O.F.S. and Klerksdorp Branch

Minutes of the General Meeting held at President Steyn Gold Mine canteen on Wednesday, 10th May, 1978, at 4.00 p.m.

Mr A. N. Shand (Chairman of the O.F.S. and Klerksdorp Branch) was in the chair.

Also present were

Four Fellows: Messrs J. G. Cockburn, C. V. van Heerden, J. F. G. Lorenzen, G. J. C. Young.

Nine Members: Messrs H. M. W. Eschenburg, J. D. Dean, E. J. Dominy, G. Evans, G. S. Lee, D. J. Miles, K. G. Pearce, J. M. Rech, C. H. Wiggett.

Six Associates: Messrs R. S. Burns, E. C. Hunter, A. J. Johansen, D. R. Lings, A. R. F. MacDonald, J. Scott.

One Graduate: Mr A. R. Godfrey.

Two Students: D. Butcher and one other.

Twelve visitors.

Total present: Thirty-five.

Apology: Mr P. S. Wentworth.

Mr Shand declared the meeting open, and extended a welcome to the members and visitors present.

Minutes of the previous meeting

The minutes of the Annual General Meeting held on 27th July, 1977, were read and adopted without amendment.

Films

Three films were screened:

(i) South African techniques in shaft sinking,

(ii) the East Driefontein story, and

(iii) the Mercedes–Benz experimental safety vehicle.

Closure

The Chairman expressed his appreciation to the management of President Steyn Gold Mine for making the facilities available for the meeting. He thanked members and visitors for their attendance, and the meeting closed at 5.15 p.m., after which refreshments were served.

Erratum

We apologize to Mr J. G. Taylor for the error in one of his qualifications as given on page 175 of the February 1978 issue of the *Journal.* B.C.S.M. should have read A.C.S.M.

Bio-engineering monograph

The selection of papers presented at the International Bio-engineering Conference at the University of Cape Town organized by the South African Institution of Mechanical Engineers and held in April 1977, and which are appearing in *The South African Mechanical Engineer* during April to June this year, will shortly be available in book form. The publishers are the International Open Press (of London, Amsterdam, and Johannesburg), and the editors are Professor E. A. Bunt and Dr A. M. Patterson of the University of the Witwatersrand, Johannesburg. Copies can be ordered through the Secretary of the South African Institute of Mechanical Engineers, P.O. Box 61019, Marshalltown 2107.

Mathematics

The Institute of Mathematics and Its Applications is planning the following conferences and symposia:

The N and F Proposals in Relation to Mathematics, 1st July, 1978: London School of Pharmacy.

International Conference on Markov Decision Processes, 17th-19th July, 1978: University of Manchester.

International Conference on The Analysis and Optimization of Stochastic Systems, 6th-8th September, 1978: University of Oxford.

Mathematical Modelling of Turbulent Diffusion in the Environment, 11th-13th September, 1978: University of Liverpool.

Mathematical Methods for Graphics and Design, 28th September, 1978: venue to be announced.

Ordinary Differential Equations and Their Applications, December, 1978: venue to be announced.

Black Holes, 5th January, 1979: venue to be announced.

Power from Sea Waves, June 1979: University of Edinburgh.

NIM reports

The following reports are available free of charge from the National Institute for Metallurgy, Private Bag X3015, Randburg, 2125 South Africa.

Report no. 1917

The instrumental neutron-activation analysis of granites from the Bushveld Complex. (31st Mar., 1978.)

Three methods of instrumental neutron-activation analysis, 14MeV, reactor thermal, and reactor epithermal, are compared for the analysis of granites from the Bushveld Complex. A total of 34 elements can be determined in the granites by these methods.

Samples from the Zaaiplaats area were analysed by thermal neutron activation, and 22 elements were determined in all of them. These elements were used to distinguish between the mineralized Bobbejaankop and Lease granites and the Main granite by the use of multivariate statistics. The Bobbejaankop granite appears as a more-differentiated rock carrying greater amounts of the incompatible elements than does the Main granite.

Report no. 1951

Potentialities and limitations of four-parameter equations for the correlation of formation constants of metal-ion complexes in aqueous solution.(15th May, 1978.)

A four-parameter equation, of the form log $K_1=E_AE_B+C_AC_B$, was used to correlate the formation constants of complexes in aqueous solution involving the ligands F^-, OH^-, and NH_3 with a wide variety of metal ions to a standard deviation of 0,24 log unit. Missing data for the amine complexes of the harder-metal ions were estimated from a model of the chelate effect.

