

production, the figures given by 'Metal Statistics' for 1970 and 1971 (149 200 and 157 500 million tons respectively) compare most favourably with the values; 149 205 and 157 470 million tons reported in the South African Department of Mines publication, 'Minerals'. *Metalli Non Ferrosi e Ferroleghe*, World Metal Statistics and the Metal Bulletin Handbook all report these values as being 144 200 and 148 400 million tons respectively.

In the case of total world mine production of copper the average copper production for 1970 and 1971, derived from the four publications 'Metal Statistics', 'Metalli', 'World Metal Statistics' and 'Metal Bulletin' are 6 369 550 and 6 462 300 million tons respectively with standard deviations of 7937 and 13 841 million tons. The error is even greater in the case of the 'Eastern', or 'Other Countries' values with averages of 1 205 467 and 1 316 700 million tons of copper being obtained with standard deviations of 2631 and 1277 million tons.

The introductory section of non-

ferrous metals, in 1972 and the first half of 1973, is rather brief in view of the large amount of data subsequently presented. More 'in-depth' comment on the reasons for price and supply fluctuations would enhance the value of the work and a mention of such trends as the supply of copper concentrates increasing at a faster rate than smelter capacity would be of assistance to those engaged in commodity studies and technological forecasting. The tables of statistics comprise a valuable addition to the literature of mineral and metal production.

H.A.S.

Symposium on underground mining equipment maintenance—1973. Institution of Mining Engineers, and Association of Mining Electrical and Mechanical Engineers.

The eleven papers presented at this symposium give a very clear indication of recent progress by the National Coal Board in making the preventive maintenance of coal face equipment more effective.

Careful recording of the causes of,

and possible remedies for, breakdowns occurring underground over a number of years, have resulted in dramatic advances in the design of such units as motors, lubricating systems, gears, etc. In order to reduce down-time even further, a certain degree of 'over design' has been considered desirable.

At the same time, a variety of recording instruments have been developed for measuring wear, deterioration in performance, etc, showing exactly when preventive maintenance must be undertaken.

A determined campaign to improve the training of all levels of worker in preventive maintenance theory and practice has accompanied these improvements and some first class schemes are outlined in these papers.

A special feature of the symposium is the comprehensive description of the basic maintenance requirements of modern longwalling equipment, which will be invaluable for reference purposes in the South African mining industry.

K.S.

Colloquium and general meeting

A General Meeting and Colloquium on 'Motivation and productivity in the mining industry' was held on May 22nd, 1974, at Kelvin House, Johannesburg.

Mr P. W. J. van Rensburg (President) was in the chair.

The Colloquium was attended by 170 delegates and was opened by the President at 09h25.

Minutes

The minutes of the general meeting held on March 13th, 1974, and published in the May 1974 issue of the Journal, were confirmed.

Obituaries

Dr P. N. Lategan, Honorary Life Fellow and Past President of the Institute

H. H. McGregor, Fellow
J. E. Williamson, Fellow
T. L. Blunt, Life Fellow
R. Murchison, Fellow

In memory of the deceased and in sympathy with the bereaved, the

delegates rose and observed a few moments' silence.

Membership

The President: I have much pleasure in announcing that the undermentioned candidates, whose names have been published in accordance with By-Law 5.2.2., have been elected to membership of the Institute in the following grades:

Fellows

F. Botha, C. Moll, N. Solden.

Members

S. J. Marais, P. H. Radcliffe,
R. Stockton, M. D. Velzeboer.

Graduates

L. A. Melis, G. J. Petersen, L. C. Stilwell, V. M. dos Santos R. Lopes.

Associates

M. W. Bell, J. W. Briedenhann,
A. C. Botha, J. R. Garbutt, L. S. Gibbs, J.-J. V. Housmans, R. R. Perkin, A. P. Sinden, C. P. Smit,
S. Venkatesan.

Students

A. C. Blignaut, W. H. J. Coetzee,
H. P. F. Kern, T. S. O'Connor,
E. D. Smith.

Transfer to Fellow

D. A. Blair Hook, R. D. Wolff.

Transfer to Member

G. A. P. Andersson, J. J. Geldenhuys, J. P. Hatfield, P. J. Pretorius.

I welcome the newly elected members to the Institute, and congratulate those who have been transferred to a higher grade.

