

3. Drilling of shell ends without relation to liners to be installed subsequently.
4. Elimination of "specials" and odd size liners.
5. Foundry problems in relation to design and bolt hole positioning.

Liner users would do well to take up further his line of thought and act firmly. Too long has the field of liner design been a Tom Tiddler's ground for all and sundry, from buyer, through engineer to reduction officer to play in, and his line of thought clearly indicates that the time is ripe for specialist work. While we drew largely on years of experience in our several fields of work, perhaps now study should recommence right from the basic fundamentals of milling knowledge, forgetting what has gone before and developing from first principles. In so doing such important features as optimum liner design in relation to mill speed, establishment of strict alloy specifications, organisation of a rigid inspection scheme of liners prior to use or acceptance, and standardization of sizes and shapes etc. might possibly be resolved for once and for all.

Finally I feel that all those who offered comment will agree that we have far from reached the end of the road. Having laid down my own ox goad I can only hope that another will take it up and be sufficiently dedicated and use it ruthlessly, for no harder task can be found than that of rousing some folk to a state of enthusiasm on something they may regard as a dull subject.

Throughout this reply I have often used the plural 'we' in expressing opinions with which I believe the late Dr Lissner would have concurred. In conclusion I can but pay my own small tribute to his sterling work. After our first meeting, his rapid adaption to my side of the job, which was new country to him, and the way in which he brushed up my many years rusty physical metallurgy were truly remarkable. One could not have possibly wished for a happier collaboration and on his death I lost not only a respected colleague, but also a very fine personal friend. If his tragic end was just like so many of those metal breakages that he investigated, a fatigue fracture, I am sure that he will emerge from the melting pot of eternity as pure refined metal. Vale, Otto.

NOTICE

TECHNICAL CONFERENCE ON TIN

The Department of Mineral Resources of Thailand is organising, on behalf of the Government of Thailand and the International Tin Council, the Second Technical Conference on Tin. The Conference will be held at Sala Santitham, Bangkok from 18th to 22nd November, 1969. Papers will be grouped under three main headings:

- (i) Geology and prospecting;
- (ii) Mining and ore dressing;
- (iii) Miscellaneous, e.g. stimulating production, metallurgy, estimation of reserves etc.

Pre-prints of papers will be circulated. A field trip to Southern Thailand has been arranged for 25th November to 2nd December, 1969.

Details of the Conference and the field trip can be obtained from Mr. W. Fox, International Tin Council, Haymarket House, 28 Haymarket, London, S.W.1, England.

ABSTRACT

FAN EFFICIENCY DETERMINATION FROM AIR TEMPERATURE MEASUREMENTS

By A. Whillier*, A. D. Maken, A. C. Chagan and H. A. Alli†

The South African Mechanical Engineer, Vol. 18, No. 6, January 1969, pp. 125-132.

The results of extensive tests on a 22½ in. diameter axial fan and two centrifugal fans have established that the variation of temperature of the air across the duct on both the inlet and outlet sides of the fan is small. Thus, the rise in temperature of the air across the fan can be measured quite easily to an accuracy of about $\pm 0.05^\circ\text{F}$. The downstream measurement must be made at least 5 diameters from the fan. It is demonstrated how this temperature rise, together with the pressure rise, can be used to determine the efficiency of the fan. The air flow rate need not be measured when determining the efficiency in this way. Tests over the full operational range of the axial fan demonstrated that the efficiency of the fan determined in this way is as accurate as that determined in the conventional way using a venturi or orifice plate to measure the air flow rate. The method is shown to be eminently suited for the routine checking of any industrial or mining fan having a pressure rise exceeding a few inches water gauge.

The equation used to calculate the fan efficiency from the measurements is:

$$\eta = \left(\frac{0.00667}{\rho C_p} \right) \left(\frac{\Delta p}{\Delta t} \right)$$

where: ρ is the density of the air, lb/ft³ (mean of inlet and outlet densities)

C_p is the specific heat of air at constant pressure, Btu/lb, °F

Δp is the increase in pressure of the air across the fan, inch water gauge

Δt is the measured rise in temperature of the air across the fan, °F.

NOTICE

INTERNATIONAL CONFEDERATION FOR THERMAL ANALYSIS (ICTA)

A new international association has been established to keep interested scientists in touch with developments in this interdisciplinary branch of science through newsletters, to promote international understanding and co-operation in thermal analysis, and to organise periodic conferences at which problems can be discussed. The next conference will be held in Switzerland in 1971.

The South African representative on the Council is Dr. T. L. Webb, Director of National Building Research Institute of the C.S.I.R., P.O. Box 395, Pretoria.

*Mining Research Laboratory, Chamber of Mines of South Africa.

†Students, Department of Mechanical Engineering, University of the Witwatersrand.

NOTICES

SECOND CONGRESS OF THE INTERNATIONAL SOCIETY FOR ROCK MECHANICS

This Congress is to be held in Beograd (Belgrade), Yugoslavia from 21st to 26th September, 1970. The very extensive agenda includes working sessions, study tours, receptions, excursions, and discussions on theory, laboratory investigations, *in situ* measurements, observations and practical application in the following main categories:

1. Intrinsic properties of rock masses.
2. Deformability of rock masses.
3. Mechanical resistance of rock masses.
4. Underground works: stresses and interaction between rocks and support.
5. Comminution.
6. Improvements of the properties of rock masses.
7. Stability of natural and excavation slopes.
8. Behaviour of rock masses as structural foundations.

The date for preliminary registration is 1st December, 1969.

The first bulletin will be available shortly from:

Sekretarijat 2 kongresa Medjunarodrog drustva za mehaniku stena.
Institut za vodoprivredu 'Jaroslav Cerni,'
Bulevar vojvode Misica 43, Beograd—Jugoslavija.

The official languages of the Congress are English, French and German. Simultaneous translation services will be provided at the Congress.

DEVELOPMENT ATLAS OF THE REPUBLIC

The Department of Planning is engaged on the compilation of a Development Atlas of the Republic, which should be of value to enterprises requiring information on development potential, and for planners in various fields.

Good progress has been made on this comprehensive project, covering a very wide field of interests, and a number of sections are already obtainable from the *Government Printer*. The atlas consists of loose leaves (size 22 in. by 19 in.), and a hard cover for binding is available.

Each section consists of one or more maps in colour, accompanied by one or more pages of description, together with tables and other figures where required, and provision has been made to supplement data in the future. A person need only acquire those sections in which he is interested.

The sections already completed are of a high standard, and should be available to the staff of every progressive organisation. The prices are modest.

P.W.J.v.R.