

- (ix) A certain amount of physical conditioning occurs.
- (x) *Saving in manpower*—the number of European supervisors and Bantu bossboys employed in climatic room acclimatization has been *cut to one third* of the requirement in underground acclimatization. A recent survey shows that in the 26 mines using the new methods the ratios of supervisors to the number of men being acclimatized are:

1 European supervisor to 3,780 acclimatizees
 1 Bantu bossboy to 430 acclimatizees

In the 8 mines still acclimatizing men underground by the Chamber of Mines methods the ratios are:

1 European supervisor to 1,340 acclimatizees
 1 Bantu bossboy to 138 acclimatizees.

By the end of 1969 it is estimated that 238,000 of the 250,000 Bantu miners being acclimatized

each year will be acclimatized by the new climatic room procedures and this will effect a saving in manpower of 100 European supervisors and 1,000 Bantu bossboys.

The direct financial benefit to the gold mining industry of acclimatization in climatic rooms can be calculated in various ways but it is doubtful whether it is less than between one and two million rand per annum.

REFERENCES

1. HODGSON, T. and KERENS, G. J. J. G., 'The design, construction and calibration of a surface climatic chamber.' *Mine Ventil. J.* 19: 137-148, 1966.
2. STRYDOM, N. B., WYNDHAM, C. H., WILLIAMS, C. G., MORRISON, J. F., BREDELL, G. A. G. and JOFFE, A. 'Oral/rectal temperature differences during work and heat stress.' *J. Appl. Physiol. (U.S.A.)* 20: 283-288, 1965.
3. WYNDHAM, C. H., STRYDOM, N. B., WILLIAMS, C. G., and HEYNS, A. J. A. 'An examination of certain individual factors affecting the heat tolerance of mine workers.' *J. S.Afr. Inst. Min. Metall.* 68: 78-91, 1967.

Notices

P.W.D. ROSTER OF CONSULTING ENGINEERS

(Extract from a letter from the Secretary for Public Works)

In recent years a large number of professional engineers has entered the consulting field. Although the names of most of these have been placed on the Department's roster of consulting engineers either as a result of representations made by the South African Association of Consulting Engineers or by applying direct to the Department there are still some who seem to think that canvassing through an influential person is necessary to obtain commissions from the Department.

The Department's roster is open to all registered professional engineers who are suitably experienced to undertake consulting work and commissions are awarded strictly on merit. I shall appreciate it, therefore, if registered professional engineers who wish to be considered for commissions by the Department could be advised that they must apply, in the first instance, to be placed on the Department's roster.

On receipt of such an application a questionnaire listing all the information required by the Department will be forwarded to the applicants for completion and returning to the Department for record purposes. All names which appear on the roster are taken into account when a commission has to be awarded, due consideration being given to factors such as geographical position, seniority, capability and compatibility.

AMERICAN SOCIETY OF MINING ENGINEERS 1970 FALL MEETING AND EXHIBIT

The Secretary for Commerce has passed to us a letter received from the American Society of Mining Engineers, reading as follows:

"We would be delighted to have South Africa attend our meeting next year and to exhibit some of their mining equipment in our Technological Information Exchange. The 1970 SME Fall Meeting and Exhibit will be held in St. Louis, Mo., October 21-23, 1970, at the Kiel Auditorium. The AIME World Conference on Lead & Zinc Mining and Metallurgy will be an integral part of our meeting—and an added incentive to attend.

It should be understood that we discourage the showing of actual mining equipment and encourage the manufacturers and suppliers to send their engineers to man the booths. We hope that the exhibits will endeavour to put across their story by means of photographs, drawings, models and literature, rather than by display of prototypes of the actual equipment.

We will be happy to welcome manufacturerers from South Africa as well as the mining engineers who, from time to time, have registered at our meetings."

For further particulars, interested parties may write to the Society of Mining Engineers, 345 East 47th Street, New York, N.Y. 10077, U.S.A.

source of inspiration to all concerned to know that Mr Louw identified himself so completely with their efforts and had such confidence in them.

