NEWS SECTION

SOCIETY REPORT

Meetings:

A meeting of the Governing Council of the Society was held on February 6, 1969 at the Indian Institute of Science.

New Members:

Member: (Miss) V. Vasantasree

Associate Member: M. Viswanathan.

Resignations:

Eastern Electronics, International Nickel, K. S. G. Doss.

GENERAL NOTES

Magnesium *versus* Aluminium

It is reported that magnesium has replaced aluminium for the crank case and other casings of the new 6-cylinder, Porsche car engine in Germany. The cost is comparable, and the weight saving is responsible for better pick-up, 0-140 km/hr. in about 17 seconds with the 130 ps motor. One of the race cars, the Carrera-6, ran at 303 km./hr. on the Le Mans course first time, and just recently Porsche came in first, second and third at Daytona Beach. Actual work time on the crankcase was cut 10-15 per cent in relation to the previous aluminium part. Aside from the 16.60 kg. crankcase on the series 911, a number of other engine parts are also magnesium die castings. In planning stage is a magnesium transmission housing for the production series. U.S. production of magnesium in 1967 totalled 96,500 short tons, or 21 per cent higher than in 1966. Dow Chemical Co., Ltd., is to set up a new $ 15 million reduction plant at Hansford, Washington to produce the metal from the chloride.—Metals and Materials, Vol. 2, No. 10, 290, 1968.

Materials of Construction

The August 1968 issue of Industrial and Engineering Chemistry, pages 29-87, presents the annual reviews on Materials of Construction, highlighting some of the more recent developments in the use, fabrication and physical properties, and covering plastics technology, stainless steels and other ferrous alloys, elastomer technology, aluminium, polymer coatings—pigment dispersion and adhesives.

Titanium Alloy

An alloy of titanium, containing aluminium 6 and vanadium 4 per cent, is being used in steam turbine blades at U.S. Industrial Chemicals plant at Tuscola, Illinois. It is corrosion resistant, lightweight, and has a high strength-to-weight ratio, all of which give it an advantage over other turbine blade materials such as stainless and special alloy steel.—Chem. and Engg. News, Vol. 46, No. 33, 45, 1968.

International Conference on Reinforced Plastics

The Sixth International Conference on Reinforced Plastics was held in London during November 1968 by the British Plastics Federation. The topics for discussion were materials research, processing technology, end uses and marketing.

Australian Corrosion Meetings

The Ninth Annual Conference of the Australasian Corrosion Association was held at Auckland, N. Z. during November 1968. Six technical sessions covered: (1) Standards, (2) Corrosion of Copper in Water Systems, (3) Aluminium Corrosion, (4) Delayed Fracture; Inhibition, (5) Biological Problems and (6) Paper and Pulp; Sulphur Corrosion. Titles of the 17 papers presented can be found in Australasian Corrosion Engineering, October 1968.

Corrosion in Fertilizer and Petroleum Industry

The Corrosion Advisory Bureau, Metals Committee of the CSIR organized a refresher course on the above subject in collaboration with the FACT Technical Society at Udyogamangal, Kerala during December 1968.

NMR Spectroscopy Symposium

An International Symposium on Nuclear Magnetic Resonance Spectroscopy has been arranged by the Chemical Society, London during July 1969 at Birmingham. It will deal with all branches of interest in the field of high resolution NMR spectroscopy.

Corrosion Resistant Copper-Nickel Alloys

The US National Bureau of Standards reports that the corrosion resistance of copper-nickel alloys is progressively improved by the addition of iron up to 1.5 per cent. Thereafter resistance falls, possibly because of the setting up of galvanic cells.—Metals and Materials, Vol. 2, No. 11, 322, 1968.

