

6. Gold production in section i
 $GDE(i) \times T(i) = AU(i)$ for all i
7. Profit contribution of area i
 $RPGRAM \times AU(i) - ZLCS \times SL(i) - ZMCC(i) \times C(i) = CONT(i)$ for all i
8. Lower bound on average grade
 $ZMINAU \times TOTTON \leq TOTAU$
9. Upper bound on average grade
 $ZMAXAU \times TOTTON \geq TOTAU$
10. Total contribution
 $\sum_i CONT(i) = TRD$
11. Total tonnage
 $\sum_i T(i) = TOTTON$
12. Total gold production
 $\sum_i AU(i) = TOTAU$
13. Total stope production workers
 $\sum_i SL(i) = TSPW$
14. Total face length allocated
 $\sum_i F(i,1) = FACE$
15. Capacity of mill located at A shaft
 $\sum_{i \text{ MILLA}} T(i) \leq MILLA$
16. Capacity of mill located at B shaft
 $\sum_{i \text{ MILLB}} T(i) \leq MILLB$
17. Maximum amount of labour to be allocated to each section
 $SL(i) \leq UPL(i)$ for all i
18. Minimum amount of labour to be allocated to each section
 $SL(i) \geq LOL(i)$ for all i
19. Maximum face length to be planned in each section
 $PF(i) \leq UPF(i)$ for all i
20. Maximum total stope production workers
 $TSPW \leq UPTSPW$

Student prizegiving

The second annual student prizegiving function of the South African Institute of Mining and Metallurgy was held in the Van der Byl Hall, University of Pretoria, on Thursday, 10th March, 1978. The main address (see opposite page) was given by Dr T. F. Muller, Chairman of Iscor.

The Institute introduced this annual function into its calendar to promote the development of student interaction in the departments of mining and metallurgy in the universities, and to encourage the recruitment of students into these departments.

The training of students is not limited to academic functions. A mining or metallurgical engineer requires more than a B.Sc. degree if he is to make a positive contribution in his chosen field of engineering. Leadership, resourcefulness and perseverance, and the ability to welcome challenge and meet adversity with fortitude are qualities that should be nurtured during the formative years at university.

The wish to recognize these qualities has led to the institution of prestige prizes to students, in the third or fourth year of study, who display the potential sought by the industry. In addition to academic performance, an important consideration is the contribution made to

student affairs and interaction with the department of mining or metallurgy. Book prizes are awarded to fourth-year students with the best academic records in a specialized field of mining or metallurgy.

The prizewinners for 1977 are as follows:

Prestige Prizes

- | | |
|-------------------|--|
| R. Gould | Department of Mining Engineering, University of the Witwatersrand |
| Miss D. Wiggill | Department of Metallurgy, Uni- versity of the Witwatersrand |
| A. W. de Villiers | Department of Mining Engineering, University of Pretoria |
| H. J. Marais | Department of Metallurgical En- gineering, University of Pretoria |

Book Prizes

- | | |
|-------------------|--|
| M. J. de Beer | Department of Mining Engineering, University of the Witwatersrand |
| K. Maske | Department of Metallurgical En- gineering, University of the Wit- watersrand |
| J. R. de Villiers | Department of Mining Engineering, University of Pretoria |
| J. C. Strydom | Department of Metallurgical En- gineering, University of Pretoria. |