NEWS SECTION

SECTION REPORT

Meetings

The Second and Third Meetings of the Section for 1959 were held on December 18 and 19, 1959 at the Central Electrochemical Research Institute, Karaikudi. Prof. K. S. G. Doss, Director, CECRI delivered two lectures on 'Application of Theory of Rate Processes to Electrode Phenomena' (Summary will be reported in the April 1960 issue of the Bulletin).

Personals

K. Rajagopal has been designated as Chief Engineer, The Mettur Chemical and Industrial Corporation Ltd., Mettur Dam R. S.

V. Aravamuthan has been nominated as a member of the Primary Cells and Batteries Sectional Committee, ISI.

H. V. K. Udupa has been nominated as a member of the Secondary Cells and Batteries Sectional Committee, ISI.

K. S. G. Doss has been nominated as a member of the Electrotechnical Division Council, as well as the Advisory Committee of the Madras Branch, ISI.

A. Jogarao has been nominated as a member of the Electroplating Sectional Committee, ISI.

New Patrons: India Section

1. M/S. T. I. Cycles of India, Ambattur. Near Madras (Life Patron).
2. M/S. Kohinoor Electro Gilders, Khetwadi, 10th Lane, Bombay-4 (Life Patron).

New Associates: India Section

1. A. Viswanathan,
2. S. Sampath,
3. G. S. Subramanian,
4. R. Radhakrishnan,
5. T. P. Mahadevan (CECRI, Karaikudi-3).
6. S. Nagarajan, Alagappa College, Karaikudi-3.

GENERAL NOTES

ECS Meeting in Columbus

The 116th meeting of the Electrochemical Society was held in Columbus during October 1959. Technical Sessions covered batteries, corrosion, corrosion-electronics, electrodeposition, electronics - semiconductors, electro-organic, electrothermics and metallurgy. The topics for the symposium were: (a) electrodeposition-electrode reactions in nonaqueous solutions, electro-and chemical-polishing, (b) electronics-semiconductors-elemental semiconductors, bulk properties; semiconducting compounds; process technology; surface phenomena, diffusion, and (c) electrothermics and metallurgy-refractory coatings and less common metals. Abstracts of the 151 papers are given in the August 1959 issue of JECS.

At the Electro-organic Sessions, H. V. K. Udupa, member of the India Section, presented a paper on 'Rotating Cathode-Type Cell for the Preparation of Benzidine'.

Future of Aluminium is Bright

Statistics show that in the past 10 years aluminium uses and applications have increased rapidly. More important, the figures disclose that this increase had taken place largely in essential industries which supply such basic services as shelter, transportation and communication-which will be as important to future generations as they are to-day. The requirements of these industries are growing and as they grow, so also will the future market for aluminium. Consumption statistics outside the 'Iron Curtain' show 1.8 million short tons in 1948, 1.975 in 1950, a jump to 3.375 in 1955, and a smaller rise to 3.4 million tons in 1958. The various applications for which the metal is used vary greatly from one country to another. In the case of the U.S.A. which may be taken as a good example of a highly industrialized country, major end-uses are estimated to be these: building and construction 21, transportation 19, household and commercial appliances and equipment 12, electrical industry 11, industrial equipment 8, and canning and packaging 5 per cent.—Aluminium News, Vol. 12, Sept. 1959.

Scientific Instruments Organization in India

At the instance of the Planning Commission, the Governing Body of the Council of Scientific and Industrial Research is setting up a Central Scientific Instruments Organization for promotion and development of indigenous manufacture of scientific instruments of all categories needed for teaching, research and industry.

Refresher Course on Corrosion at the CECRI

The Central Electrochemical Research Institute held a five-week refresher course on 'Corrosion and Its Prevention' commencing from November 9, 1959 at Karaikudi. The subjects for the course included corrosion processes, economics of corrosion and prevention measures. Extension lectures on allied subjects together with practicals and demonstrations were also arranged. It was open to persons sponsored by industrial organizations and Government departments.

Aluminium Industry Expands in India

With the formation of Hindustan Aluminium Corpn. Ltd a joint venture of Kaiser Aluminium and Chemical Corpn, U.S.A., and the Birlas, the well-known industrial magnates, initial plans have been nearly completed for the establishment of an integrated aluminium producing plant at Riband in Uttar Pradesh State. The corporation will constuct and operate a 20,000 metric ton plant, and the capital cost of the project is estimated at Rs. 16 crores.