Zinc Die Castings 69

Throughout 1969 Zinc Development and Zinc Alloy Die Casters Associations all over the world will be cooperating in a campaign aimed at spreading knowledge and information on the latest developments in the field of zinc alloy die casting, with the symbol *Z* and a title Zinc Die Castings 69. In India, the programmes will be organized by the Indian Lead Zinc Information Centre and the newly formed Zinc Alloy Die Casting Society, by way of publications, lectures, exhibitions, etc. The most important event will be the 6th International Pressure Die Casting Conference to be held in Paris during June 1969, and the 2nd International Zinc Die Casting Competition.—Press Release, Indian Lead Zinc Information Centre, Calcutta, January 1969.

New Process for Sodium Chlorate and Chlorine Dioxide

Krebs, Paris have developed a new process for sodium chlorate utilizing activated titanium electrodes in the NC 12 electrolytic cells—characterized by a special method of electrolyte circulation. There are substantial savings by way of space requirement, power consumption which is 20 per cent less, and operating expenses because of the long life of the electrodes. The chlorine dioxide is produced by reacting with hydrochloric acid in a series of titanium reactors. Separation of the dioxide and chlorine is effected by selective dissolution.—Chemical Age of India, Vol. 19, 1126, 1968.

Terne Plate in Building

The use of terne coated roofing on building constructions attests to the durability and safety of terne-steel sheet coated with a lead alloy containing 7-25 per cent tin. In Washington D.C., the headquarters of the American Institute of Architects was re-roofed about 1870 in terne, and is still in service. The home in Tennessee of a US President was re-roofed in 1835 after a fire during the previous year, and protects the building to this day.—Tin and Its Uses, No. 79, 5, 1968.

Electropainting *versus* Hot-Dip Galvanizing

There is a competition in the U.S. between electrophoretic painting and hot-dip galvanizing as methods of protecting the more vulnerable parts of motor cars. Galvanizing seems to be favoured, however, and in fact most of the electrocoating is actually being applied over galvanized steel. Galvanized sheet usage in the motor industry is growing fast, with 120-400 lb. per vehicle. On the other hand, British cars in mass production contain virtually no galvanized material. Manufacturers prefer to pin their faith in electropainting applied onto plain steel, or to more conventional painting systems.—Metal Finishing J., Vol. 14, 351, 1968.

Tine-Zinc-Coated Steel Tubes

A tin-zinc-coated steel tube for central heating has arrived at a time when the market for such tube is about 100 million feet a year. Called "Tru-well", it costs half the price of thin-walled copper tube and can save up to £20 on an average domestic heating system. The electrolytically deposited coating with 75 per cent tin was developed by the Tin Research Institutie, England. It gives a satisfactory combination of protection and solderability.—Tin and Its Uses, No. 79, 12, 1968.

New Solid-State Battery

Melpar Inc., a subsidiary of Westinghouse U.S.A., has reported significant advances in solid state storage batteries using no liquid electrolyte and having no gas evolution when recharged—by solar cells. Because of its sheet form it can be constructed in a thin packet of any desired size, and by stacking in series a multivolt battery is obtained. Fabrication is simple, and the negligible material loss in the charge-discharge cycle appears to forecast a high economy and savings in space and weight. Presently a system employing zinc and silver sheets—with presumably sheets of the chlorides of the metals sandwiched within, develops an open circuit potential in each sheet "packet" of about 0.9 volt, and current densities in

excess of 2 mA/cm^2.—Electro Technology, Vol. 12, 185, 1968.

Chemical Thermodynamics Journal

The Academic Press, London and New York has announced the publication of the "Journal of Chemical Thermodynamics" effective January 1969. There will be 6 issues a year, the topics covering thermochemical and equilibrium studies on chemical reaction, and measurement of thermodynamic properties of single and multi-component systems.

Nuclear Power in West Germany

Electricity from nuclear power, now calculated to cost $ 0.96 per kwh of production, is estimated to cost only $ 0.64 in the mid-seventies according to a German nuclear physicist. Nuclear energy accounts for 40 per cent of power consumption in West Germany.—German News Weekly, Vol. 10, No. 39, 12, 1969.

