

ABSTRACTS

DEPARTMENT OF PHYSICS

1. CORRECTION CHARTS FOR LORENTZ AND POLARISATION FACTORS IN ANTI-EQUI-INCLINATION PHOTOGRAPHS. P. Gopinath Kartha, *Acta Crystallographica*, 1952, 5, 549-50.

The charts for applying the geometrical correction factors (*viz.*, Lorentz and polarisation factors) in a combined form for anti-equi-inclination weissenberg photographs have been given.

2. THERMAL EXPANSION OF CRYSTALS AT LOW TEMPERATURES, PART I. SUGAR. A. K. Sreedhar, *Proc. Ind. Acad. Sci.*, 1952, 36, 141-47.

The thermal expansion of a typical mono-clinic crystal has been measured thoroughly using a low temperature apparatus and results obtained are shown in the form of a figure. It is found that in the case of cane sugar the anisotropy of expansion is fairly high especially at low temperatures while at room temperature it is not so anisotropic.

3. BOND MOMENTS AND INDUCED MOMENTS. P. T. Narasimhan, *Curr. Sci.*, 1952, 21, 181.

The equations of Groves and Sugden, for the evaluation of induced moments and bond moments have been modified to achieve greater consistency with available data. Unlike the original equations the new equations give better values for the bond moments of C — O and C = O.

4. RAMAN SPECTRUM OF CARBORUNDUM. P. S. Narayanan, *Curr. Sci.*, 1952, 21, 239.

A preliminary study of the Raman spectrum of a hexagonal form of carborundum has been made using λ 4358 of a mercury arc as exciter and a Hilger two-prism spectrograph. It is found to consist of one line with a frequency shift of 818 cm.^{-1} and a few fainter ones nearby. This Raman line, 818 cm.^{-1} , has been attributed to the same mode of oscillation as that which gives rise to the only infra-red reflection maximum observed by Schæfer and Thomas.

DEPARTMENT OF ORGANIC CHEMISTRY

1. ELECTROLYTIC REACTIONS ON POROUS CARBON ANODES. I. THE PREPARATION OF *p*-BENZO-QUINONE BY THE OXIDATION OF BENZENE. J. C. Ghosh, S. K. Bhattacharya, M. S. Muthana and C. R. Mitra, *J. Sci. Industr. Res.*, 1952, 2 B, 356.

The preparation of *p*-benzoquinone by the electrochemical oxidation of benzene has been studied, employing thick-walled porous carbon tubes as anodes, under various experimental conditions. A sulphuric acid bath (2 per cent. H_2SO_4) has been found to have maximum effectiveness. Potassium ferricyanide is used as catalyst using an anolyte of 2.0 per cent. sulphuric acid, containing 6.0 per cent. potassium ferricyanide, a carbon anode soaked in 6.0 per cent. potassium ferricyanide solution, a current density of 1.43 amps./sq. dcm. and a duration of 1 hour, a current efficiency of 51.0 per cent. is obtained at 27° C.

2. ELECTROLYTIC REACTIONS ON POROUS CARBON ANODES, II. THE PREPARATION OF CHLOROBENZENE FROM BENZENE. J. C. Ghosh, S. K. Bhattacharya, M. R. A. Rao, M. S. Muthana and R. B. Patnaik, *J. Sci. Industr. Res.*, 1952, II B, 361.

The preparation of chlorobenzene by the electrolytic chlorination of benzene has been studied employing thick-walled porous carbon tubes as anodes. Hydrochloric acid (18 per cent.) has been used as catholyte; among the anolytes tried, 100 per cent. solution of mono-chloro- and trichloro-acetic acids in concentrated hydrochloric acid have proved effective.

Using 1.34 per cent. cyanuric acid as catalyst (on weight of carbon anode), a bath consisting of 100 per cent. solution of mono-chloroacetic acid, a temperature of 38° C. and a current density of 4.3 amp./sq. dcm. for 2-hour duration, a current efficiency of 89 per cent. has been obtained.

