NEWS SECTION

SOCIETY REPORT

New Members

Associate Member : Terence V. Hyde

Meetings

The Ninth Meeting of the Governing Council of the Society was held on August 11, 1965 at the Indian Institute of Science, Bangalore.

Advertisements

The Section will accept advertisements for the Journal at the following rates per insertion:

Full Page. 8"x6"—Rs. 85 outside and Rs. 65 inside.

Half Page, 4"x6"—Rs. 45 outside and Rs. 35 inside.

Quarter Page, 4"x3"—Rs. 25 outside and Rs. 20 inside.

Note : Blocks or stereos accepted, matrices not accepted. Screen for half-tone blocks not more than 100.

Subscription for Journal

Inland Rs. 20 and Foreign Rs. 30 per year. Special Trade Discount 15 per cent.

Personals

T. L. Rama Char has been elected as a Member of the Institution of Engineers (India). He has also been nominated as a Member of the International Congress on Metallic Corrosion.

GENERAL NOTES

Ni-Resist

Examples of the excellent service given by the Ni-Resist irons in the chemical industry are contained in a publication by International Nickel—" Ni-Resist for Fluid Handling in the Chemical Industry " References are made to the use of these materials in caustic soda processing, salt industry, soap production, fatty acid handling, paper making and fertilizer production. The survey covers the U.K, Germany, Italy. New Zealand and U.S.A. Copies of the publication can be obtained from the Nickel Information Bureau P. Ltd., Bombay.

Powder Metallurgy

As Symposium on " Recent Advances in Powder Metallurgy" was held in London during October 1964. The 6 papers presented therein together with the discussions have been published in Powder Metallurgy, Vol. No. 8, No. 15, 1965.

Stress Corrosion Cracking

Three papers in Materials protection, May 1965 discuss several cases of failure due to stress corrosion cracking : (1) External stress corrosion cracking of stainless steel under thermal insulation, (2) Bird droppings, sea water, and even hot water cause stress corrosion cracking in marine service and (5) Two cases of stress corrosion cracking in copper tubing. There are illustrations with figures and tables, and also references in each article.

International Congress on Metallic Corrosion

The Third International Congress on Metallic Corrosion will be held in Moscow from May 16 to 25, 1966. Technical sessions have been planned on basic research, passivity and anodic films, inhibitors, stress corrosion cracking, under-water corrosion, salt water corrosion, non-metallic coatings, metallic coatings, high temperature oxidation, corrosion in the power industry, and atmospheric corrosion.

Gold Plating in Space Programme

Mirror bright gold finishes play a vital role in protecting delicate electronic instruments in the U. S. ballistic missile and space programme. One of the most important applications is the gold coatings used by Textron's Bell Aerosystems Co. to protect its digital velocity meters. The instruments are used on the Agena space vehicles. Agena has been used in such space programmes as Ranger. Mariner,

Echo, Nimbus, Alouette and various Air Force satellite programmes. Gold is specified because of its emissivity qualities as well as its excellent resistance to corrosion and oxidation.—Products Finishing, Vol. 29, No. 8, 162, 1965.

Corrosion Week at Brussels

The Begian Centre for Corrosion Study, CEBELCOR, organized a Corrosion Week at the University of Brussels during June 1965. It consisted of (1) Technical Days covering 35 papers on 'The fight against corrosion in the building and public works industry' and (2) Colloquium presenting 40 papers on 'fundamental research in electrochemical corrosion and its applications'. The Corrosion Week formed the 28th Meeting of the European Federation of Corrosion.

Reaction Mechanisms of Inorganic Solids

An International Symposium on Reaction Mechanisms of Inorganic Solids sponsored by the Chemical Society, London will be held at the University of Aberdeen during July 1966. The subjects to be discussed will include methods of study, theoretical aspects and mechanisms of specific classes of reactions.

Corrosion and Food

The June 1965 issue of Corrosion Technology contains several articles of interest in the field of corrosion as applied to food technology: (1) Corrosion in food packaging, (2) Stainless steel in food processing, (3) Sulphur staining in canned foods, (4) Food case histories, (5) Plastics versus food contamination, (6) Some experiences with aluminium for canning agressive fish foods and (7) Flooring in food plants.

Corrosion Engineering

Three papers on the professional aspects of Corrosion Engineering have appeared in the June 1965 issue Materials Protection: (1) The importance of corrosion control: you and your company, (2) Professional malpractice and (3) Ethics of the corrosion engineer.