General

Election of Scrutineers for Ballot

In accordance with Section 9.4 of the By-Laws, the following scrutineers were elected:

P. W. J. van Rensburg, R. P. Plewman, R. E. Robinson, J. K. E. Douglas, J. P. Hugo, M. D. G. Salamon, D. G. Maxwell, H. Britten.

The meeting ended at 09h30.

Colloquium on motivation and productivity in the mining industry

At the above Colloquium on the 22nd May, 1974, Dr W. Rapson assumed the duties of Colloquium Chairman. The day was divided into three sessions, each with a separate Session Chairman. Papers were presented by the authors in the following order:

Session 1:

Chairman — Mr H. G. M. Rose.

'The value of incentive payments in the mining industry', by K. Smith, University of the Witwatersrand.

'Job evaluation and wage patterns', by D. L. van Coller, Anglo American Corporation of South Africa Limited.

Showing of film 'Productivity — key to America's economic growth'.

Session 2:

Chairman — Mr K. G. Macleod.

'The role of training in increasing productivity', by W. S. Nel, Anglo American Corporation of South Africa Limited.

'The migrant labour system and the personnel function', by P. L. Dempster, General Mining and Finance Corporation.

Session 3:

Chairman — Mr K. Reim.

'Importance of human factors in mining productivity', by A. C. Lawrence, Chamber of Mines of South Africa.

After the presentation of each paper and the contributions thereto, a period of open discussion followed.

Dr Rapson ably highlighted the important points of the day in his summary address as follows.

'The campaign for productivity was born out of opportunity —

opportunity offered by the increase in the price of gold. It was also born out of a feeling of insecurity in that threats to the Industry in cost inflation and a deteriorating labour situation were evident. The importance of this campaign must, therefore, be viewed in relation to the present crisis, a crisis alleviated somewhat by the hope of further increases in the price of gold. Today's colloquium has, however, shown that tremendous opportunities lie ahead in the field of increased productivity.

'The problems are complex; the mining operation itself, the labour situation with the added complexity of labour handling not experienced in a normal manufacturing industry, and the existence of conflicting concepts as to the inter-action of various human factors which lead to higher productivity. Dr Lawrence in presenting his concept of CORE offers the Industry one tool which can be used in organising its effort towards greater productivity. The atmosphere is at present ripe for a re-organisation of our efforts. CORE as a concept will be of value to managers in industry as a whole.

'Mr Dempster's paper is perhaps the first review from within the Industry to highlight the problems associated with migrant labour. We should be prepared to discuss these matters openly, if we are to arrive at sound labour policy decisions. South Africa talks glibly of her rich inheritance and mineral resources. Due to their very nature these mineral resources, however, could not be exploited other than by

labour-intensive methods currently in use in South Africa. Altering circumstances will, however, necessitate changes to the classical pattern of the Mining Industry labour both white and black.

'The call is loud and clear. We must examine the whole of our labour usage pattern within the context of the CORE model and we must do this together. How far-reaching this re-thinking should be has been illustrated by Mr Nel's paper. He has outlined a method to organise training on an industry basis for both blacks and whites. In the context of longer-term Bantu service, Mr Nel's thinking must be given thorough consideration. The whole attitude of change must be understood and accepted by Union employees to be effective.

'Other papers dealing with the R of CORE show that varying opinions and ideas exist. This colloquium has thrown forward many challenges which the Chamber of Mines and the Institute can take up together. The colloquium has, therefore, been of greater benefit to the gold and other mining fields.'

Dr Rapson offered his congratulations to the Institute for an extremely interesting and productive colloquium. He extended a vote of thanks to Mr L. W. P. van den Bosch, the S.A.I.M.M. Council, the session chairmen and the staff of Kelvin House for the facilities provided. In conclusion, Dr Rapson thanked the authors of the papers, contributors, those who took part in the discussions and all who had attended the colloquium.

Special general meeting

A Special General Meeting of the Institute was held in Kelvin House, Johannesburg, on Wednesday, May 22nd, 1974.