3. ELECTROLYTIC REACTIONS ON POROUS CARBON ANODES, III. THE PREPARATION OF ETHYLENE CHLOROHYDRIN FROM ETHYLENE. S. K. Bhattacharya, M. S. Muthana and A. D. Patankar, *J. Sci. Industr. Res.*, 1952, II B, 365.

The preparation of ethylene-chlorohydrin by the electro-chemical oxidation of ethylene has been studied, employing thick-walled porous carbon tubes as anodes and sodium chloride solution as electrolyte. Both chlorohydrin and glycol are produced, the yields depending on experimental conditions.

Working with a 10 per cent. solution of sodium chloride, a flow rate of 5.55 litres of ethylene/hour/sq. dcm. of anode surface, a current density of 2.25 amp./sq. dcm., and a duration of run of 2 hours, the following current

efficiencies were recorded: on basis of chlorohydrin — 84 per cent. at 1° C. and 1 per cent. at 90° C.; on the basis of glycol — 5 per cent. at 1° C. and 17 per cent. at 90° C.

4. ELECTROLYTIC REACTIONS ON POROUS CARBON ANODES, IV. THE PREPARATION OF ETHYLENE GLYCOL FROM ETHYLENE. S. K. Bhattacharya, M. S. Muthana and A. D. Patankar, *J. Sci. Industr. Res.*, 1952, II B, 369.

The preparation of ethylene glycol by the electro-chemical oxidation of ethylene has been studied employing porous carbon tubes as anodes. In a sulphuric acid sulphate bath, only glycol is formed; whereas in a chloride bath, both glycol and chlorhydrin are formed. Alkaline baths are not suitable for the production of ethylene glycol.

Using a bath of NH_2SO_4 at a flow rate of 8.83 litres of ethylene/hour/sq. dcm. of anode surface, a current density of 0.83 amp./sq. dcm., duration of run of 1.5 hour; the current efficiency is 27 per cent. at 90° C.

5. ELECTROLYTIC REACTIONS ON POROUS CARBON ANODES: V. THE PREPARATION OF CHLORAL FROM ALCOHOL. J. C. Ghosh, S. K. Bhattacharya, M. S. Muthana and R. K. Parikh, *J. Sci. Industr. Res.*, 1952, II B, 371-73.

Investigations have been carried out on the preparation of chloral by the electro-chemical oxidation of ethyl alcohol, employing porous carbon tubes as anodes. Besides chloral and chloral alcoholates, other products like mono-chloroacetic acid, ethylacetate, monochloroacetaldehyde hydrate and alcoholate, and chloroether are formed as by-products—the yield depending on experimental conditions.

Working with a viscous calcium chloride solution maintained at 100°-15° C., a current density of 3 amps./sq. dcm., duration of run 1.5 hour and a porous carbon anode impregnated with 1.34 per cent. (by weight) of cyanuric acid the current efficiency, calculated on the basis of chloral, was 51.0 per cent. By using platinized platinum, in place of carbon, the current efficiency increases to 61 per cent.

6. ANTI-TUBERCULAR ACTIVITY OF SESAMIN. P. R. J. Gangadharam, N. L. Narayanamurthy and B. H. Iyer, *Curr. Sci.*, 1952, 21, 246.

While sesamin, one of the crystalline constituents of the unsaponifiable fraction of sesame (*Sesamum indicum* Linn.) oil, has shown little activity against the common pathogenic bacteria like *Staphylococcus aureus*, *Streptococcus pyogenes*, *Bact. coli* and *Bact. typhosum*, it has indicated activity against *Mycobacterium tuberculosis*, even in 1:1,000,000 dilution.

DEPARTMENT OF BIOCHEMISTRY

1. ANTIMALARIAL ACTIVITY OF AUREOMYCIN IN BLOOD INDUCED INFECTION IN CHICKS. A. S. Ramaswamy, R. Rama Rao, N. K. Keshavamurthy and N. N. De, *Curr. Sci.*, 1950, 19, 245.

