ABSTRACTS

DEPARTMENT OF INORGANIC AND PHYSICAL CHEMISTRY

1. ELECTRODEPOSITION OF NICKEL ALLOYS FROM THE PYROPHOSPHATE BATH. Nickel-Zinc and Nickel-Molybdenum Alloys, S. K. Panikkar and T. L. Rama Char, *J. Sci. and Ind. Research*, 1958, **17A**, 95.

The pyrophosphate bath has been found to be suitable for the plating of nickel-zinc alloys. The effect of variation of c.d. and electrolyte concentration on alloy deposit composition, cathode efficiency and cathode potential has been shown in a Table. With a nickel plating solution containing ammonium molybdate, nickel can be codeposited with molybdenum.

2. ANODIC CORROSION OF METALS AND ALLOYS IN PYROPHOSPHATE SOLUTIONS. T. L. Rama Char, *Corrosion Prevention and Control*, 1958, **5**, No. 4, 37.

The behaviour of the following anodes during deposition from pyrophosphate baths has been studied: tin, zinc, nickel, copper and lead; tin-copper, tin-zinc, tin-nickel, tin-lead, copper-zinc and copper-nickel. The tables cover data on efficiency, limiting c.d., polarization and structure of the alloy.

3. INHIBITION OT THE CORROSION OF ALUMINIUM IN ALKALINE SOLUTIONS. J. Sundararajan and T. L. Rama Char, *Corrosion Prevention and Control*, 1958, 5, No. 5, 55.

Results of studies on the corrosion rates and inhibitor efficiencies for 92 % aluminium alloy in sodium hydroxide have been presented. Table I gives effect of variation of alkali concentration, time and temperature on corrosion rate, and Table II gives effect of alkali concentration and time on inhibitor efficiency. The inhibitors used were: agar-agar gum-acaciæ, dextrin, gelatin and glue. The best inhibitor was agar-agar with an efficiency of 90 %.

4. ELECTRODEPOSITION OF LEAD AND LEAD-TIN ALLOYS FROM THE PYROPHOSPHATE BATH. (Miss) Vasanta Sree, J. Vaid and T. L. Rama Char, *J. Electrochem. Soc.*, Japan, 1958, **26**, 224, E78.

Lead and its alloys with tin can be satisfactorily electrodeposited from the pyrophosphate bath. The anodic corrosion of the metal requires careful control of operating conditions for lead deposition, and cast alloy anodes present no difficulties in alloy plating. Two tables give the plating characteristics under optimum conditions for the pyrophosphate and sulphamate baths for lead, and the pyrophosphate and fluoborate baths for lead-tin alloy plating.

5. ELECTRODEPOSITION OF NICKEL-IRON AND NICKEL-COBALT ALLOYS FROM THE PYROPHOSPHATE BATH. (Miss) Vasanta Sree and T. L. Rama Char, *Bull. India Section, Electrochem. Soc.*, 1958, 7, 72; *Research and Industry*, 1958, 3, 247,

Optimum conditions have been established for the codeposition of nickel with iron and cobalt from complex pyrophosphate solutions. It is possible to obtain good quality alloy plates over a wide composition range. The constancy of deposit composition with variation in c.d. and some other variables is a special feature in nickel-cobalt plating.

6. INHIBITION OF CORROSION OF ALUMINIUM IN ACID SOLUTIONS. J. Sundararajan and T. L. Rama Char, *J. Sci. and Ind. Research*, 1958, **17B**, 387.

Report of investigations on the inhibition of the corrosion of aluminium in hydrochloric acid solutions. Two tables give corrosion rates and inhibitor efficiencies for acridine, thiourea, dextrin, nicotinic and tannic acids. The first two are the most effective inhibitors.

7. PHYSICO-CHEMICAL STUDIES ON MIXTURES OF TARTARIC ACID AND DICHROMATE, T. L. Rama Char, *Bull. India Section, Electrochem. Soc.*, 1958, 7, 89.

Measurements of the optical rotation of mixtures of tartaric acid and dichromate show that a complex is formed in solution. The dark reaction in these mixtures has been investigated, and the reduction of dichromate by racemic-tartaric acid found to give a higher value for the reaction velocity than that for d-, l- or dl-acids. The photochemical reaction has been studied in the ultraviolet.

