O.F.S. Branch

Minutes of the Committee Meeting held in the Committee Room at the St. Helena Club at 4.45 p.m. on Wednesday, 3rd September, 1975.

Present

Mr G. J. C. Young (Chairman), Mr D. A. Smith, Mr E. J. Dominy, Mr B. J. Drysdale, Mr H. M. W. Eschenburg, Mr A. T. Lewis, Mr E. T. Wilson.

Apologies

Messrs A. N. Shand and Z. J. Lombard.

The Chairman declared the meeting open and welcomed Committee Members to the first meeting of the 1975/76 Session.

Minutes of the Previous Committee Meeting

The minutes of the Committee Meeting held on the 11th June, 1975, which had been distributed to Committee Members, were taken as read. Their adoption was moved by Mr Lewis and seconded by Mr Wilson.

General Meetings and Visit for the Ensuing Year

Following discussion the following tentative programme of activities for 1975/76 was agreed to:

12th November, 1975: General Meeting. Talk and slide show of general interest on Canada by Mr John Dominy, supplemented by a film of a technical nature. Venue: Harmony Club.

February 1976: General Meeting. Details yet to be decided.

May 1976: Visit to a works such as Vecor, Iscor, or USCO. In this regard the Secretary was requested to obtain itineraries of visits from these concerns.

July 1976: Annual General Meeting. Date still to be set.

Date of Next Meeting

It was decided that a Committee Meeting be convened on Wednesday, 14th January, 1976, in order to finalize arrangements for the February General Meeting.

General

It was suggested that the Secretary approach embassies and consulates in an effort to obtain suitable technical films on loan.

The Meeting closed at 5.30 p.m.

Book reviews

JONES, M. J. (ed.). *Minerals and the environment.* London, Institution of Mining and Metallurgy, 1975.

This book represents the proceedings of an international symposium, organized by the Institution of Mining and Metallurgy with the co-operation of the Institute of Quarrying and the Institution of Mining Engineers. It was held in London from 4th to 7th June, 1974.

More than 40 papers were presented, dealing with the detection measurement, control, and use of solid, liquid, and gaseous waste products from mining and metallurgical operations. Particular attention was given to such aspects as the re-use of water in processing operations, recovery and recycling of waste metals, restoration of the surface after strip-mining operations, revegetation of mine dumps, the control of dust and noise, mining subsidence, and the effects of pollution control on process technology.

Most of the papers presented reflect case histories based on practical experience. The papers were subjected to extensive discussion, and the authors' replies serve to further explain many different approaches to the solution of the environmental problems encountered.

The value of the book lies in the practical, applied approach of most authors to environmental problems, with the emphasis on finding a balance between economics and ecology.

This book is a useful reference work on environmental problems in the mineral industry for mining and metallurgical engineers.

W.C.J.v.R.

Mining Companies of the world: 1974/75. London, Mining Journal Books Ltd (15 Wilson Street), 1975. £12. 303 pp.

This comprehensively indexed directory includes almost 5000 names of mines, plants, and corporations engaged in the production of minerals other than coal in the non-Communist countries of the world. This directory really works. In all the random checks carried out, the information on production, expansion plans, sales income, ownership, operations, registered office, directorate, capitalization, and financial year was easy to locate—and it was correct and up to date.

In addition to the main directory of companies, there are three subsidiary cross-references:

(1) An alphabetically arranged index to mining company directors (some 3000 of them).

(2) A tabulation of major operating metal mines, arranged by country, covering open-pit and underground mines currently producing more than 150 000 tons per annum. For each mine, the tabulation indicates the location, the mining method, the size of the operation (coded), and the metal or metals produced.

(3) A summary of new projects and expansions based on official company or government announcements. This section is also arranged by country, and indicates the location of each project, type of product and design production plan, expected completion date, type of operation, and brief general comment.

H.M.W.

NIM reports

The following reports are available free of charge from the National Institute for Metallurgy, Private Bag 7, Auckland Park 2006.

Report no. 483

Summary of the mineralogical investigation of pegmatites. (11th April, 1969; re-issued October 1975).

An account is given of the mineralogical investigations of pegmatites at the National Institute for Metallurgy. Two varieties of microlite were found in the Noumas Pegmatite, and there were indications that the micas of the same pegmatites are not sufficiently rich in lithium to be regarded as ores of that element, although this finding is not considered to be final. A new approach has been adopted, based on the idea that a study of the outermost zone of an intrusive, complex pegmatite would reflect the original bulk composition of the pegmatitic magma and supply a rapid indication of its economic potential. Tests so far have indicated anomalous concentrations of beryllium in the marginal parts of some South West African pegmatites.

Report no. 1697

A petrographic and mineralogical investigation of silica samples from the farm Elandskraal 470JQ, Rustenburg district. (24th Jan., 1975; re-issued October 1975).

Samples of quartzite from the farm Elandskraal 470 JQ, Rustenburg district, were examined in detail with a view to the production of a glass sand. The samples are well-crystallized, medium- and coarse-grained quartzites having a muscovite content of between 1 and 2 per cent as their major impurity. Minor amounts of kaolinite, illite, tourmaline, rutile, zircon, goethite, and hematite are also present. These mineral impurities have grains that are several times smaller than the average for the quartz, and can be concentrated in the fine-grained fractions by sieving after disaggregation of the rock.