The excellent planning and execution revealed by the paper leaves me with little opportunity for critical comment. However, there are several thought provoking aspects.

The first that comes to mind is the question of whether we are right to assume that a major inflow of water is inevitable when we are mining in an area where the rocks contain water bearing fissures. The authors remark, and I concur with their view, that the sag and consequent fracturing of the hangingwall is a major factor. There are ways in which such sag can be limited, perhaps by the installation of relatively incompressible support such as sand filling followed by grouting of the hangingwall in selected areas. Or perhaps we could consider leaving a carefully designed system of pillars. Recent advances in Rock Mechanics should assist substantially in assessing the possibility of such action. It seems to me that we would do well to initiate some research into this problem.

The second thought that comes to mind is the vexing problem of estimating the pumping and storage capacity which we should instal in order to safeguard our mines against such major inrushes. We must admit that at present our estimates amount to almost pure guesswork and some vague idea that if our pumping capacity exceeds the actual pumping rate by a factor of three or four and we can store some hundreds or thousands of millions of gallons we should be safe. The events at Merriespruit and West Driefontein illustrate forcibly how fallacious such reasoning may be.

I refuse to believe that the problem is so intractable that with some diligent research we could not substantially improve our estimates. Established techniques in geohydrology coupled with the use of available computers and statistical methods should provide very useful results. Perhaps I can indicate very briefly a possible line of enquiry by discussing the factors governing the rate of inflow.

There are three permeability environments to be considered. The excavation itself in which I include the friction provided by the orifice; the fractured zone around the excavation and the aquifer itself—this is the undisturbed fissured formation itself.

In considering the possible magnitude of a major inrush we may start off by assuming that the orifice is

so large that its resistance to water flow is negligible. This leaves us with the permeability of the fractured zone and the fissures in the formation. Here again we can assume that friction losses in the fractured zone are very small in relation to those in the formation; a not unreasonable assumption. This leaves us with the properties of the aquifer itself and here we have at our disposal useful geohydrological tools. In fact an analysis of the measured pressure build up after closing the plugs at West Driefontein and the excellent assessment of the rate of inflow should give good approximations of the coefficients of storage and transmissibility of the aquifer from which the water was derived.

Naturally such factors as the effects of turbulent flow and vertical variations in the coefficients defining the properties of the aquifer must be taken into account and also the effects of ground water barriers. Time does not permit me to deal with these aspects beyond pointing out that techniques exist or could in my view be developed to deal with such problems.

It seems to me that some research into this problem would not only be well worthwhile but also has a good chance of success.

We are indebted to Mr Cousens and Mr Garrett for presenting such a lucid paper. It provides us with three particularly valuable conclusions.

The first is that the design criteria for plugs are valid and we may with considerable confidence use them should the need arise again in the future.

The second is that when mining in water-bearing strata we must provide, as soon as possible, adequate water storage capacity to protect the pumps and to give us time to construct plugs.

The third is that the present design of bulkhead doors is inadequate and requires revision.

AUTHOR'S REPLY

Many of the contributions have given an extremely valuable addition to the knowledge that the paper is intended to record for the future. Other than this, I do not think I can make any comment on the contributions made. I might take up an issue with Dr Venter on the design of bulk-head doors. I have no complaint against the design of the actual doors, but I do have complaint with the design of flange joints for pipes through plugs, and I consider that the Achilles Heel of a plug is likely to be any sort of a hole or service through it.

Notice

VI INTERNATIONAL MINING CONGRESS, JUNE 1970

This Congress will be held in Madrid from June 1-7, 1970. In addition to inaugurating the new Palace of Congresses and Conventions of the Ministry of Information and Tourism, there will be simultaneous exhibitions on mining machinery, and on the History of Mining in Spain and the Spanish-speaking countries. A number of

technical excursions will visit the most important mines in Spain and Northern Africa between June 7-13.

The theme of the Congress is "Science at the service of the Mining Industry."

Copies of the first congress information leaflet are available at the offices of the South African Institute of Mining and Metallurgy.