All-Synthetic Plane

An elegant form, low running costs and technical progress were united in the first airplane for commercial travelling which is entirely made out of glass-fibre enforced synthetics — except for the engine and the landing gear. This was presented at the recent 7th German Aviation Show held in Hannover, West Germany. The one-engine, 4-passenger plastic bird-span 10.85 metres, length 7.65 meters and with a 200 HP power-unit has a speed of 300-360 km./hour.—Engineering Times, 4, January 15, 1969.

CITCE Meeting

The 20th Meeting of the CITCE will be held at Strasbourg, France during September 1969. The topic for discussion is "Transport Phenomena in Electrochemical Systems" and will cover: (1) Theoretical and experimental fundamental basis, (2) Mass and charge transport in solution and in the pores of porous electrodes and (3) Mass transport towards and through membranes.

Copper-Spectacular Growth in Consumption

Growth in the demand for copper has been spectacular and indicates the dependence of modern industry on the unique combination of properties of the metal and its alloys. During the decade 1950 to 1960 world production was 200 times greater than for the first decade of the 19th century, and there has been substantial increase during the current decade. World consumption of the metal is divided between electrical engineering 50, general engineering 25, building 15 and transportation 10 per cent. Sixty per cent of the total is used by U.S.A., U.K., West Germany, France, Italy and Japan. The average annual growth rate of copper consumption has been about 2.5 per cent for the last 15 years, and it is clear that its future growth rate must depend to a considerable extent on the industrial activity in the major, using-industries concerned.—Copper, Vol. 2 No. 6, 1, 1968.

Copper-roofed Structures

The "Sports Palace" on the outskirts Mexico City is outstanding for its striking copper-clad roof—amongst the largest in the world. For an area of 214,000 sq. ft., over 96 metric tons of metal were required. In the U.K., the Sports Hall of the Crystal Palace Recreation Centre has a roof area of 120,000 sq. ft., for the cladding of which over 60 tons of copper were used. The statute of Saint Carlo at Arona, Italy—completed in 1697 is 72 ft. high above a pedestal of 36 ft. Like the Statue of Liberty in New York (154 ft.: 1896) it was assembled on-site from a number of component parts prefabricated from copper plate and fixed with gay abandon to an iron framework. The latter is clad in the attractive pale green patina colouring of naturally weathered copper, but this adornment was removed from the Italian monument in 1818 and replaced by a permanent bronzing finish.—Copper, Vol. 2, No. 6, 5, 17, 1968.

Stainless Steel Arch in the U.S.A.

The Stainless Steel Gateway Arch in St. Louis was completed in 1965. The construction took 3 years, and consumed stainless steel 900, structural steel 3,100 and concrete 36,000 tons. It spans a distance equal to its height, 630 ft., and the construction required exacting precision. The monument's principal geometric expression is a triumphant restatement of the triangle that lends the structure an illusion of exaggerated height. The legs of the arch are equilateral triangles with sides 54 ft. wide at a ground level and taper to 17 ft. at the top.—Span, Vol. 10, No. 1, 46, 1969.

Electroless Nickel

A highly successful application for today's electroless nickel processes is the coating of industrial molds in a variety of applications.

One of the major advantages is the inherent lubricity of electroless which provides a good parting medium especially in the area of complex shapes and configurations. For lower costs, increased wear resistance, corrosion protection and close dimensional tolerances, electroless nickel is well worth investigating for mold finishing.—Metal Finishing, Vol. 66, No. 11, 9, 1968.

The advantages and disadvantages of electroless and electroplated nickel have been discussed under "Finishing clinic" in Products Finishing, 24, November 1968. It has been concluded that, for each application, the merits of the electroless process have to be weighed carefully to determine whether the higher cost is justifiable.