The samples were disaggregated, and the natural grain-size distribution was determined by sieving. The grain size of both samples is too large for the production of glass sand and further crushing is necessary. The disaggregated grains have a roundness that can be described as angular, and their sphericity value is approximately 0,7.

Chemical analyses of the samples and various size fractions show that the coarse-grained quartzite, EK 2, is satisfactory for the production of glass sand, but that the medium-grained material, EK 1, has more than twice the maximum permissible iron content.

The results of beneficiation tests indicate that a suitable quality of glass sand can be produced by the following method:

(1) disaggregation of the samples,
(2) screening out and discarding of the fractions smaller than 38 mesh,
(3) milling to the required grain-size range,
(4) magnetic removal of tramp iron, and
(5) washing and screening for the removal of the fines smaller than 120 mesh.

The material produced in this manner should conform to the specifications for a grade-C glass sand. If necessary, acid leaching could be employed to produce material conforming to the specifications of either grade A or B.

Report no. 1761

The determination, by atomic-absorption spectrophotometry, of minor elements in anode sludges and residues.

An account is given of a rapid atomic-absorption procedure for the determination of minor amounts (0,1 to 5,0 per cent) of Pb, Ag, Se, Te, Sb, Ni, Bi, Cu, Zn, Al, Fe, and Sn in anode sludges and residues.

The sample is decomposed by fusion with a mixture of sodium peroxide and sodium carbonate in a zirconium crucible, and the melt is leached in hydrochloric acid. Diethylenetriamine is then added to form a complex with the silver if the latter precipitates as the chloride, and the leach liquor is diluted to volume.

The element required is determined by atomic-absorption spectrophotometry against a series of individual standards matched with respect to the concentrations of sodium salts and acid.

Report no. 1762

The determination, by instrumental neutron-activation analysis, of some elements in the NIMROC standard reference materials.

Instrumental neutron-activation analysis (INAA) was used for the determination of sixteen trace and minor elements in the six NIMROC reference materials. Six reference rock materials prepared by the U.S. Geological Survey were also analysed, and the results were compared with the recommended, average, or magnitude values given for these rocks by Flanagan.

The agreement between the two sets of results was found to be generally good, indicating that INAA is an acceptable technique for the determination of most of these elements. The values found for the NIMROC samples represent a significant contribution to the evaluation of the trace elements in these reference materials.

Report no. 1770

The spectrophotometric determination of vanadium in chromium-bearing materials.

A method for the determination of small amounts of vanadium with N-benzoyl-N-phenylhydroxylamine is described. The method has been developed from published procedures.

Foundry conference

An international foundry conference, sponsored and organized by the South African Institute of Foundrymen, will be held in Johannesburg from 23rd to 27th February, 1976. The themes for each day are as follows:

Monday: Foundry Equipment, Sands, and Refractions.

Tuesday: Furnace Technology, Pattern- and Core-making, and Production Engineering.

Wednesday: Metallurgy and Testing of Castings, and Dissemination of Technical Information.

Thursday: Personnel, Heat Treatment and Manganese Steels, and Mining Industry Requirements.

Friday: Foundry Design, Diecasting, Containerization and Export Incentives.

Further information is available from Conference Division (Foundry Conference—S.120), CSIR, P.O. Box 395, Pretoria, 0001.

Coordination chemistry

A symposium on coordination chemistry in extractive metallurgy is to be held in Kelvin House, Johannesburg, on 18th and 19th March, 1976. It is being organized jointly by the National Institute for Metallurgy and the South African Chemical Institute.

Further information is obtainable from Mrs J. Gillespie, National Institute for Metallurgy, Private Bag 7, Auckland Park 2006.

Practical jet cutting

The third international symposium on jet-cutting technology to be organized by BHRA Fluid Engineering will be held in Chicago from 11th to 13th May, 1976, in conjunction with the IIT Research Institute of Chicago.

High-pressure water jets have two properties that make them potentially useful industrial tools: their destructive power, and their application as a precision cutting tool. This meeting will discuss their potential in mining and jet cleaning, as well as the use of jets for accurate cutting with minimum wastage. The accent will be on successful commercial installations, although fundamental aspects of the fluid mechanics of high-pressure jets, and the equipment for their generation, will be covered. Papers on safety, and the consequences of system failure, will also be welcomed.

An intensive two-day course on the fundamentals of jet-cutting technology will run immediately prior to the symposium.

Further details can be obtained from the Organizing Secretary, 3rd ISJCT, BHRA Fluid Engineering, Cranfield, Bedford, England.

Hydraulic transport

The fourth international conference on the hydraulic transport of solids in pipes (Hydrotransport 4) is being organized by BHRA Fluid Engineering. To be held in Banff, Alberta, Canada, from 18th to 20th May 1976, the conference will cover all aspects of solids pipelining from a practical point of view.

Hydraulic pipelines offer a method of transporting granular materials that is economic and environmentally attractive. In addition, they could help to conserve oil-based energy supplies so that world interest in this method of moving bulk materials is growing rapidly.

The subjects to be covered include pilot-plant studies, system design and construction, installations and operating experience, economics, wear and corrosion, hydraulic capsule transport, liquid-solid studies, flow characteristics, and other theoretical aspects.

Immediately prior to the conference, BHRA will hold an intensive short course on the fundamentals of hydraulic transport, and it is hoped to arrange facilities for firms to demonstrate their equipment during the conference period.

Further details can be obtained from the Organizing Secretary, Hydrotransport 4, BHRA Fluid Engineering, Cranfield, Bedford, England.