(2) Iscor is concentrating its drilling programme in an area lying roughly between the Beit Bridge–Pretoria railway line and the western border of the Kruger National Park, with a view to keeping future developments as close as possible to the existing infrastructure.

(3) Iscor is proceeding with the development of the Grootegeluk blend-coking coal mine near Ellisras. It is also considering opening up a mine in the Soutpansberg area, on the western border of Vendaland, to produce straight coking coal. These two mines should produce some 3 million tons of metallurgical coal per year, which should meet the Corporation's requirements up to at least 1983. After that date, consideration will be given to other deposits in the same general area.

(4) Apart from studying the Geological Survey's drilling data pertaining to the Kruger National Park as they become available, Iscor has not even considered the advisability or practicability of conducting mining operations in the Reserve. Should this eventuality ever arise, and my guess is that it will not do so for many years to come, one would imagine that the procedure would be more or less as follows.

   (a) Permission would have to be obtained from the relevant authorities, which will entail amendment of the Act.

   (b) The authorities responsible for our national parks have a proud record of successful conservation and the continuing improvement of facilities provided for the general public. Far be it from me to attempt to teach these professionals how to discharge their duties, but I imagine that, if ever they were to agree to mining operations in one of our reserves, they would impose stringent conditions. The following tentative points come to mind:
   — the area to be mined at any one time would have to be limited, say to 50 or 60 km² (the total area of the Kruger Park is 19 000 km²);
   — the mining company would have to offer an exchange of suitable and acceptable ground;
   — royalties would have to be paid, which would doubtless be ploughed back into conservation;
   — during mining, disturbance to the environment would have to be kept to a minimum, and maximum levels of noise, dust, and fumes would have to be laid down;
   — after completion of the mining, all the dumps would have to be covered with soil and revegetated, and all the surface structures would have to be removed;
   — finally, the restored ground would have to be handed back to the authorities for reincorporation in the Reserve.

When, if ever, such arrangements are being considered, the general public and other interested bodies will presumably be informed, and will be given ample opportunity to comment and come forward with suggestions.

Judging by the experience gained in many countries of late, there is no doubt that countryside that has been disturbed by mining operations can be restored to its original state with a minimum loss to all the parties concerned. There is already a sincere appreciation and understanding between mining on the one hand and agriculture on the other. With our regulatory control, codes of practice, and experience in re-establishing disturbed areas, there is every reason to believe that mining practice in this country will continue to limit itself to a minimum of disturbance to the environment.

Book review

National Coal Board. *Gate belt conveyors*. London, H.M.S.O. (Price 95p.)

Although the preface of this handy little book states that it has been written for the guidance of mining-operation trainees, it will prove valuable to the practising engineer as well.

Beginning with a general description of the belt conveyor and an explanation of terminology, the manual then outlines the method of installing and extending a gate belt, and details its operational maintenance and care. The appendix contains some useful information on lifting appliances suitable for gate-belt conveyor installation and extension.

There are some 38 excellent blue and black drawings illustrating the text, which is both succinct and readable. It should be pointed out that the book was written primarily with U.K. longwall-mining layouts in mind, but the various operations described are also applicable to bord-and-pillar working.

At R1,43 (post-free in the U.K.) the book is a bargain, and it is to be hoped that publications of a similar standard on such subjects as trunk conveyors will follow.

R.H.B.

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. 1733

A mineralogical investigation of weathered carbonatite from Salpeterkop. (14th Apr., 1975; re-issued 28th Feb., 1978).

A sample reputed to be carbonatite was investigated mineralogically for determination of the mode of occurrence of niobium, zinc, and thorium in the sample.

The sample was found to consist of earthy goethite cemented largely by opaline silica.

Niobium was present in varying amounts in ten minerals, of which brookite was the most abundant. It had a niobium content of 6 to 12 per cent. Recovery of the brookite would be difficult because 80 per cent of the grains are smaller than 30μm.

Small amounts of thorium are present in small grains of thorite and thorianite.

No discrete zinc-bearing minerals were encountered. Zinc was mainly associated with goethite in the groundmass of the sample.

A large variety of other minerals were identified, but none was present in economic proportions.

Report no. 1823

The recovery of gold and pyrite from a residue dump at Crown Mines. (10th Jul., 1976; re-issued 28th Feb., 1976).

The application of ore-dressing methods to a residue dump at Crown Mines has been examined. The use of either single-stage or double-stage gravity concentration is advocated for the recovery of the gold. Flotation and wet high-intensity magnetic separation (WHIMS) are not recommended.

The two-stage gravity process facilitates the recovery of most of the pyrite in the residue (over 70 per cent) at commercial grade (40 per cent sulphur), but sacrifices some of the gold obtainable by a single-stage operation. There is little prospect of the commercial recovery of uranium from the dump at Crown Mines.

Report no. 1829

An investigation of weathered carbonatite from Salpeterkop. (20th Jul., 1976; re-issued 28th Feb., 1978).

In the four samples investigated, the composition of the brookite was found to vary from 71 to 86 per cent TiO_2, from 6 to 16 per cent Nb_2O_5, and from 5 to 12 per cent FeO, with small amounts of calcium, silicon, and potassium.

Yttrium was found to be distributed at random in the fine-grained matrix of the samples and in weathered products of the original primary minerals. Yttrofluorite and xenotime were the only discrete yttrium-bearing minerals, but the grains were smaller than 8μm.

A partial chemical analysis indicated a possible fluorite content of 8,5 per cent and a barite content of 3,7 per cent in one of the samples.

In exploratory tests on the concentration of the ore samples by gravity, flotation, and magnetic methods, no significant concentration of niobium was obtained.

