TABLE X
A COMPARISON OF FORECAST AND ACTUAL PLANT RESULTS

Item	Bench test	Pilot-plant test	Plant results	
		(≈ 80 t)	Forecast	Actual
Water glass, g/t	900	800	600	550
Fatty acid, g/t	250	300	350	350
P.G.E., g/t	80	120	140	130
Feed grade, %	7,6	7,8	7,8	7,8
Final conct. grade, %	38,0	37,0	36,5	36,5
Recovery, %	—	78,8	70	70

bogged down at present by the complex interrelationships between the geology, mineralogy, and metallurgy), the development of methods for on-line analysis (NIM X-ray-diffraction system), the development of a reliable controller of levels in flotation cells, comparative testing of flotation cells (various makes and capacities), a feasibility study on the regrinding of phosphate tailings for the recovery of coarse apatite, and the testing of alternative materials (steel, rubber, polyurethane) for flotation cells.

(*d*) *Better Utilization of the Declining Ore Reserves*

This includes the processing of weathered foskorite and the development of flotation methods for the beneficiation of mixtures of foskorite and pyroxenite.

(*e*) *Development of Alternative Beneficiation Processes for Similar Types of Ore*

Such processes include autogenous milling (dry) and the extraction of apatite by high-intensity magnetic separation.

(*f*) *Development of Beneficiation Processes for Ore from Other Sources*

Such a process is the flotation of apatite from PMC tailings.

New developments usually involve the following steps: bench tests in a laboratory, pilot-plant tests, parallel tests in a plant, a full-scale plant run, and an evaluation of the plant results as against the results obtained in the bench and pilot-plant tests. This last step is very important since this information can give the operating staff a very good indication of how to evaluate any future bench and pilot-plant results.

Recently, Foskor conducted tests on the flotation of a new combination of ore, and tried to forecast plant results from the pilot-plant results. The results of this exercise are shown in Table X.

After some experience in using this method, one can, with reasonable accuracy, forecast plant results from the results of bench and pilot-plant tests.

Conclusion

Very important aspects in the construction of metallurgical plants are the establishment of all the design criteria well in advance, and the use of proven equipment of maximum unit size in the plant. There are great advantages in the use of large units, including lower capital expenditure per ton of product, savings in building space, and lower maintenance costs because of the smaller amount of revolving machinery.

The limited number of qualified metallurgical personnel available at present have to be organized into a practical structure, and very strict control must be exercised on the use of reagents since these costs represent a high percentage of the production costs. Research work into the replacement of expensive reagents with cheaper equivalents, as well as reducing the overall consumption, ensures the stabilization of reagent costs in the future.

The system used for the reporting of production data must be cost-centred, and must permit comparison of the data with design or budget figures on a daily basis, any variances being investigated immediately. In addition, a planned maintenance system is essential if the equipment is to be utilized fully.

Letter to the Editor

With reference to the recent questionnaire in the December 1980 issue on 'The Contents of Journals', I have made the following observations.

1. While only 8,8 per cent of the subscribers replied, they indicated by 25 votes to 23 that more articles on mining were desired. In fact, in Volume 79 of the Journal, 34 per cent of the articles were on mining and 44 per cent on metallurgy. The other 22 per cent were articles of a general nature, e.g. finance, energy, and sales of minerals. In Volume 80, only 23 per cent of the articles were on mining, while 57 per cent dealt with metallurgy and 20 per cent were general.
2. In spite of the poor response to your questionnaire, it would appear that more articles dealing specifically with mining would be generally acceptable.

I would appreciate an indication of the Institute's intentions in this matter for discussion at the next general meeting of the O.F.S.–Klerksdorp Branch.

I. D. Macrae
Welkom.

Mr Macrae makes a very valid point. However, the Institute publishes all the papers (whether on mining, metallurgy, or general matters) that are accepted by the referees as being suitable for the Journal. The only solution is for our mining members to supply us with more papers.

Editor.