Recovery of Waste Metal in the Metal Finishing Industry

The October 1959 issue of 'Electroplating and Metal Finishing' has for its 'comment' the topic 'A Problem of Waste'. The important points made out are: Recovery of waste metal is more difficult in the electroplating proce-s than in other manufacturing operations, including polishing. The total consumption of the more common metals in the plating shop and not including electrogalvanizing and manufacture of tin plate, involves an expenditure of around 4 million pounds in the form of anodes and plating salts, and of this between 0.4 to 0.8 million pounds goes to waste. The recovery of metal coatings from rejects is also a difficult matter. Particularly in manually-operated decorative plating plant, the reject figure may often average 7 per cent. Metal is again lost in chemical and electropolishing processes and in anodizing. In the chemical polishing of aluminium, for example, an average of 1 pound of metal goes into solution for every 60 or so sq. ft. of metal treated. In eastern Europe it is common practice to extract iron by reduction and precipitation from electropolishing baths while in America, aluminium is extracted by ion-exchange from a number of large electropolishing installations. The metal finishing industry is still a long way short of making full use of the materials it consumes, and a great deal of investigation is needed before it is in a position to do so. Future developments may result in much less valuable material going to waste.

Corrosion Resistance of the Delhi Pillar

Dr J. C. Hudson has reported that the British Iron and Steel Research Association, London, carried out corrosion tests on a British steel exposed near the iron pillar at Delhi. The results showed that the corrosion rate was only 0.0002 in. per year, about one-tenth of the rate observed in rural atmospheres in Great Britain. The difference is accounted for by the dryness of the climate at Delhi. Meteorological records show that the average annual relative humidity there is about 46 per cent, which is well below the critical value of 70 per cent that Dr W. H. J. Vernon showed to be necessary for serious corrosion of iron. Presumably too, the atmospheric pollution at Delhi is very low In the view of Dr Hudson, therefore, the freedom from corrosion of the Delhi pillar is to be attributed primarily to the mildness of the local corrosive conditions. A detailed account of the experiments mentioned above is found in 'Nature', 499, Sept. 12, 1953.– Metal Finishing J, Vol. 5, 325, 1959.

Nickel in Electroplating

Nickel plating accounts for about 15 per cent of the free world's nickel consumption. In the future the plating industry will be a still greater consumer of nickel since it has tremendous market potentialities. The popular nickel-chromium plating of to-day is a substantial coating of nickel under a thin film of chromium. The largest use of nickel plating is in the production of durable and attractive metallic finishes for manufactured articles ranging from costume jewellry, in which a thin nickel coating serves as a base plate for precious metals, to automobile bumpers requiring thousands of tons of nickel per year. The automotive industry is the largest consumer of nickel for plating. A major advance in the electroplating industry has been the development of

'duplex' nickel plating systems in which two successive layers of nickel are deposited, imparting marked improvement in corrosion resistance and quality of finish.— Industrial Finishing, Vol. 11, No. 135, 39, 1959.

Annual Report of the CECRI, Karaikudi, 1958-59

The latest report from the Central Electrochemical Research Institute, Karaikudi covers the activities for the year 1958-59. The research work under progress has been divided under various branches of electrochemistry: electric furnace products, electrolytic preparation of metals of high purity, recovery of pure metals from industrial wastes, electroplating of metals and alloys, technical electro-organic preparations, electrolytic oxidation and reduction, anodizing, batteries, corrosion, theoretical electrochemistry. The report also contains other information: executive council, staff, budget and equipment, papers published and library.

Thirteenth Annual Review of Materials of Construction

Industrial and Engineering Chemistry, Vol. 51, No. 9, Part II, 1156-1230, 1959 has reviewed materials of construction under: highlights, aluminium alloys, carbon and graphite, copper and copper alloys, elastomers, fibers, hard rubber, iron, carbon steel and alloy steel, lead and its alloys, less common metals, nickel and high-nickel alloys, plastics, protective coatings, stainless steels and other ferrous a loys, tin and its alloys, and titanium. Each review contains an up-to-date bibliography.

Indian Standards Institution, 12th Annual Report

The I.S.I., New Delhi has published its report for 1958-59. (price Rs. 2, free to members). It consists of 4 parts: general review, divisional reports, standardization at international level and appendices. The reports cover the work of the following divisions: engineering, building, textile, chemical, agricultural and food products, structural and metals, electrotechnical, certification marks and implementation. The appendix includes the standards published and in press, accounts, staff, new licences issued and articles covered by standard marks.

The Future of Nuclear Energy

The special number of the International Atomic Energy Agency Bulletin, November 1959, records the discussion on the future of nuclear energy organised by the IAEA in Vienna in September 1959. Three eminent scientists participated, and this number presents their statements together with the questions and answers. The topics coverd by them are: (1) Sir John Cockcroft-problem of burn-up, recession in nuclear power, a temporary phase, radioisotopes, (2) Dr Homi. J. Bhabha-situation in India, cost of power, need for a beginning, and (3) Dr Bertrand Goldschmidt-nuclear materials industries, isotope separation, radiation and radioactive by-products, industrial use of high level radiation, emerging technologies.