The limitations of the four-parameter equation in the correlation of formation-constant data in the aqueous phase are discussed. In particular, it is shown that the four-parameter equation cannot, in general, simultaneously correlate log K_1 for F^-, OH^-, and NH_3 complexes on the one hand, and Cl^- and other large donor-atom complexes on the other. However, good correlation is obtained for the larger ligands Cl^-, Br^-, I^-, $S{=}C(NH_2)_2$, PPh_3, and CN^- provided that attention is restricted to the larger metal ions.

A hardness parameter, $H=E/C$, was defined and leads to an order of hardness that agrees fairly well with previous orders of hardness derived from gas-phase data. Some significant differences between the order of hardness obtained here and other orders of hardness that are based on aqueous phase data, such as the position of H^+ and CH_3^+, are a result of the conventional use of the large ligands Cl^-, Br^-, and I^- as criteria for hardness and softness.

Report no. 1963

An evaluation of the methods used at the National Institute for Metallurgy for the analysis of base-metal concentrates. (28th Apr., 1978.)

The methods used in the determination of major and minor trace constituents in sulphide concentrates are discussed, comments are made on the procedures, and the results obtained for the different procedures are compared. Finally, the merits of these procedures are considered in terms of precision, accuracy, the number of elements determined, and the time taken for analysis.

Report no. 1964

The separation, by anion exchange, of noble metals on substituted cellulose. (28th Apr., 1978.)

In the separation of the noble metals on diethylaminoethyl cellulose, it was shown that, provided the cellulose is correctly precycled and preconditioned, quantitative retention of all the noble metals and their separation from a large number of base metals can be achieved. The effect of flow-rate, volume of sample solution, and anion concentration on the retention of gold, and the effect of cationic species and concentration on the retention of rhodium and ruthenium, are discussed in detail. The cellulose was applied successfully to the separation and determination of noble metals in a sample of matte-leach residue. High concentrations of sodium and copper seriously affect the retention of rhodium and ruthenium, precluding the application of this technique to a wider range of materials and process solutions, and limiting its use to platinum, palladium, and iridium.

GUIDE TO THE PREPARATION OF PAPERS FOR PUBLICATION IN THE JOURNAL OF THE SOUTH AFRICAN INSTITUTE OF MINING AND METALLURGY

The following notes have been compiled to assist authors in the preparation of papers for presentation to the Institute and for publication in the *Journal*. All papers must meet the standards set by the Council of the Institute, and for this purpose all papers are referred to at least two referees appointed by the Council.

Although the worldwide readership of the *Journal* results in a preference for papers in English, the Council treats papers in Afrikaans on an equal basis, but, to meet the needs of the majority of readers, an English summary of some 500 to 750 words should be provided.

STANDARDS FOR ACCEPTANCE

To merit consideration, papers should conform to the high standards that have been established for publication over many years. Papers on research should contain matter that is new, interpretations that are novel or of new significance, and conclusions that cast a fresh light on old ideas. Descriptive papers should not be a repetition of well-known practices or ideas but should incorporate developments that would be of real interest to technical men and of benefit to the mining and metallurgical industry.

In some cases, a well-prepared review paper can be of value and will be considered for publication. All papers, particularly research papers, no matter how technical the subject, should be written with the average reader of the *Journal* in mind, to ensure wide interest.

The amount of textbook material included in a contribution should be the minimum essential to the argument. The length of a paper is not the criterion of its worth, and it should be as brief and concise as possible consistent with the lucid presentation of the subject. Only in very exceptional circumstances should a paper exceed 15 pages of the *Journal* (15 000 words if there are no tables or diagrams). Six to ten pages is more normal.

NOTE: Papers in the *Journal* are printed in 10 point type, which is larger than the 8 point type used on this page. For special publications, Council may decide on page sizes smaller than A4 used for this *Journal*.

The text should be typewritten, double-spaced, on one side only on A4 size paper, leaving a left-hand margin of 4 cm, and should be submitted in triplicate to facilitate the work of the referees and editors.

LAYOUT AND STYLE

Orthodox sequence

Title and author's name, with author's degrees, titles, position.

Synopsis, including a brief statement of conclusions.

An Afrikaans translation of the synopsis.

Introduction.

Development of the main substance.

Conclusions, in more detail.

Acknowledgements.

References.

Title: This should be as *brief* as possible, yet give a good idea of the subject and character of the paper.

Style: Writing should conform to certain prescribed standards.