The President, Mr P. W. J. van Rensburg, opened the proceedings at 09h15 by welcoming those present and stating that this meeting had been called to make certain amendments to the constitution in order to

retain the Institute's status as a professional engineers' institute in terms of section 7 (3) (a) (i) of the Professional Engineers Act, 1968 (Act 81 of 1968), and at the same time to admit to membership certain experienced persons, who were not academically qualified as required for registration as Professional Engineers, but who held high tech-

nical qualifications and occupied positions of senior responsibility. It had thus been decided by Council to create a further non-corporate grade of membership to accommodate those persons who would previously have been graded as Members. This grade is to be designated "Associate Member". At the same time, it was proposed that non-corporate mem-

bers be given representation on the Council of the Institute.

The President then put forward a motion that the following amendments to the Constitution be approved.

Amend Clause 2.6

Non-corporate members shall comprise the grades of:

- Company Affiliate
- Honorary Fellow
- Associate Member
- Graduate
- Associate
- Student

Insert after 2.7 a clause as follows

Qualifications for Associate Member:

A candidate for admission to the grade of Associate Member or for transfer into that grade shall be not less than thirty years of age, and shall have been engaged in a position of responsibility in, or associated with the mining and metallurgical industry or allied professions for a period of not less than ten years, of which five years shall have been in a senior technical position in major mining or metallurgical undertakings, or in Government, Educational or Research organisations concerned with those industries. In all cases the applicants shall satisfy the Council that they are fit and

proper persons to become Associate Members.

Amend Clause 3.1

Subject to the Constitution and in conformity with the By-Laws, the management of the affairs of the Institute shall be vested in the Council, whose members shall be elected as provided in Section 9 of the By-Laws and who shall hold office until their successors have been elected.

Amend Clause 3.2.5. to read

Ten Corporate Members

Add after Clause 3.2.5.

Two non-Corporate Members, elected from and by the members in the grades of Associate Member, Graduate, Associate and Student, with the proviso that:

Non-Corporate representatives on Council shall not be entitled to vote upon matters concerning the policy of the Institute, change in the Constitution, the investment of the Institute's funds, the election of Corporate Members or the winding up of the Institute.

Amend Clause 3.3.

Insert *corporate* before the word *members*.

Amend Clause 9.1

Delete the word *Corporate*.

Amend Clause 9.1.1.

Each nomination of a Corporate Member for election to Council must be proposed and seconded by at least two non-Corporate Members in the grades of Associate Member, Graduate, Associate or Student on an official nomination form.

Amend Clause 9.2

Delete the word *Corporate* and add after the word *Member* the words *who is entitled to vote*.

Amend Clause 9.3

Delete the word *Corporate* wherever it appears.

Amend Clause 10.1

Insert the word *Corporate* before the word *Members* wherever it appears.

NOTE:

- (i) The Council will amend "Rules for the Conduct of Branches" to take account of the foregoing changes.
- (ii) It is the intention of Council to set entrance fees and annual subscriptions for Associate Members at the same level as that of Members.

The motion, having been duly proposed and seconded, and there being no counter proposals, was carried and adopted without amendment.

The meeting ended at 09h25.

OFS Branch

General meeting

Mr D. A. Smith (Vice-Chairman of the O.F.S. Branch) was in the Chair. There were also present:

Three Fellows

Messrs E. T. Wilson (Chairman), A. H. Shand (Committee Member) and A. T. Lewis.

Eleven Members

Messrs W. B. Evans and G. J. C. Young (Committee Members), F. J. Bayley, D. E. Couperthwaite, J. D. Couperthwaite, M. Forster, A. F. Goetzsche, E. R. Penny, G. P. Rundle, P. A. N. Wallace and D. I. Watson.

Eight Associates

Messrs J. Dean, W. F. de Lange, A. J. Johansen, R. R. Perkin, C. F. K. Poulton, J. Scott, L. Vorster and B. D. C. Watts.

Two Graduates

Dr A. E. Hall and Mr C. H. Obray.

One Student

Mr A. P. S. Howard.

Thirty-eight Visitors

Total present: Sixty-four.

Welcome

Mr Smith declared the meeting open and reported that the Chairman, Mr Wilson, had been unavoidably delayed, but that he would arrive as soon as possible during the proceedings.

A special welcome was extended to the guest-speaker, Mr D. MacLeod, Gold Plant Superintendent, Vaal Reefs Exploration and Mining Co. Ltd., who had made the journey from Orkney.

Minutes of the Previous General Meeting

The minutes of the General Meeting held on the 3rd April, 1974 were taken as read and their adoption, proposed by A. N. Shand and seconded by A. T. Lewis, was carried.