8. ELECTRODEPOSITION OF IRON-ZINC ALLOYS FROM THE PYROPHOSPHATE BATH, (Miss) Vasanta Sree and T. L. Rama Char, *J. Sci. and Ind. Research*, 1958, **17B**, 439.

It is possible to codeposit iron with zinc from the pyrophosphate bath. The alloy deposits are of good quality, and in the composition range 10-90 % iron depending on the operating conditions. In the low current density range there were sudden changes in plate composition and cathode potential. At higher current densities the composition remained practically constant.

9. ELECTROPLATING AND ELECTROREFINING OF METALS FROM THE SULPHAMATE BATH, T. L. Rama Char, *Electroplating and Metal Finishing*, 1958, **11**, 343.

A review of recent work on electrodeposition from sulphamate solutions, including the results of investigations carried out in the author's laboratory.

Three tables give operational data for nickel, cadmium, zinc, indium and lead. Alloy deposition and electrorefining have been discussed. It is concluded that the sulphamate bath is very promising in the field of electrometallurgy. Thirty-four references.

PHARMACOLOGY LABORATORY

1. ANTIBIOTICS FROM THE GENUS FUSARIUM, M. O. Tirunarayan and M. Sirsi, Symposium on Antibiotics 1956. C. S. I. R. (India) publication, New Delhi, 1958.

The possibilities of *Fusaria* elaborating compounds of clinical usefulness in antibiotic therapy, particularly in tuberculosis, have been explored. About 130 strains of *Fusaria* representing about 34 species, collected from various parts of the world have been tested for antibiotic production under different sets of culturing conditions and screened against a variety of organisms typical of Gram-positive, Gram-negative and acid-fast groups.

Some strains in twelve species exhibit antibacterial activity, while the crude culture fluids of eleven of these species inhibit the growth of *Mycobacterium tuberculosis*.

Maximum activity was obtained with amino nitrogen sources such as glycine and a complex mixture such as bactotryptophane. Amongst the carbon sources glucose and sucrose are able to stimulate oxysporin production to the maximum. pH ranging from 5.7 to 7 show optimal activity.

2. OXYSPORIN IN EXPERIMENTAL TUBERCULOSIS AND PRELIMINARY OBSERVATIONS ON TOXICITY AND PHARMACODYNAMIC ACTION OF OXYSPORIN, M. O. Tirunarayanan and M. Sirsi, Symposium on Antibiotics 1956, C. S. I. R. (India) Publication, New Delhi. 1958.

Oxysporin, an antibiotic obtained from *Fusarium oxysporum* Schlecht, strain 549, inhibits the growth of virulent tubercle bacilli *in Vitro* and controls the disease process in experimental tuberculosis of mice. The antibiotic is found to be highly toxic when administered intravenously to anæsthetized dogs, but rats tolerate more than 100 mg./kg., when given intraperitoneally.

3. THE OCCURRENCE OF SOME ESTROGENIC SUBSTANCES IN PLANTS. PART I. Estrogenic Activity of *Cyperus rotundus* (Linn.) Miss M. Indira, M. Sirsi, Senich Radomir and Sukh Dev, *J. Sci. & Ind. Research*, 1956, **15C**, No. 9, 202-204.

The essential oil obtained from the tubers of *Cyperus rotundus* (Linn.) exhibits estrogenic activity of a low order. Of the fractional distillates of the oil, the hydrocarbon fraction, Cyperene I, is more active than the others but none is

as potent as the oil. The probability of these compounds being proestrogens is indicated by the rate of the systemically active to locally effective concentrations. No correlation exists between antibacterial activity and estrogenic potency of the oil and its fractions.

4. STUDIES ON NUTRITION IN EXPERIMENTAL TUBERCULOSIS—The influence of certain natural diets and the effects of starvation on experimental tuberculosis of mice. *Bulletin of the International Union against Tuberculosis*, 1957, **27**, No. 3 and 4, 285 to 289.

Nutritional status of the individual is known to influence the course of diseases. Malnutrition has been particularly associated with incidence of tuberculosis. In a study of the possible influence of different Indian diets on experimental tuberculosis of mice, no significant difference in the survival period or in the type of lesions was seen, provided the quantity of diet was not restricted. Deficient diet exerted a deleterious effect, only when reduced to $12\frac{1}{2}$ % of the original consumption.