoidable absence of Dr. M. S. Thacker. The minutes of the Business Meeting held on March 16, 1961 were confirmed. The Tenth Annual Report covering the activities of the Section for 1960-61 was presented by the Secretary. The following were elected as Officers of the Section, 1961-62; Chairman — Dr. M. S. Thacker, Vice-Chairmen—Mr. S. Ramaswamy and Dr. A. Jogarao, Secretary—Treasurer—Dr. S. Krishnamurthy. General matters concerning the Section were discussed. Dr. S. Krishnamurthy gave an account on further developments regarding the formation of 'The Electrochemical Society of India'. The meeting terminated with a vote of thanks to the chair.

Personals

M.S. Thacker was outside India during August-October 1961 on a tour of Europe and the USSR. He was a special invitee to the UN Conference on 'New Sources of Energy' which was held in Rome in August. The visit to Moscow was at the invitation of the Academy of Sciences, USSR.

S. Ghosh, who had been to France for training in Storage Battery Technology, has returned and resumed his duties at the CECRI, Karaikudi.

J. Sundararajan has been awarded the Ph.D. degree of the Indian Institute of Science, Bangalore for his thesis on 'Inhibition of the Corrosion of Aluminium'.

K. I. Vasu has left for London to join the Department of Metallurgy, Imperial College of Science and Technology for advanced studies under the Commonwealth Bursary Scheme.

New Associates: India Section

1. K. M. Srinivasan, Plating Shop, BEL, Bangalore.
2. Dr. S. Soundararajan, Indian Institute of Science, Bangalore-12.

New Patrons: India Section

Estrela Batteries Ltd., Plot No. 1, Dharavi, Post Bag No. 6603, Matunga, Bombay-19.

OUR PATRONS

Estrela Batteries Ltd.

ESTRELA BATTERIES LIMITED is a Public Limited Indian Enterprise manufacturing Dry Batteries. It started towards the end of 1939 with an authorised capital of Rs. 5 lakhs and installed capacity of 5 million cells a year. It made rapid progress and in 1944 the authorised capital was increased to Rs. 25 lakhs. A few years later the Company shifted its manufacturing activities to its own spacious premises in 1947. Estrela is now employing about 1,000 workmen. Its output has been steadily rising and has exceeded 40 million cells in 1960, about 8 times its initial output. Estrela is now manufacturing a wide range of Dry Batteries for the country's Government and Civilian needs including Radio batteries and Layer type batteries. Estrela has an ambitious plan of expansion. For this purpose its authorised capital has been further increased to Rs. 75 lakhs and recently a licence has been granted by Government for increasing its installed capacity by 25 million cells a year.

Along with progress in output Estrela has also been active in developing its products. For this purpose it maintains up-to-date Research and Development and Quality Control Laboratories including air-conditioned laboratory for testing of batteries. Estrela has pioneered the use of seamless extruded zinc cans in the manufacture of Dry batteries in India. It has introduced the manufacture of Layer type batteries with indigenous effort based on the technique developed by the Defence Department, Government of India. Estrela also makes a large number of component parts required for the manufacture of batteries. It has been contributing actively in the preparation of Indian Standards for Dry Batteries.

Many of the important raw materials are either not available in our country or if available are not of the right grade. As a result of its own research Estrela is progressively using indigenous substitutes in manufacture of Dry Batteries and is constantly engaged in research for using more and more indigenous materials to save foreign exchange. It is also giving attention to the Development of Export Trade to contribute its share in earning much needed foreign exchange. In addition to its Factory and Head Office in Bombay, Estrela possesses Branch Offices in Delhi, Kanpur, Calcutta aud Madras

as well as a net work of Distributors throughout the Country. In the years to come Estrela looks forward to making still better contribution in serving the needs of the Country for Dry Batteries.

GENERAL NOTES

German Society for Electrodeposition

A group of active technical people in the electroplating and allied metal finishing field met in Wiesbaden, Germany in April 1961 to form a Society for Electrodeposition: "Duetsche Gesellschaft fur Galvanotechnik". Correspondence may be addressed to Dr. Ruheuback, Forschungsgesellschaft Blechver-arbeitung, Postfach 10026, Dusseldorf 10, W. Germany.

Multi-Color Electroplates

Metal and Thermit Corpn, Rahway, N. J. U.S.A., have announced the production of multicolored finishes by electroplating on textured metals. For example, when textured steel is zinc plated and dyed using chromate conversion coatings, buffing causes the bright zinc to stand out in relief, high-lighted by the colored—chromate conversion coating in the recesses. In another variation, a basic metal is plated in a cold-chromium plating bath. On buffing, contrasting lighter spray shades are produced on raised areas while the dark gray deposit remains in the recesses. A multitude of design effects can be achieved by varying the basis metal, the electroplating process and the texturing method. Potential applications include appliance and business machine housings, automotive interiors and trim.—Products Finishing, Vol. 25, No. 10, 124, 1961.