Matters Arising from the Minutes

There were no matters arising from the Minutes.

General Business

It was unanimously agreed that Messrs M. G. Cul'en, A. F. Goetzsche and R. R. Perkin be appointed scrutineers for the forthcoming election of Committee Members.

Film Show

Two films were screened:

- (i) 'Diamond—King of Gems'. Interesting aspects of gem dia-

monds.

- (ii) 'TORCO-Breakthrough'. The treatment of refractory copper ore.

These proved to be both entertaining and informative and were well received.

At this stage the Chairman, Mr E. T. Wilson, joined the Meeting and apologised for his late arrival. He took the Chair.

Main Business

Talk by Mr D. MacLeod on 'The Gravity Concentration of Gold'. The Chairman introduced Mr MacLeod

and called upon him to address the Meeting.

Mr MacLeod gave a detailed account of the various aspects of gravity concentration methods of gold recovery as practised over the years in the gold mining industry in this country. He went on to describe the improvements in overall gold recovery that had been brought about in reduction plants on mines of the Anglo American Corporation which incorporated gravity concentration circuits.

This talk was well received and

resulted in numerous questions from the floor.

The Chairman called upon Mr G. J. C. Young to thank the guest-speaker. In his vote of thanks Mr Young congratulated Mr MacLeod on his excellent presentation of a subject of which the speaker obviously had considerable expertise.

Closure

The Chairman thanked members and visitors for their attendance and declared the Meeting closed at 6.00 p.m. after which refreshments were served.

NIM reports

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

Report No. 1615

Fluorspar pellets. A survey of the world market and an assessment of future South African production.

Dwindling world reserves of metallurgical-grade fluorspar are causing concern about future supplies of CaF_2 to the steel industries. Because there are no substitutes that can compare economically with fluorspar, the use of pelletized acid-grade fluorspar is becoming increasingly

important.

A preliminary analysis of probable production costs indicates that South Africa should be able to produce metallurgical-grade pelletized fluorspar for export at an economically competitive cost, particularly if pellets with more than a 95% effective CaF_2 content are produced. An export market of at least 100 000 tonnes per annum (at a value of R4,34 million) could be contemplated.

Report No. 1621

Correction for matrix effects in the analysis of solutions by X-ray-fluo-

rescence spectrometry.

The technique described involves the insertion, in the solution to be analysed, of a solid disc containing the required element, and the use of the intensity thus obtained for matrix correction. It is applicable to the determination of elements heavier than titanium for which the internal-standard technique of matrix correction is not applicable and in which the matrix variations are unusually large. It has been successfully applied to the analysis of titanium, iron, and rubidium in solutions of widely varying matrices.

Notices

Questionnaire on Technicians

The Department of National Education's committee of enquiry into the education, training, utilization, and status of engineering technicians in the Republic of South Africa was established as a result of Resolution 6.3 taken at the Sixth Conference on Engineering Education: The Education and Training of Engineering Technicians.

This committee will be distributing a questionnaire on technicians to the employers of technicians. The Federation of Societies of Professional Engineers urge members who receive these questionnaires to co-operate by completing the questionnaire and returning it promptly.

Vraelys oor Tegnici

Die Departement van Nasionale Opvoeding se komitee wat ondersoek instel na die opleiding, gebruik en status van ingenieurstechnici in die Republiek van Suid-Afrika is gestig as gevolg van Besluit 6.3 wat geneem is tydens die Sesde Konferensie oor Ingenieursopleiding: Die Opleiding van Ingenieurstechnici.

Hierdie komitee sal binnekort 'n vraelys oor tegnici na werkgewers van tegnici stuur. Die Federasie van Verenigings vir Professionele Ingenieurs versoek lede wat hierdie vraelys ontvang, om saam te werk deur die vraelys te voltooi en onmiddellik terug te stuur.

Competition for Student Members of the South African Institute of Mining and Metallurgy

Each year the Institute offers a prize (or prizes should the entries warrant it) of up to R100 for the best paper or dissertation on a topic appropriate to the interests of the Institute. The competition is open to all Student Members of the Institute.

A Student Member who is in full-time study at a university may submit the dissertation or thesis he has to write in part fulfilment of his university degree, provided that it is presented in a manner and on a topic suitable for publication in the journal.

Entries for 1974 should reach the Institute by 31st December, 1974.