1966 NACE Conference

"Corrosion Control Cuts Cost" will be the theme of the 22nd Annual Conference and Corrosion Show arranged by the National Association of Corrosion Engineers during April 1966 in Miami, Florida. The topics for the 21 technical sessions and other details can be found in Materials Protection, June 1965.

NACE Corrosion Reports

Reports on 1964 corrosion activities have been published in the May and June 1965 issues of Materials Protection, and cover India, Italy and Germany. The addresses of the overseas correspondents for each country have been given.

International Surface Treatment Conference

A 3-day International Conference on Metal Finishing will be held during the Exhibition "Surface 1966" at Basle, Switzerland in November 1966 under the aegis of the European Federation of Corrosion. The general theme will be "Protection of surfaces against corrosion by organic or metallic coatings". The Conference is intended to give a general review of the metal finishing techniques with particular reference to the latest developments, and at the same time to provide a modern presentation of the basic principles involved.

Industrial Chemistry Congress

Brussels, Belgium will be the venue of the 36th International Congress on Industrial Chemistry in September 1966. The technical sessions have been divided into 12 groups; organization of research, general technical problems of the chemical industry including corrosion, fuels, nuclear sciences, metallurgy, mineral chemical industries, silicates industry, petrochemistry and coal chemistry, photographic-pharmaceutical—dyestuffs industries, miscellaneous organic industries, food and agricultural industries, industrial and social organization.

Corrosion of Zirconium Alloys

The many facts of corrosion resistance of zirconium are explored in 'Corrosion of Zirconium Alloys—STP 368" published by the American Society for Testing and Materials. Corrosion resistance of zirconium and its alloys in high-temperature water and steam is not well known. The 7 papers in this publication by leading authorities give a comprehensive evaluation of the present knowledge in this vital area of nuclear reactor technology.

Vanadium-Columbium Alloys

Union Carbide Corpn. of New York claim to have found a suitable alloy which is resistant to chlorine gas and boiling acids—sulphuric, nitric and hydrochloric (U.S. Pat. 3, 136, 631) It is also said to possess good tensile and stress-rupture strength at high temperature.

The alloy consists of titanium 3-15, columbium and vanadium 25-40; or columbium 40, chromium 5 and vanadium 55 per cent and less than 1 per cent of carbon, nitrogen and oxygen.—Corrosion Prevention and Control, Vol. 12, No. 6, 29, 1965.

Seminar on Electrochemistry

The Sixth Seminar on Electrochemistry will be held by the Central Electrochemical Research Institute at Karaikudi during December 1965. The technical sessions will cover: electrode kinetics, electrochemical equilibria and electroanalysis; electro-organic and — inorganic products; electrothermics and electrometallurgy; batteries; electrodeposition and metal finishing; corrosion; miscellaneous.

World Mining

The June 15, 1965 issue of World Mining is a special annual number covering the highlights of the minerals industries from mineral search to metal refining: technological advances in 1964; world wide mining activities; metal and mineral review; ore buyers' guide; catalogue index of equipment and manufacturers' index.

Nickel in Batteries

Abstracts of the following 9 papers published in the Proceedings of the 18th Annual Power Sources Conference, 1964 have appeared in the Nickel Bulletin, Vol 38, No. 5, 1965: (1) Fuel cell catalysts—nickel boride, (2) Standard line of secondary batteries, (3) Sealed nickel-cadmium batteries, (4) Characterization of sealed nickel-cadmium cells, (5) Nuclear-radiation-resistant batteries, (6) Low temperature operation of batteries and (7-9) Charge control for secondary batteries. Part 1. Auxiliary electrode for charge control, Part 2. The 'Adhydrode 'in charge control, Part 3. Stabistors their application in battery operatton.

Aerosol Plating

Aerosol plating, the process used to produce silver mirrors, brings much of the ease and convenience of spray painting to the art of metal plating. It has been used for plating copper and other metals as well as silver, a principal advantage being the ease with which large non-conductive surfaces are metallized. At the present time, however, the copper has not won extensive commercial use because copper salts are more difficult to reduce than silver. There are 30 different aerosol processes, including 9 for copper.—D. J. Levy, Tech. Proc. 51st Ann. Conv. Amer. Electroplaters' Soc. 139, 1964.