Battelle Technical Review

With the Nov.-Dec. 1968 issue the publication of the Review ceases. The Journal and the Abstracts were serving as a valuable source of information on developments in science and technology for the last 17 years. Battelle Memorial Institute is amongst the biggest *R* and *D* organizations in the world, and its work in a large number of areas was being quickly disseminated through the medium of this periodical.

Titanium Bonding

A project sponsored by NASA at the Battelle Memorial Institute involves the study of the feasibility of bonding stainless steel to titanium alloys for possible use in liquid oxygen systems in space vehicles; techniques include explosive bonding and vacuum deposition. Titanium-stainless steel specimens of varying thicknesses are under examination to determine, among other things, the strength properties of the two-material composite.—Battelle Technical Review, Vol. 17, No. 10, 20, 1968.

Electro-Organic Synthesis

An intensive research programme to tap the industrial potentials of high-rate, selective electro-organic synthesis has been proposed by Battelle-Columbus. This is a five-year project requiring the joint support of at least 25 companies and costing 1.25 million dollars. It is based on a concept of alloying electrodes to accomplish specific reactions—including reduction, oxidation, substitution and polymerization, and with the development of selectivity under conditions of high-rate mass transfer. High-current pulses of microsecond durations would be used, while reactants are supplied and products are removed at rates not exceeding milliseconds.—Battelle Technical Review, Vol. Vol. 17, No. 10, 20, 1968.

Lead Acid Batteries

A Symposium on Lead Acid Batteries was held at Calcutta during November 1968 under the joint auspices of the Indian Lead Zinc Information Centre and the Society for the Advancement of Electrochemical science and Technology. A digest of the 12 papers presented in 3 technical sessions can be found in Chemical Age of India, February 1969.

Induced Electron Emission Spectrometer

A Spectrometer has been developed by John Helmer and Norbert Weichert of Varian Associates, U.S.A., and it is a great leap forward for physical chemists. It is designed to measure both the energy that binds orbital electrons of elements and compounds to their atomic nuclei, and changes in that energy—or chemical shifts—that result from chemical modifications of the compounds. The new instrument is claimed to have at least 10 times greater sensitivity than existing chemical analysis instruments.—Scientific Research, Vol. 3, No. 25, 51, 1968.

Materials of Construction Report

The 23rd Biennial Materials of Construction Report by Chemical Engineering is contained in the November 4, 1968 issue, pages 126-178. It is divided into 3 sections: plastic materials of construction, directory of manufacturers and inventory of current literature.

Material Engineering

Materials Engineering, Vol. 68, No. 5, 1968 is a Materials selector issue. The data section includes comparisons of materials, irons and steels, non-ferrous metals, plastics and rubber, finishes and coatings, composite materials. There is also an information and data service, and buyers guide.

Effluent and Water Treatment Exhibition and Convention

London was the venue for the above Exhibition and Convention held in March 1969. The papers presented covered automation, economics, industrial cooling water treatment-sewage and waste treatment and water reuse. Corrosion prevention was amongst the subjects for display at the Exhibition.

CEBEDEAU Congress

This is the 22nd International Congress to be held in Liege during May 1969 in 2 parts: (1) Water treatment and scientific research and (2) Corrosion by water and anti-corrosion, incorporating the 47th Manifestation of the European Federation of Corrosion.

Steel Mill in Japan

The world's largest steel mill became operative recently at Wakayama in Japan with the commissioning of a 2.15 million ton annual capacity blast furnace, and an annual crude steel production capacity to the tune of 8.5 million tons. The Gary mill in the U.S.A. has an annual capacity of 8.3 million tons, and the U.S.S.R. is reported to have a unit producing 10 million tons annually using 10 blast furnaces.—The Eastern Metals Review, Vol. 22, 71, 1969.

Oxidation Resistant Tungsten Alloy

High oxidation resistance is reported for alloys containing chromium 10 and palladium 1 per cent by weight. They exhibit lives of 500 hour at 2190°F and 100 hour at 2550°F.—Materials Engg., Vol. 68, No. 7, 27, 1968.

—T.L.R.