Antimalarial activity of aureomycin in *P. gallinaceum* infected chicks has been reported. Aureomycin acted as a preventive and therapeutically-active drug against chick malaria.

2. STUDIES ON THE ANEMIA IN CHICKS INFECTED WITH *P. gallinaceum*. A. S. Ramaswamy, R. Rama Rao and N. N. De, *Proc. Ind. Acad. Sci.*, 1950, 32 B, 126.

Investigations reported in this paper deals with the study of the anemia in chicks produced by *P. gallinaceum*. The characteristics reported are: (1) a slightly lowered colour index, (2) Heperplasia of the bone marrow, (3) a slightly raised mean red cell area, (4) small late erythroblasts which are spherical occur in the peripheral blood during infection.

3. A METHOD FOR PREPARING CONCENTRATES OF MALARIAL PARASITES FROM CHICK INFECTED WITH *P. gallinaceum*. R. Rama Rao, A. S. Ramaswamy and N. N. De, *Ind. Med. Gaz.*, 1951, 76, 147.

A procedure for obtaining concentrates of parasitised erythrocytes and *P. gallinaceum* in the free form from chick blood has been described. After saponin hemolysis and differential digestion with trypsin of parasitised chick blood, *P. gallinaceum* has been obtained free and intact from erythrocytes.

4. IMMUNOLOGICAL STUDY IN AVIAN MALARIA (*P. gallinaceum*) BY THE ANAPHYLACTIC REACTION. R. Rama Rao, A. S. Ramaswamy, N. N. De, *Proc. Ind. Acad. Sci.*, 1951, 34 B, 242.

A procedure has been described for obtaining hemoglobin-free erythrocyte protein of the chick and the malarial parasite protein (*P. gallinaceum*) for use as test antigens. Schultze-Dale technique has been used to descriminate between the proteins and by this procedure they are qualitatively found to be antigenically similar.

5. THE MODE ACTION OF PALUDRINE. V. R. Srinivasan and N. N. De, *Curr. Sci.*, 1951, 20, 179.

Paludrine has been found to have 89% inhibitory effect on the respiration of the malaria parasite. It has been found to have no effect on the D-amino acid oxidase.

6. PARTITION PHOSPHORUS IN BLOOD OF CHICKEN INFECTED WITH *P. gallinaceum*. V. R. Srinivasan, V. Ramamurthy and N. N. De, *Curr. Sci.*, 1951, 20, 37.

This note describes the partition of phosphorus in blood of chicken infected with *P. gallinaceum*. As the period of infection lengthened there was a steady decrease in the total as well as acid-soluble *p.* levels.

7. TOXICITY OF PTERYGOSPERMIN AND ALLICIN. R. R. Rao and S. Natarajan, *Proc. Ind. Acad. Sci.*, 1949, 29 B, No. 4, 148.

Detailed toxicity studies on two plant antibiotics, viz., Allicin from garlic and Pterygospermin from drumstick root are reported.

8. ON MORELLIN THE ANTI-BACTERIAL PRINCIPLE OF THE SEEDS OF *Carcinia morella* Desrous. R. R. Rao and S. Natarajan, *Curr. Sci.*, 1950, 19, 59.

Anti-bacterial activity of morellin against several micro-organisms have been reported.

9. AN *in vitro* EVALUATION OF THE TUBERCULOSTATIC PROPERTIES OF SOME SULFONE DERIVATIVES. M. Sirsi, B. N. Jayasimha and J. R. Iyengar, *Curr. Sci.*, 1951, 20, 237.

An *in vitro* tuberculostatic properties of some biguanido derivatives of sulfones have been determined. A few of the substituted compounds definitely show an increased activity over the parent D.D.S.