Notices

METRICATION

In 1962 the Government appointed a committee to investigate the desirability of a change-over to the metric system in South Africa. That committee reported to Parliament in 1965 and in the following year the Government decided in principle that South Africa should switch over. A Metrication Department was established within the South African Bureau of Standards, and starting dates for Metrication in numerous fields have been suggested. Target dates for commercial metrication will be final when published in the Government Gazette. Certain packaging and marketing regulations have already been issued in metric units, and many others will be following at regular intervals.

The reasons for the change-over and the many expected advantages have been widely publicised. It is now necessary for the proposals to be put into effect and your Council requests that authors use the SI system of units in all papers and contributions submitted for publication in the *Journal* from August, 1970 (Issue No. 1 of Volume 71). In order to assist members in following papers in the initial stage of the change-over, a conversion table of actual quantities in SI units, appearing in articles, to the equivalent foot-pound-gallon quantities should be given in an Appendix until complete metrication is achieved.

The *Système International d'Unites* (S.I.) is the system of metric units formally approved in 1960 by the General Conference of Weights and Measures and recommended by the Metrication Board for use in South Africa. It is a coherent system in which there are six basic units (metre for length, kilogramme for mass, second for time, ampere for electric current, kelvin for thermodynamic temperatures and condela for luminous intensity), from which are derived all other units, such that they are products or quotients of the fundamental units only, e.g. the unit of force is newton (N) for kilogramme metre per square second (kg m/s^2).

The South African Bureau of Standards has published "Basic Guide to the Metric System in South Africa," and this will be found useful in following the new system. In particular one of the first changes affecting authors is that the current practice of using commas for separating groups of digits for ease of reading is replaced by grouping of digits in threes counting from the decimal point towards the left and the right. Authors are requested to adopt this change without delay.

P.W.J.v.R.

INTERNATIONAL CONFERENCE ON THE SCIENCE AND TECHNOLOGY OF IRON AND STEEL

This conference will be held in Tokyo, Japan, from 7th to 11th September, 1970 under the auspices of The Iron and Steel Institute of Japan.

There will be seven sections: (1) Ironmaking; (2) Steelmaking; (3) Physical Chemistry of Iron- and Steelmaking; (4) Rolling of Iron and Steel; (5) Sheet Metal Forming and Formability (under joint sponsorship with International Deep Drawing Research Group); (6) Physical Metallurgy of Iron and Steel, and (7) Educational Problems in Metallurgy.

A series of technical visits to several of the larger steel and metal industries, and to EXPO '70, are offered. There will be sightseeing trips for the ladies during the conference.

Further information can be obtained from the Conference Secretariat, c/o The Iron and Steel Institute of Japan, Keidanren Kaikan, No. 5 Otemachi 1-Chome, Chiyoda-ku, Tokyo 100, Japan.

HUGE RESPONSE TO ENGINEERS' REGISTRATION

The deadline for the mandatory registration of professional engineers engaged in private practice (consulting engineers) in South Africa with the South African Council for Professional Engineers (SACPE), has been extended by six months to 14th March, 1970 from the original 14th September, 1969.

This is largely because the administrative staff of SACPE has been overwhelmed by thousands of applications and steps had to be taken to relieve the pressure and enable registration to progress in an orderly manner.

More than 6,000 applications for registration under the various categories provided for in Act 81 of 1968 were received by 14th September and are being processed in SACPE's offices in Kelvin House, Hollard Street, Johannesburg.

This is a very encouraging indication of the interest of our country's engineers and shows that registration was inaugurated at an opportune time.

The large number of applications are considered very thoroughly by the Registration Committee of SACPE.

Until the end of August, 1,130 engineers had been registered and 600 applications held back after examination until more information is available. So far only 104 applications have been refused since the committee is careful to ask for more information if there is any doubt in a particular case.

The Registration Committee meets weekly to consider applications and attempts to deal with matters as rapidly as possible. It considers between 100 and 200 applications weekly.

Applicants will realize that it may take a considerable time before all applications are dealt with. Meanwhile persons whose applications were received before 14th September will not be penalized if their applications are not considered until later. In view of the importance of the task, over hasty procedures must be avoided.