1700°-1350°C in an oxidising atmosphere electrolytic oxidation in a fused salt bath.

61. X-ray analysis of crystal structures.—

M. M. Harding (Chemistry in Britain, **4**, 548, 1968). The problems of structure determination by X-ray diffraction, and the various methods employed to overcome them, are explained; 8 figures and 29 references.

62. Fluctuations of overpotential at metal cathodes and changes in surface concentration of hydrogen atmos.—

M. N. Hull and F. A. Lewis (Trans. Faraday Soc., **64**, 2472, 1968). Fluctuation of the total apparent hydrogen overpotential at platinized platinum cathodes at low current density were correlated with irregular changes of the hydrogen content of the electrode surface. The comparative lack of fluctuations at palladized palladium cathodes was attributed to hydrogen absorbed in the palladium lattice.

63. Science and technology in exploitation of natural resources in developing countries and role of consultants.—

U. P. Mullick (Science and Engineering, **22**, 27. 1969). Biref survey.

—T. L. R.

(B) ELECTROMETALLURGY AND GENERAL METALLURGY

1. Parameters affecting electron beam welding

R. D. Engquist (Materials Engg. Quarterly, **8**, No. 4, 56, 1968). Introduction, weld criteria, significance of the welding variables, experimetal procedures, analytical techniques, comparison between electron beam welding machines additional data and applications, summary; 1 table and 13 figures.

2. The influence of ausforming on the stress corrosion susceptibility of some high-strength steels—

C. N. Ahlquist (Materials Engg. Quarterly, **8**, No. 4, 52, 1968). Ausforming produces improved resistance to stress corrosion cracking in some alloy steels as measured with a constant strain bend test exposed to a 5 per cent sodium chloride fog. Three tables, 8 figures and 7 references.

3. The gain to the national economy from an improvement in the quality of iron and steel—

N. F. Sklokin and A. A. Brodev (STAL in English, No. 7. 537, 1968). Introduction, degree of uniformity of steel, metal cleanness, low-alloy, steel heat-treatment strengthening of rolled products, metals with anti-corrosion, coatings, special properties of metal.

4. Grain-boundary corrosion in zone-refined and lower-purity aluminium—

L. E. Hendrickson and M. Metzger (Trans. Met. Soc. AIME, **242**, 2329, 1968). Grain boundary attack in 16 per cent hydrochloric acid was found to be substantially the same at low penetrations in zone-refined aluminium, superior electrolytically refined aluminium, and metal with various impurities at much higher levels. Four tables, 8 figures and 14 references.

5. The hazards of mercury to metals and alloys in the process industries and some little known sources of mercury contamination—

W. B. Brooks (Corrosion, **24**, 335, 1968). Brief note with 1 table and 4 references.

6. Electric power in steel plants.—

K. S. Kuka (J. Inst. Engineers, India, **49**, No. 2, Pt. EL1, 19, 1968). This paper discusses the nature of electric power in steel plants and suggests methods which could be adopted in estimating the overall power requirements of integrated steelworks in general. Calculations of individual power demands, based on actual operations and experience obtained over a number of years, are indicated which could be a fair guide as a reference during the planning of electric power supplies for new integrated steelworks. Three tables, 10 figures and 2 references.

7. Detection and removal of iron contamination from stainless steel surfaces.—

J. Q. Lackey and M. A. Streicher (J. Materials **4**, 983, 1968). In laboratory tests the ferricyanide test was found to be definitely superior to the acetoacetanilide test in detecting iron contaminants—such as iron particles, oxides, salts and adherent metallic iron. Precautions for minimizing contamination during fabrication are described; 2 tables.

8. Platinum mining at Rustenburg—

(Platinum Metals Review, **13**, No. 1, 15, 1969). This article describes the mineral resources available, mining methods and extraction processes in use at the Rustenburg mines in South Africa.

9. Extraction metallurgy research at Warren Spring Laboratory—

A. W. Fletcher (Metals and Materials, 3, No. 1, 9, 1969). Introduction, hydrometallurgy, pressure hydrometallurgy, pyrometallurgy, relevance of work to U.K. industry; 19 figures and 30 references.

10. Metallurgists—mice of men?

H. M. Finniston (Metals and Materials, 3, No. 1, 23, 1969). An appraisal of the modern metallurgist, the societies that represent him, and the education that is intended to fit him for his role in society.

11. Strength and structure under hot-working conditions—

J. J. Jones, C. M. Sellars and W. J. McG. Tegart (Metallurgical Reviews, **14**, No. 130, 1-24, 1969). Review, with 1 table, 24 figures and 176 references.

12. Non-ferrous metals research and development: NML achievements—

(CSIR News, **19**, No. 6, 43, 1969). An account of the work carried out at the National Metallurgical Laboratory, Jamshedpur; aluminium, copper, manganese, magnesium, nickel, corrosion of metals, flourspar, refractory materials, oriented basic research, non-ferrous metals symposium.

13. Beryllium—A rare element and an important metal—

E. H. Hohmann (Chem. Age of India, 20, 169, 1969). Occurrence, production, fabrication, importance, properties; 3 tables, 2 figures and 4 references.

14. Development trends in metal electrolysis—

W. Schulz (Chem. Ingr. Tech., **40**, 570, 1968). The relative economic and technical advantages of electrolytic and other methods of metal extraction are discussed. The electrolytic extraction of zinc and lead is explained, and the electrolytic production of metallic powders and electrolysis of molten baths are considered.