The Institute is guided in its requirements by:

Collins, F. H. *Authors & Printers' Dictionary*—Oxford University Press.

Hart, H. *Rules for Compositors and Readers*—Humphrey Milford (familiarly known as the *Oxford Rules*).

Fowler, H. W. & F. G. *The King's English*—Oxford University Press.

General: A few well-selected diagrams and illustrations are often more pertinent than an amorphous mass of text. Overstatement and dogmatism are jarring and have no place in technical writing. Avoid the use of the first person, be objective, and do not include irrelevant or extraneous matter. Avoid unnecessary use of capitals and hyphens; punctuation should be used sparingly and be governed by the needs of sense and diction. Sentences should be short, uninvolved, and unambiguous. Paragraphs should also be short and serve to separate basic ideas into compact groups. Quotation marks should be of the 'single' type for quotations and "double" for quoted matter within quotations.

Interpretations in the text should be marked off by parentheses ( ), whereas brackets [ ] are employed to enclose explanatory matter in the text.

Words to be printed in italics should be underlined *singly*. For small capitals they are to be underlined DOUBLY and for large capitals TREBLY.

If there is any problem in producing formulae accurately by typewriter, they should be handwritten in ink.

Abbreviations and symbols are laid down in *British Standard* 1991. Abbreviations are the same for the singular and plural, e.g., cm for centimetre and centimetres, kg for kilogram and kilograms. Percentages are written in the text as per cent; the symbol % is restricted to tables. A full stop after an abbreviation is used only if there is likely to be confusion of meaning.

Metric System: The Système International d'Unités (SI) is to be used for expressing quantities. This is a coherent system of metric units derived from six basic units (metre, kilogram, second, ampere, kelvin, and candela), from which are derived all other units, e.g., the unit of force is the newton (N) for kilogram metre per square second (kg m/s^2). Always use the standard metric abbreviations.

The comma must be used as a decimal indicator and must not be used for separating groups of digits. For ease of reading, digits should be grouped in threes counting from the decimal indicator towards the left and right. However, where there are only four digits to the left or right of the decimal indicator, there should be no grouping.

Illustrations: Drawings and diagrams are to be in black India ink and should be about 18 cm wide. When submitting graphical representations, avoid a fine grid if possible. Curves should be in heavy line to stand out. Lettering too should be bold, as a reduction in size is often involved in the printing process.

Numbering of tables should be in Roman numerals: I, II, etc., and figures in Arabic numerals: Fig. 1, Fig. 2, etc. (Always use the abbreviation for figure.) Photographs should be black and white glossy prints.

As a guide to the printer, the author should indicate by means of notes in the typescript where tables and figures, etc. are to appear in the text.

Paragraphs: A decimal system of numbering paragraphs may be used when the paper is long and complicated and there is a need for frequent reference to other parts of the paper.

Proof correction: Galley proofs are sent to authors for the correction of printers' errors and not for the purpose of making alterations and additions, which may be expensive. Should an author make alterations that are considered excessive, he may be required to pay for them. Standard symbols as laid down in *British Standard* 1219*C* should be used.

SYNOPSIS

It is most important that the synopsis should provide a clear outline of the contents of the paper, the results obtained, and the author's conclusions. It should be written concisely and in normal, rather than abbreviated, English, and should not exceed 250 words, except when an English summary of an Afrikaans paper is involved. While the emphasis is on brevity, this should not be laboured to the extent of leaving out important matter or impairing intelligibility. Summaries simplify the task of abstractors and therefore should present a balanced and complete picture. It is preferable to use standard rather than proprietary terms.

FOOTNOTES AND REFERENCES

Footnotes should be used only when they are indispensible. In the typescript they should appear immediately below the line to which they refer and not at the foot of the page.

References should be indicated by super-script, thus . . .[1] . . .[2]. Do not use the word *Bibliography*. When authors cite publications of other societies or technical and trade journals, titles should be abbreviated in accordance with the standards adopted in this *Journal*.

GENERAL

The Council will consider the publication of technical notes taking up to three pages (maximum 3000 words).

Written contributions are invited to the discussion of all papers published in the *Journal*. The editors, however, are empowered by the Council to edit all contributions. Once a paper or a note has been submitted to the Institute, that document becomes the property of the Institute, which then holds the copyright when it is published. The Institute as a body is, however, not responsible for the statements made or opinions expressed in any of its publications. Reproduction from the *Journal* is permitted provided there is full acknowledgement of the source. These points should be borne in mind by authors who submit their work to other organizations as well as to the Institute.