Corrosion Control Measures and Water Pollution Control

Increasingly heavy demands are being made on the supply of water available for industrial use. In some sections, supplies are so limited that industries are using effluent from sewage plants. In others, growing populations demand an ever-increasing share of the available supply, and because uses for people have higher priority than uses for industry, large scale users are looking at their operations with the view of reducing consumption. The alternative of recirculation also becomes attractive when the delivered price of water makes once-through use uneconomical, even when the supply is adequate. With recirculation, however, come the troubles of scale, algae, materials deterioration, diminishing heat transfer rates, esthetic and property damage problems as well as safety hazards from blowdown, and a number of others well known to the engineers that maintain the heat exchangers. Better recirculating practices and application of known methods of controlling the corrosion illls that beset cooling towers and other heat exchangers will materially reduce the cost of maintaining adequa e water for industrial use. Even in the end-treatment of industrial wastes, considerable corrosion problems exist. Corrosion control aspects of the water pollution problem need greater attention so that expensive mistakes can be avoided. — Corrosion, Vol. 17, No. 6, , 1961.

Corrosion Reports by NACE

Four reports on corrosion activities in Holland, Italy, India and Japan have been published in the June 1961 issue of 'Corrosion' by the National Association of Corrosion Engineers U.S.A. They contain an account of conferences, publications, research work and other items of interest in the field of corrosion. The addresses of the foreign correspondents for each country have been given. The August 1961 number covers papers published in France and Switzerland.

Plating Chromium on Aluminium

The Battelle Memorial Institute, U.S.A. has recently developed, for the General Development Corpn., a new technique which provides an adherent and attractive chromium plate on aluminium. This results from the electrodeposition of un table chromium hydride, which after some time decomposes into hydrogen gas and chromium, the latter contracting as a result of stress. It is this contraction which gives chromium its well-known crack pattern and causes it to exfoliate away from a weaker basis metal. Aluminium is such a metal, and chromium plated directly on it tends to form non-adherent flakes. The Battelle process comprises alternate 'on time' deposition and 'off time' non-deposition steps. A crack-free chromium plate is built up because each layer is allowed to stabilize before the succeeding layer of chromium hydride is deposited. The resulting plate is smooth and semi-bright, and light buffing brings it to full brilliance. Corrosion performance is unexpectedly good with 0·15-0·30 mil plate. When duplex nickel 0·2-0·8 mil is applied over this chromium and a final 0·025-0·050 mil chromium plate applied, the corrosion characteristics are exceptional.—Battelle Technical Review, Vol. 10, No. 7, 17, 1961.

ECS Meeting in Detroit

The 120th meeting of the Electrochemical

Society was held in Detroit during October 1961. Technical Sessions covered batteries, corrosion, electronics—semiconductors, electro-organic, electrothermics and metallurgy. The topics for the Division Symposis were: (*a*) battery—fuel cell, (*b*) battery and corrosion—fused salt corrosion, (*c*) electrodeposition—effect of addition agents in electrodeposition and electrodeposited magnetic films, (*d*) electro-organic-organic electrochemistry in nonaqueous solutions, (*e*) electrothermics and metallurgy—sintering of refractory metals and materials. Abstracts of the 200 papers have been given in the August 1961 issue of JECS.

At the Electro-Organic Sessions, two papers were presented by R. Ramaswamy, M. S. Venkatachalapathy and H.V. K. Udupa (India Section): (1) Improvement in the Electrolytic Preparation of Iodoform, and (2) Electrolytically regenerated manganic sulphate for the Oxidation of Aromatic Hydrocarbons, II. Oxidation of Xylenes to Tolualdehydes.

Corrosion in Nuclear Energy

A Symposium on Corrosion in the Nuclear Energy Industry was organized in Paris during Oct. 1961 by the Societe de Chimie Industrielle. The programme formed the 16th manifestation of the European Federation of Corrosion. Eight papers were presented covering beryllium and aluminium; zirconium and niobium alloys; magnesium-base alloys.

Fuel Celle using Radioisotopes

A fuel cell that uses radoisotopes such as carbon-14 and nickel-63 as catalysts for the oxygen electrode might help speed commercialization of fuel cells. Developed at Yardney International Corp. under the direction of R. Salcedo, radioisotope-treated electrodes should permit construction of a simple basic cell which is inexpensive, and has a long operating life. A test cell operating at 40-60 C at 10 p.s.i g. has sustained current density of 150 milliampers per square centimeter for extended periods at polarizations of 0·2-0·3 volt.—chem. and Eng. News, **39**, No. 33, 51, 1961.

New Journals to be published by NACE

The National Association of Corrosion Engineers, U.S.A. will be publishing two new Journals, effective January 1962: 'Materials Protection' and 'Corrosion Abstracts'. These additions are designed to improve accessibility of the stores of information made available in NACE publications, to serve the varied interests of corrosion workers better, and to substantially increase the speed with which the information is published.