Technical Training Course in Batteries

A short course of Technical Training in Batteries has been arranged by the CECRI, Karaikudi beginning from Feb. 1, 1960. It is intended to provide training to the technical personnel employed in the industries manufacturing lead-acid batteries in particular as well as to representatives of large consumers of the batteries, and of organizations engaged in the testing of batteries according to the IS: specification. Topics for the 8 week course include: batteries: fabrication, uses and recent advances, testing, battery plant layout, other types of storage batteries, primary batteries, fuel cells, solar and atomic batteries.

Foamed Aluminium, New Structural Material

Foamed aluminium is corrosion resistant, fireproof, waterproof, extrudable or moldable, can be machined, sawed and nailed, bolted, glued, bent or pressed into shape. Called Alumafoam, it can be bonded to anything by means of epoxy adhesives. At 12 lb/cu ft. density vs 170 lb. for aluminium itself the foam floats. First use and sales of the material produced by Dynamic Metals Inc, Houston, U.S.A., is in built up roofing and building panels; next come chemical plants, aircraft autos and packing. It is made by mixing zirconium hydride with molten aluminium, and the price will be 75 cents — 1 dollar/lb, for a sq. ft. of 1 in. thick material. This is for a standard aluminium alloy 220, made up of 90% aluminium, 10% magnesium plus a trace of zirconium coming from the foaming process. The company is now experimenting with aluminium-magnesium--silicon alloys which should be cheaper. — Chemical Engineering, Vol. 66, No. 21, 120, 1959.

Electroplating and the ISI

The Indian Standards Institution (ISI) set up in 1953 a full-fledged Sectional Committee to pre-

pare Indian Standards covering the field of electroplating. Some of the leading electroplaters, organized consumers of electroplated articles, leading research laboratories and testing organizations in the country are represented on this Sectional Committee and its various Sub-Committees and Panels.

As a result of deliberations of the Sectional Committee (ETDC 12) the following Indian Standards have already been published: (*a*) IS: 1067-1958 Specification for Commercial Silver plating, (*b*) IS: 1068-1958 Specification for Copper, Nickel and Chromium Electroplated Coatings, (*c*) IS: 1337-1959 Specification for Hard Chromium Plating on Steel (under Print), (*d*) IS: 1 59-1959 Specification for Electro-Tin Plating (Under Print), (*e*) IS: 1378-1959 Specification for Oxidized Copper Finishes (Under Print). Specifications for the following have also been finalized and are likely to be available in printed form by June 1960: (*a*) Cadmium Plating, (*b*) Zinc Plating.

The Committee is also engaged in preparing a detailed code of practice for Electroplating. As at present visualized, the code will cover: (*a*) Recommended Equipment for Plating Operations, (*b*) Pre-treatment of basis metals, (*c*) Special treatment of basis metals like aluminium, and (*d*) Actual plating processes viz., nickel, chromium, copper, silver, tin and other platings.

Draft specification relating to the following subjects are in various stages of preparation: Copper Plating, Lead Plating, Industrial Silver Plating, and Brass Plating. Specifications for Anodes for electroplating will also be taken up shortly.

While preparing specifications for electroplating, the Committee has had the benefit of the investi gations in various laboratories in the country and the special requirements of tropical conditions of use have always been prominently kept in mind and requirements laid down accordingly.

The subject of chemicals for Electroplating is being handled through the appropriate Committee of the Chemicals Division of ISI and the position of work in that field is as under: Standard published: (*a*) IS: 330-1951 Specification for Chromic Acid, (*b*) IS: 331-1951 Specification for Chromic Salt. Work is in hand on the following: (*a*) Nickel Salts for Electroplating, (*b*) Sodium Cyanide, (*c*) Potassium Cyanide, (*d*) Zinc Cyanide, (*e*) Copper Cyanide, (*f*) Cadmium Cyanide, (*g*) Zinc Sulphate for Electroplating.

'Pure and Applied Chemistry' Journal

The new Journal 'Pure and Applied Chemistry' will be published by Butterworths Scientific Publications, London beginning from January 1960. It will contain lectures and papers read at symposia organised or sponsored by the International Union of Pure and Applied Chemistry, reports of commissions, divisions and committees, and other material. There will be 4 parts of about 600 pages in a volume.

Second International Congress of Polarography

The Polarographic Society organised the Second International Congress in Polarography at Cambridge during August 1959 to honour the seventieth birthday of Professor Heyrovsky. The scientific programme included the inaugural address by Heyrovsky, plenary lectures, and papers exceeding a hundred contributed by delegates from 23 countries. The Pergamon Press will publish the proceedings of the Congress.