Report no. 1932

A BASIC computer programme for the evaluation of intensity data from the Telsec Lab-X-250 Analyser. (12th Jan., 1978).

A programme is described that requires 5,8 K of memory and is designed for the processing of the values determined by Telsec Lab-*X*-250 Analyser for iron, copper, zinc, and lead in products from the beneficiation of sulphide ore. The programme tests the precision of replicate difference counts and applies corrections for spectral overlap, instrumental drift, and day-to-day variations, thus increasing the precision and accuracy, reducing the total measuring time, and eliminating the need for daily adjustment of the instrument and frequent recalibration. A family of linear calibration graphs is used in the evaluation of the corrected measurements. As the programme is written in a fully conversational mode, both the Analyser and the terminal can be used successfully by an operator of relatively low skill.

A detailed description is given of the programme, as well as instructions for the user and guidelines for the ready adaptation of the programme to other analytical applications.

Report no. 1940

The extraction of the noble metals with n-octylaniline, and its application to the analysis of platinum-bearing materials. (30th Jan., 1978).

A study was made of the extraction of noble metals with *n*-octylaniline at varying normalities of different mineral acids, and optimum conditions were established for their separation from the base metals commonly present in platinum-bearing materials. The noble metals, with the exception of gold, can be back-extracted with perchloric acid and determined by atomic-absorption spectrophotometry. The procedure was successfully applied to the analysis of mattes, sludges, and flotation concentrates. The lower limit of determination in such materials is 100 p.p.m. for platinum and iridium, 40 p.p.m. for ruthenium, and 10 p.p.m. for palladium and rhodium. Gold was not determined.

Report no. 1945

Analyses of the NIMROC reference samples for minor and trace elements. (28th Feb., 1978).

The results are given of all the determinations made by the cooperating laboratories of minor and trace elements in the 6 NIMROC rock samples prepared by the National Institute for Metallurgy in 1966. Relevant statistical data and a graphical display of the distribution of the results are given for the sets of results for each element.

Recommended values are given for those elements in which the number of results and their quality are reasonably acceptable. A description is given of the procedures that were used in the estimation of these recommended values.

International futures conference

A conference entitled 'The Road Ahead' is being organized by the 1820 Settlers National Monument Foundation to be held in Grahamstown from 3rd to 7th July, 1978. This multi-disciplinary conference will look at the future, its objective being an examination of the major global problems and challenges mankind will face over the next few decades, and their relation to the Southern African situation in particular.

The delegates will be men and women who make and influence policy in all fields of private and public enterprise. Their position and responsibilities demand an understanding of probable future developments not only within the confines of their own particular vocations but over a much broader spectrum of human endeavour. Such understanding must improve professional productivity and mutual awareness, and make planning more meaningful. The majority of delegates will represent

Academic and Educational Institutions
Business and Professional Organizations
Commerce and Industry
Government and Quasi-government Bodies
Labour Organizations
The Media
Research Institutes
Religious Organizations
Scientific and Technical Associations
Socio-Cultural Bodies.

The conference structure comprises five principal areas of interest:

(i) Natural resources and the environment
(ii) Community needs — facing the realities
(iii) The international economic order
(iv) Human values and social change
(v) The changing world order.

There will be keynote addresses at daily plenary sessions, while parallel sessions throughout the conference will enable delegates to follow their own particular interests.

Enquiries should be directed to The Conference Officer, P.O. Box 304, Grahamstown 6140.

Conference of metallurgists

The technical programme has been established for the 17th Annual Conference of Metallurgists sponsored by the Metallurgical Society of the Canadian Institute of Mining and Metallurgy. This year the Conference will be held in Montreal, Quebec, on 27th to 31st August, 1978, together with the 8th Hydrometallurgy Meeting.

Symposia on uranium, titanium, and hydrogen in metals will be featured as part of the programme, each consisting of three sessions and including specially invited papers. The following technical sessions are planned by the individual sections of the Metallurgical Society.

Basic Science	
Interfacial Phenomena in Metals	Sargent and Kirkaldy
Kinetics of Metallurgical Processes	Brimacombe and Pelton
General Physical Metallurgy	Baïlon
General Chemical Metallurgy	Masson and Toguri
Iron and Steel	McLean and Guthrie
Non-ferrous Pyrometallurgy	
Physical Chemistry in Non-ferrous Pyrometallurgy	Ajersch and Fairweather
Physical Chemistry and Process Metallurgy	Ajersch and Dugdale
Process Metallurgy	Dugdale and Webster
Titanium Symposium	Lee and Solar
Hydrometallurgy	
General Hydrometallurgy	Stanley
Corrosion in Hydrometallurgy	Berkovitch and Moniz
Solvent Extraction — Ion Exchange	Lackshmanan
8th Hydrometallurgy Meeting Uranium	Dutrizac and Cooper
Materials Engineering	
Coated Steels	Hyam
Heavy Sections for the Energy Industry	Hunt
Weld Quality in Automatic Welding	Goldak
ASM Hydrogen in Metals Symposium	Tyson
Materials Performance in High-temperature Aggressive Environments	Mills
New Developments in the Forging Industry	Gagnon
Corrosion	
Materials for Scrubbers	Moniz
Corrosion in Hydrometallurgy	Berkovitch and Moniz
Abrasion-resistant Materials	Moniz and Bruce
Minerals Engineering	
Abrasion-resistant Materials	Moniz and Bruce
Minerals Engineering	Bruce
Iron and Steel	
Continuous Casting in the 80's	Tomson
Billet Quality	Hutchison
Basic Science — Iron and Steel	McLean and Guthrie

The final technical programme with titles and authors of the papers will be published in the June issue of the *CIM Bulletin*; the complete programme including abstracts will be featured in the July issue of that publication.