

ON THE MANUFACTURE OF REFRACTORY MATERIALS

Mr. Albert Cliff (Stamford) spoke "On the Manufacture of Refractory Materials," putting forward in a general way the makers' point of view.

My function at this meeting is to say a few things from the makers' point of view, which could not find expression at a better time or on a more fitting occasion.

I feel sure I correctly interpret the feelings of our fire-clay and silica manufacturers—especially those associated with the Society of British Gas Industries—when I say how much we appreciate your growing interest in refractory products. We owe a debt to several gentlemen who are here to-day. We owe most, perhaps, to the quiet personality of Dr. Mellor, who has already done a large body of enduring work, and who is the special object of our goodwill.

So far as I know, the bulk of the British makers of refractory articles have restricted manufacture almost wholly to the output of retorts, blocks, and bricks in fire-clay or silica. A good deal of controversy has in recent years gathered round the making of retorts used for the manufacture of town gas. Although the controversy referred to is now a matter of history, a few general remarks on the subject of retorts may perhaps be usefully made here. One of the best means of effecting the elimination of expansion and contraction, and incidentally effecting an economy, would be secured by the return of old material which has done service over a period of years at varying temperatures back to the seat of manufacture. The material is no worse for discoloration by carbon, which would burn off on re-manufacture. Partially fused or slagged pieces would require to be kept out. Although there is a cleavage of opinion among gas engineers as to which is the better—hand-made or machine-made retorts—it may be put on record that this country pioneered the manufacture of retorts by machinery.

Makers have hitherto mostly concerned themselves with the supply of acid refractories. But in the basic and neutral groups there is an inviting prospect for the application of manufacturing skill. There are difficulties peculiar to the present time. There is not the same abundant importation of minerals as in normal times. Cost is also a deterrent just now. These temporary difficulties we ourselves are endeavouring to surmount by fastening working surfaces of chromite, magnesite, or other minerals calculated to secure furnace linings against corrosion or attack from various causes on ordinary fire or silica bricks. Like most things in clay, it opens out more complications. It is a variation of the facing or engobing of bricks, of which most of us have had experience. I have brought a few samples down for your inspection, and I may say we have already had considerable encouragement.

THE MANUFACTURE OF REFRACTORY MATERIALS 171

What are the practical uses of this meeting? We are here to learn wisdom from the past, and it should be still more easy to learn wisdom from current events. We know full well that the whole fabric of our ideas needs searching reform. To set about this is better than wailing about the past. There has never been a time since brickmaking began when an industry was more aflame with earnest longing for improvement, and while it can never go back, rolling along the old channels, everything that can be done to promote a better order should be done now.

Work of great urgency awaits both the chemist and the craft in making an organized investigation into the commercial value of chromite, magnesite, graphite, and other minerals reported as abundant in the Colonies. I want to say with respect that laboratory tests which could speedily be carried out are not enough. Years of patient observation are frequently necessary in order to establish the quality and fitness of such materials under practical conditions.

If, too, the industry is to occupy its rightful position, it will have to be founded on an improved education; and although statesmen may be slow to come to our aid, still there is room for action. The Faraday gift was never more needed in this country than now. If we could secure men of science to communicate more freely facts and principles to the youth of the fire-clay districts, speaking to them about and exhibiting to them gases and materials, I am certain that at small cost to the mind you would render invaluable aid. It is not to be forgotten that we are on the eve of the greatest industrial opportunity this country has ever had, and we are in less danger of wasting it if chemists of the right sort would go down occasionally to the leading fire-clay centres and, supported with all the influence which employers can bring to bear, speak with appropriate clearness to the rising race. In the past they have been left sadly too much to their own unguided intuition, when steps should have been taken in some such way to rouse them to reflection on their task. It is almost unnecessary to suggest that there is embraced in some of the commonest materials, such, for example, as "a piece of silica," a story as arresting to the vulgar as anything inside a picture house. I may be forgiven if I bluntly tell of an incident within my own knowledge which occurred at a works in Yorkshire County. Owing to the shortage of prepared fire-clay, an employee was called upon to leave the works before the appointed time. "What is tha going hoam for, Bill?" shouted a fellow-worker; to which Bill subjunctively replied, "Becoss thear is noa muck." There is coarse humour in this, but we dare not in the coming time perpetuate the unbroken night in which the majority of our workers have been reared. Our own hard-crusted indifference, which is the real criminal, must be broken up. If the spirit of the times is not sufficient, then the man who is powerful enough to do that will perform a national service. We greatly need more first-class minds given up wholly to the chemistry of the trade, but it is also obvious that these must have an intimate union with the minds of the workers, and I feel that a good deal is to be expected by accelerating a rise of specialized intelligence among clayworkers.

I believe the makers of refractory materials are alive to the responsibilities of the hour and preparing to be equal to all demands. We on our side expect much from our scientific friends. Hitherto the growth of knowledge, particularly in this branch, has been painfully slow. For thirty years I have personally endeavoured to absorb all the available information on clays, and although I have never been set down as a particularly sluggish student, I am much more distinguished for what I don't know than for what I do know about the endless complexities of this subject.

172 THE MANUFACTURE OF REFRACTORY MATERIALS

I sometimes think something like this was in the mind of the writer when he said—

“Were man to live coeval with the sun,
The patriarch pupil would be learning still,
And, dying, leave his lesson half unlearnt.”

However, it is peculiarly in the power of this meeting to speed up the good work, and coming here to-day will have been well worth while if it bears witness to the unity with which we shall carry on in the future.