10. TUBERCULOSTATIC PROPERTIES OF SOME ANTIMALARIAL COMPOUNDS. M. Sirsi and N. N. De, *Curr. Sci.*, 1951, 20, 159.

Paludrine, Chloroquine Quinine Dihydrochloride and Camaquin showed tuberculostatic action, at the critical concentration of 10 $\mu\text{g./c.c.}$ or absolute concentration varying from 100 to 1,000 $\mu\text{g./c.c.}$

11. AN *in vitro* STUDY OF THE SYNERGESTIC ACTION OF AUREOMYCIN AND P.A.S. AGAINST SOME PATHOGENIC BACTERIA. M. Sirsi and L. S. Kale, *Ind. J. Med. Res.*, 1951, 39, 3.

Chemotherapeutic activity of aureomycin and *para*-amino salicylic acid separately and in combination on some gram positive and gram negative pathogenic bacteria are reported. The results indicate that while minimum inhibitory concentration is 100 $\mu\text{g./c.c.}$ of aureomycin and $\frac{1}{4}\%$ P.A.S. for staphylo, strepto, etc., the same result is got with the drugs in combination at $\frac{1}{8}\%$ P.A.S. and 1 $\mu\text{g./c.c.}$ of aureomycin, i.e., two-fold reduction of P.A.S. and one hundred-fold reduction of aureomycin.

12. ANTI-TUBERCULAR ACTIVITY OF *Cucurbita pepo*. M. Sirsi, P. R. J. Gangadharam and N. N. De, *Curr. Sci.*, 1951, 20, 297.

Cucurbita pepo (N.O.) Cucurbitaceæ has been studied for its anti-tubercular property. *In vitro* tuberculostatic activity of a crude conc. aqueous extract of the fruit has been determined and is found to inhibit the growth of virulent tubercle bacilli in 1:100,000 dilution using the Youman's synthetic media.

13. THE EFFECT OF AUREOMYCIN ON THE GROWTH, MORPHOLOGY AND PHYSIOLOGY OF MYCO. TUBERCULOSIS. M. Sirsi, *Jour. Ind. Med. Ass.*, 1951, 20, 280.

In presence of the bacteriostatic concentration of aureomycin the tubercle bacilli show marked morphological peculiarities. The oxygen uptake of the tubercle bacilli was also found to be diminished in presence of aureomycin.

14. USE OF MOUSE IN EXPERIMENTAL TUBERCULOSIS. M. Sirsi and N. N. De, *Jour. Mys. Med. Assn.*, 1951, 16, 11.

15. BACTERIAL PROPERTIES OF SOME QUINOLINE SUBSTITUTED GUANIDES WITH SPECIAL REFERENCE TO ACTIVITY OF N'-(p-CHLOROPHENYL)-N⁵-(8-CHLORO-5'-QUINOLYL) BIGUANIDE ACETATE. M. Sirsi, R. Rama Rao and N. N. De, *Curr. Sci.*, 1950, 19, 317.

The anti-bacterial activity of some quinoline substituted guanides are described. N'-(p-chlorophenyl)-N⁵-(8'-chloro-5'-quinolyl) biguanide acetate exhibited marked bacteriostatic action and the toxic data for mice reveals the maximum tolerated dose being favourably comparable with that of some other drugs employed in the chemotherapy of intestinal infections.

16. STUDIES ON THE CHEMOTHERAPY OF TUBERCULOSIS. M. Sirsi, *Jour. Mys. Med. Assn.*, 1951, 16, 11.

The present status of the chemotherapy of tuberculosis has been discussed.

17. A STUDY OF THE METHODS OF ISOLATION AND CULTURE OF MYCO. TUBERCULOSIS. M. Sirsi, *Ind. Med. Gaz.*, 1951, 86 (1), 10.

Toxicity of the commonly used sputum digestants is investigated and the results indicate that 10% trisodium phosphate is the best for collection of sputum and other contaminated material for culture studies.