Brass Tube after 100 Years

After 100 years' immersion in sea water a leaded yellow brass tube was found to be in good condition, and only moderately corroded. The interior surface was heavily encrusted with bio-fouling products and corrosion on the inside may have been caused by anaerobic bacteria. The exterior surface was almost free of fouling.— Materials in Design Engineering, Vol. 61, 23, March 1965.

Lead Alloy

Lead or lead-antimony alloy is alloyed with 0.005-1 per cent silicon and 0.01-2 per cent of one or more metals such as copper, arsenic and nickel. The alloys produced are highly resistant to corrosion and mechanicaily strong, their tensile strength being 120 to 658 kg/cm^2 depending on composition.—Japanese Patent 56 ('64), 1962; Chemical Abstracts, Vol. 62, No. 2, 1418, 1965.

Fuel Ash Corrosion

The increased content of corrosive elements in heavy residual fuel oils and the use of higher furnace temperatures has led during the past decade to severe problems of high temperature corrosion and a correspondingly shortened life for some furnace parts. The problem arises from ashes left over after combustion which settle on furnace tube supports and other hot parts and attack them at a rapid rate. To combat this type of corrosion 50/50 and 60/40 chromium-nickel alloys are increasingly used in this field, as they are markedly superior to nickel-chromium alloys containing 20-30 per cent chromium at temperatures of 900 C and above. A new publication entitled "Chromium-Nickel Alloys that Overcome Fuel Ash Corrosion" is available from Nickel information Bureau P. Ltd., Bombay.

New Beryllium Copper Alloy

A free-machining beryllium copper alloy, now available, can be machined in less than 40 per cent of the time usually required for conventional beryllium copper (alloy 25) rod. In addition, finish of the machined parts is said to be excellent, and chips are so small that they do not clog automatic screw machines. Although the new alloy costs about twice as much as phosphor bronze, the savings in

labour, tool wear and machining is reported in many cases, to result in a lower cost finishep part than would be possible with phosphor bronze, The alloy has high strength, good conductivity and good fatigue strength. In addition, it has good resistance to corrosion, is non-magnetic, and retains its physical property values over a wide operating temperature range.—Materials in Design Engineering, Vol. 61, No. 6, 13. 1965.

Stress Corrosion

Three papers in 'Corrosion', May 1965 discuss stress corrosion: (1) Stress corrosion cracking of face-centered-cubic alloys, (2) Mechanisms of transgranular stress corrosion cracking of solid solution alloys and (3) Statistical distribution of endurance in electrochemical stress-corrosion tests. The first two papers contain a large number of references.

Radiation—Activated Batteries

Small atomic batteries—formed by sandwiching a thin layer of a beta-emitting radioactive material between two silicon solar cells—have been developed at the Battelle Memorial Institute, Columbus to provide longlasting, highly reliable electrical power units. Intended for applications in civilian, military and space programmes, they differ from conventional solar cell power units—a radioactive source rather than a light or solar source being used to activate the cells. The batteries produce power levels in the range of 10 microwatts and can be used for such purposes as operating low-power switching circuitry. The units have a theoretical lifetime of several years, depending on the half life of the radioisotope.

The first development units, occupying less than one-half cubic inch, consist of a layer of promethum-147, a beta-emitting isotope with a half-life of 2.7 years, sandwiched between two tiny silicon solar cells sealed in a stainless steel case. The energy emitted by the promethium isotope is converted into electricity when beta particles recoil into the active surface of the silicon solar cells. The cells convert radiant or particle energy into electrical power through an ionization process.—Battelle Technical Review, Vol. 14, No. 7, 9, 1965.

Savings in Structural Steel

A paper on 'India can save over 23 per cent structural steel', ISI Bulletin, Vol. 17, August 1965, discusses the subject under: (1) Assessment of savings, (2) Overall savings during Second Plan period and possibilities in subsequent plans and (3) Recommendations. It is based on a study conducted by the National Council of Applied Economic Research.