15. Coins and coining—

D. R. Cooper (Copper, 3, No. 1, 2, 1969). Description of outstanding examples of copper coins of all ages: bronze, other alloys, "Sandwich Coins", vending machines, assaying, future demands; illustrations.

16. The application of fracture mechanics to stress-corrosion cracking—

B. F. Brown (Metallurgical Reviews, 13, No. 129, 171-183, 1968). Review with 17 figures and 33 references.

17. The oxidation of liquid non-ferrous metals in air or oxygen—

M. Drouzy and C. Mascre (Metallurgical Reviews, **14**, No. 131, 25-46, 1969). Review with 12 tables, 53 figures and 74 references.

18. Recent developments in some electro thermal industries—

V. Aravamuthan and M. Sundaram (Chem. Age of India, 20, 281, 1969). Survey covering recent advances in the production of phosphorus, carbon disulphide and carbide, ferro-alloys, refractory oxides, carbides, borides, silicides, nitrides etc; 109 references.

19. Electrochemical machining: the process and the applications—

V. K. V. Unni and T. L. Rama Char (J. Inst. Engineers, India, **49**, No. 2, Pt. CH 1, 5, 1968). Review: process, techniques and applications; 73 references.

20. Electroforming: principles and practice—

K. L. Vasanth, (Miss) M. Sarojamma and T. L. Rama Char (J. Inst. Engineers, India, **49**, No. 2, Pt. CH 1, 12, 1968). Review: process, techniques, applications and economics; 57 references.

21. Electron concentration as a guide to alloying behaviour—

A. S. Darling (Platinum Metals Review, 13, No. 2, 53, 1969). Some unexpected reactions in platinum metal alloys have been successfully predicted by the Engel-Brewer relationships; possible applications are proposed. Pure metals, alloys, stable platinum metal compounds, some practical applications; one table and 11 references.

22. Pre-patination of unique copper tube sculpture—

M. S. Stamford (Copper, 3, No. 2, 2, 1969). The advantage of the patination operation for the 33 ft. copper structure is shown, the colour being indistinguishable from natural platinum.

23. Electrolytic recovery of lead from molten salts—

Y. K. Delimarskii, O. G. Zarubitskii and V. G. Budnik (Tsvetn. Met., U.S.S.R., No. 4, 27, 1968); Zinc Abs., 9, 46, 1969. Electrolytic

extraction of lead from a molten salt electrolyte containing lead, zinc and potassium chlorides was investigated. The electrode potentials of lead, zinc and bismuth in the electrolyte differ sufficiently to allow them to be separated satisfactorily. Nickel, steel, molybdenum and graphide cathodes were tested. Details of operating conditions are given. Two figures and 2 tables.

24. Coating aluminium with organic finishes—

P. Brown (Metal Finishing, **67**, No. 4, 67, 1969). Introduction, cleaning and pretreating the aluminium surface, organic coatings; references.

25. Precioua-metal thermocouples—

D. W. Rhys (Metallurgical Reviews, **14**, No. 132, 47-60, 1969). Review with 4 tables, 3 figures and 97 references.

26. Non-ferrous metals research and development: NML achievements—

(CSIR News, **19**, No. 6, 43, 1969). An account of the work done at the National Metallurgical Laboratory, Jamshedpur covering aluminium, copper, maganese, magnesium, nickel, flourspar, refractory materials.

27. The magnetic properties of columnar-cast, high-titanium permanent magnet alloys—

A. V. Dean and J. J. Mason (Cobalt, No. 43, 73, 1969). Studies on the effect of composition and heat treatments on the magnetic properties of columnar cast alloys, containing more than 7 per cent titanium, produced by this technique. Four tables, 5 figures, and 9 references.

28. A new Co-Ni-Mo-Cr ultra high-strength corrosion-resistant alloys system: multiphase—

L. A. Pugliese and J. P. Stroup (Cobalt, No. 43, 80, 1969). Introduction, metallurgy, work strengthening, corrosion resistance, applications. Seven tables, 12 figures and 3 references.

29. Magneform—a new method of forming aluminium—

(Aluminium Courier, No. 85, 2, 1969). Magneform machines, made by General Atomic Europe, are the first commercially available machines which shape metal without contact with the workpiece. The electromagnetic forming technique simplifies many assembly and forming operations which are difficult or costly to perform with conventional techniuqes. Here is a description of the method: introduction work coils, machines and applications; 11 figures.

30. Diffusion coatings for the protection of iron and steel. Part 1: Aluminium coatings—

R. Drewett (Anti-Corrosion Methods and Materials, **16**, No. 4, 11, 1969). Introduction; aluminium coatings: application methods, composition and structure, physical properties, corrosion and oxidation resistance; 1 table, 8 figures and 30 references.

31. Recent advances in metallic aerospace materials—

K. S. Jepson and C. A. Stubbington (Metals and Materials, 3, 115, 1969). For sub-sonic applications there is considerable scope for development of materials for aircraft main structures. The direction of research is reviewed here under: introduction, aluminium alloys, steels, titanium, other metallic materials; 21 tables, 7 figures and 61 references.

32. Electron-probe microanalysis: instrumental and experimental aspects—

D. M. Poole and P. M. Martin (Metallurgical Reviews, **14**, No. 113, 61-84, 1969). Review with 4 tables, 14 figures and 299 references.

—T. L. R.