Seminar in Electrochemistry

A Seminar in Electrochemistry will be held by the CECRI, Karaikudi during April 1960. It includes in its scope the entire field of fundamental and applied Electrochemistry, and also contributions relating to personal experiences in the operation of electrochemical plants. Two copies of the abstracts should be sent by Jan. 15 and of the full papers by Feb. 15, 1960.

Vacuum Metallising Aluminium

The National Research Corporation, Cambridge, Mass, U.S.A., have reported a new process for the vacuum coating of aluminium. The metal is boiled in vacuum, and the resulting aluminium vapour is condensed on the part to be coated. The method is claimed to yield a pure aluminium skin up to four thousandths of an inch thick which is adherent, ductile and non porous. They have been used successfully on high-tensile steel, cold-rolled steel, aluminium die castings, forgings, titanium, magnesium and cast iron. The technique may usefully be employed in the car manufacturing industry as an alternative to dipping body sheet steel in molten metal, as a corrosion protective coating for aluminium die castings and forgings of particular alloys, and as a protective coating for cheaper stamped or pressed steel parts. Its applications in the aircraft industry can also be of importance. The thick film vacuum metallising process has been developed to the

point where it can be applied on a commercial scale.—Corrosion Technology, Vol. 6, 290, 1959.

Can Competition

The time-honoured 'tin can' will get more and more competition from aluminium in the next ten years, with aluminium expected to account for 20 per cent of the metal container market. In commenting on the competition between aluminium and tin plate before 28th National Packaging Conference held during 1959 in Chicago, F. B. Newcomb of American Can's Canco Division said his company is 'willing to commit increasingly greater research funds on the gamble that the price of aluminium will be reduced enough to make aluminium cans more competitive with tin plate'. Some aluminium cans are already in use as beer cans, oil containers and cheese containers. Experimental work is underway on cans for citrus juices and on a pressure can that will be useful to aerosol packagers.—Products Finishing, Vol. 24, No. 2, 78, 1959.

Journal of Electroanalytical Chemistry

The Elsevier Publishing Co., Amsterdam has started the publication of a new international journal entitled the 'Journal of Electroanalytical Chemistry' with effect from 1959. The subjects covered will include: potentiometric, amperometric and coulometric determinations; recent developments in polarography; chromopotentiometry, oscillographic polarography, square ware polarography, anodic stripping; conductimetry; and high-frequency methods. The Journal will also contain papers on fundamental problems of electrochemistry. The annual subscription is £6 sh 5.

Silver-Zinc Missile Battery

A new automatically activated silver-zinc primary battery, the 20xPA50, has been developed for the missile field by Yardney Electric Corp, New York, manufacturers of silvercel and silcad batteries. This is capable of 31 whr/lb and 1.7 whr/cu. in. It can be activated and redried to meet specification voltages within 3 seconds, and can be discharged at numerous rates-ranging from less than the 50-amp rate at 37V for 90 min. to the 350-amp. rate at 28V for 11 min. Weighing only 72 lb. it has a Volume of 1290 cu. in., exclusive of external mountings. Its shelf life in the dry condition, is about 5 yr; in the activated condition 8 hr.—J. Electrochem. Soc, Vol. 106, 295C, 1959.

German Electroplating Conference

A Conference on Electroplating was held at the Research Institute for Precious Metals and Metal Chemistry during September-October 1959 in Schwabisch-Gmund, Germany. It was sponsored by the Research Association for Sheet Metal Work. Nineteen papers were presented by authors from Germany and other countries, and the topics covered: Electroplating, electroforming, electrolytic and chemical polishing, cleaning, corrosion testing and general plating practice. Abstracts of the papers can be found in Electroplating and Metal Finishing, Vol. 12, November 1959.

Materials Deterioration in the Atmosphere

The National Association of Corrosion Engineers arranged a series of educational lectures on atmospheric corrosion and deterioration during the 14th Annual Conference held in March 1958 at San Francisco. In the October 1959 issue, 'Corrosion' presents the 4 lectures under the title 'Some Fundamental Aspects of Materials Deterioration in the Atmosphere' (pages 523t—545t) as publication 59–18. The subjects are: (1) mechanisms of atmospheric corrosion of ferrous metals, (2) mechanisms by which non ferrous metals corrode in the atmosphere, (3) principles and procedures employed in design and interpretation of atmospheric corrosion tests, (4) deterioration of materials in polluted atmospheres. There is still a tremendous annual economic loss because of attack by the elements on externally exposed installations of all kinds Much research and development is needed to find less expensive ways of protecting metals and other materials from atmospheric damage. This publication is intended as a convenient reference to corrosion engineers and investigators. It should also serve as a stimulus to students of corrosion, some of whom may be alerted to the need for specialization in this field.

—T.L.R.