Welding Electrode Resists Severe Corrosion

Magna Alloys and Research Pty. Ltd., St. Peters, N.S.W., Australia has developed a welding electrode formulation which will apply a deposit which resists the corrosive attack on metal, making it extremely useful for industrial applications. Magna 711, now in commercial production, is an A.C.—D.C. electrode and has the extra-ordinary and unprecedented ability to withstand corrosion of extreme proportions as a result of its unique microstructure which is completely different from that provided by the ordinary types of stainless steel such as 304, 347, 310 and 316. In addition this new formulation is completely resistant to inter-granular corrosion and can be put into immediate service in the as-welded condition without any type of heat treatment.—Australian Chemical Engineering, Vol. 6, No. 6, 45, 1965.

Corrosion, Deesign and Economics

Three papers in Australasan Corrosion Engineering, Vol. 9, July 1965 discuss topics of special interest to corrosion technologists: (1) Testing equipment avaiable for the detection and measurement of corrosion, (2) Improve productivity by solving the corrosion problem at the design stage and (3) The economics of the selection of materials for construction.

Metal Finishers Convention

The Annual Convention of the National Association of Metal Finishers, U. S. A. was held at New York during July 1965. The discussions were centered round: (1) Improve industry profits through uniform accounting, (2) Successful financing through proper presentation, (3) Operating costs and (4) Economic evaluation of the job metal finishing industry.

World Energy Consumption

The world's consumption of energy rose by 11 per cent during 1960-1963 according to a United Nations study. Electricity consumption in 1963 amounted to a record of 2,850 thousand million kwh, an increase of 8 per cent over the previous year. In the production of electricity the role of nuclear power plants rose — 11 thousand million kwh in 1963. The annual per capita consumption ranged from a low of 1 kwh to a high of 10,654 kwh for Norway, the world's leader. The break-up figures for the consumption were: United States 35, USSR 14, U.K. 6

and Japan 5 per cent of the total. Nuclear power stations are in operation in USSR, U.S.A., U.K., France, West Germany, Belgium, Canada, Italy, Japan and Sweden.—UN Weekly Newsletter, Vol. 13, No. 35, 4, 1965.

Engineering and Mining Guide Book

The June 1965 issue of Engineering and Mining Journal contains the 1965 Guidebook Section: articles on processing, exploration, mining and marketing minerals; USA smelter directory; geological surveys of the world; buying directory under product classification and manufacturers' index.

Technical Books—U.S.A.

The US Information Service arranged the exhibition "Technical Books—U S.A." at New Delhi for 20 days during September 1965. It consisted of about 7.000 books and 325 professional journals in all the principal areas of science and technology.

Stainless Steel Road Tankers

The Search for higher rates of utilization of road tankers with emphasis on operational flexibility has led to a widespread use of nickel stainless steels for an immense range of transport tasks. Not only are they very often the only materials capable of maintaining the rigid standards of cleanliness required but, due to their strength and corrosion resistance, they outlast tanks made of other metals. The publication "Stainless Steel Road Tankers" issued by International Nickel and available from Nickel Information Bureau P. Ltd., Bombay, contains a survey of different types of stainless steel road tankers operating in 8 countries.

Nickel Boride in the Fuel Cell

It has been recently shown that, in a fuel cell, a performance only slightly less satisfactory than that of the noble metals can be obtained with "Teflon"—bonded nickel boride supported on a nickel screen. Data have been obtained for the nickel boride anode in the hydrogen and ethylene fuel cells.— Nature, Vol. 206, 186, 1965.

—T.L.R.

(*Concluded from Page* 105)

133. Z. M. Sominskaya et al., Renii, Tr. Vses. Soveshch. po Probl. Reniya, Akad. Nauk SSSR, Inst. Met., 209 (1958); Chem. Abs., 57, 3,186 (1962).

134. E. M. Natanson, N. N. Kozachek and V. V. Bushin, Doklady Akad. Nauk S.S.S.R., **135**, 137 (1960); Chem. Abs., **56**, 263 (1962).

135. V. T. Pustovit and N. N. Gratsianskii, Met. Gornorud'n. Prom., Nauchn.-Tekhn. Sb., No. 5, 70 (1962); Chem. Abs., 58, 10,973 (1963).

(*Concluded from Page* 110)

how virtually every calculation of chemistry can thus be simplified have been vividly brought home in this small book. Apart from the introduction the practical value of mole concept is discussed in eight other chapters with captions; gases, stoichiometry, formulae, quantitative relationship in chemical reactions, properties of liquid solutions, chemical equivalents, electrochemistry, Avagadro number and calculation of molecular quantities. This book is recommended to all students and teachers of chemistry.

—P. L. N. R.