Corrosion Science Course at Manchester

The Dept. of Chemical Engineering, Fuel Technology and Metallurgy of the University of Manchester has instituted a training course in Corrosion Science leading to the degree of Master of Technical Science. The subjects offered are: principals of corrosion and protection, metallurgy, analysis, resistant materials, testing techniques, mathematical examination, instrumentation, industrial problems, electrochemistry, transport processes; laboratory-metallography, analytical and corrosion; project, dissertation.

New Anodizing Technique Cuts Costs

A method of hard-coating aluminium parts in a very much shorter time than required by conventional methods was announced recently by Toro Mfg. Corpn., Minneapolis, U.S.A. The process also challenges older methods with greater electrical efficiency, reduced refrigeration requirements and lighter colour of the end product. These improvements are expected to lead to a greatly expanded use of hard-coat aluminium for such items as helicopter blades, pistons, gears, architectural components, kitchen utensils, automotive and other parts The heart of the new process is its ability to utilize very high current densities—20 to 40 times employed by other methods, 25-100 asf, without 'burning' the aluminium. This will permit greater speed in anodizing parts:—Industrial Finishing, Vol. 13, No. 159, 56, 1961.

Annual Convention of the Australasian Corrosion Association

The Second Annual Convention of the Australasian Corrosion Association was held at the University of New South Wales, Kensington during November 1961. Sixteen papers were presented in four technical sessions: (1) corrosion testing and specifications and their significance (2) new developments in studies of oxidation and high temperature corrosion, (3) marine corrosion, and (4) new developments in corrosion-resisting non-ferrous metals and alloys. The programme included lectures on 'Corrosion Engineering — A Problem in Education' and 'Corrosion Aspects of Electroplating'. The papers have been preprinted in 'Australian Corrosion Engineering' and 'Australian Chemical Engineering'.

Symposium on Ferro-Alloy Industry in India

The National Metallurgical Laboratory, Jamshedpur is organizing a Symposium on 'Ferro-Alloy Industry in India' during February 1962. The Symposium will broadly cover: survey of new materials, beneficiation of raw materials for indigeneous industry, evaluation of production techniques and principles, latest advances in production technology, utilization of by-products, standard specifications, present status of the industry in India and future expansion plans.

Refresher Course on Purer Metals

The Institution of Metallurgists, London held the 1961 Refresher Course on 'Purer Metals' at Llandudno during October. The following were the topics: (1) Engineering Use of Purer Metals, (2) Principles Employed in Producing Very Pure Metals, (3) Technological Advances in the Production of Purer Metals, and (4) Properties of Pure Metals. The object of these courses is to give opportunities for informal contact and exchange of views between metallurgists from all varieties of special interest and background.

International Conference on Coordination Chemistry

The Seventh International Conference on Coordination Chemistry will be held at Stockholm and Uppsala, Sweden from June 25 to 29, 1962. It has been organized by the Swedish Chemical Society with the sponsorship of the Swedish Government and the International Union of Pure and Applied Chemistry. Attendance is by invitation only. Papers will be presented under 6 sessions: (1) the chemical bond in coordination compounds, (2) coordination in fused salts, (3) biochemical applications, (4) isopoly and heteropolyions, (5) donor-acceptor reactions, and (6) general. Plenary lectures will be delivered by specialists from several countries.

—T.L.R.

(Concluded from page 22)

58. **Anodic polarization of stainless steel in chloride solutions—**

G. M. Schmid and N. Hackerman (J. Electrochem Soc, **108**, 741, 1961). The existence of maxima in the potential-time curve for stainless steel in potassium chloride was verified, and the time for the potential to decay to +0.5 v vs SCE was measured. Polarization data support the view that the effect of the chloride ion can be due to sorption phenomena, without assuming an oxide film.

59. **Lead dioxide anode in the preparation of perchlorates—**

K. C. Narasimhan, S. Sundararajan and H. V. K. Udupa (J. Electrochem. Soc., **108**, 798, 1961). The influence of the variables on the current efficiency of perchlorate formation from chlorate was studied using as anodes lead dioxide deposited on graphite or carbon. Addition of fluoride together with sulphuric acid has the maximum effect on the efficiency under acidic conditions. Eight tables, 2 figures and 26 references.

60. **Electrical properties and kinetics of electrode reactions—**

R. J. Brodd (J. Res. Nat. Bur. Standards, **65A**, 275, 1961). A common basis for investigations of the properties of electrode reactions is provided. The basic equations of electrostatics and electrodynamics and the assumption that electrode reactions are relaxation processes, are used to develop the equations for the electrical behaviour of electrode systems. Thus electrode reaction processes are characterized as two states separated by an energy barrier.

—T. L. R.