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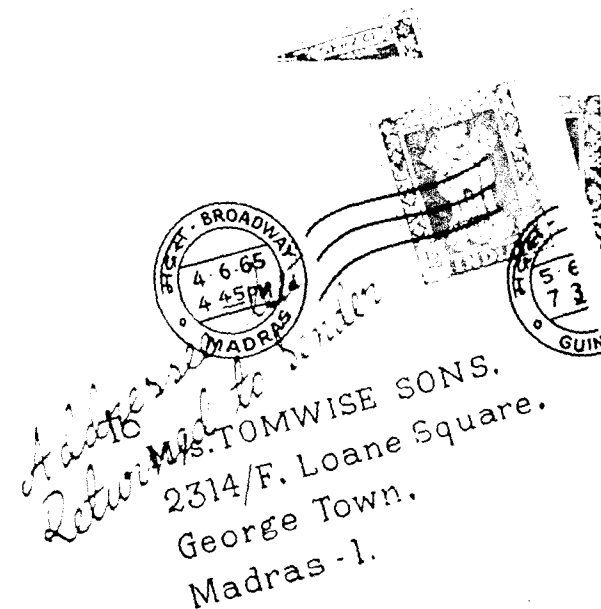
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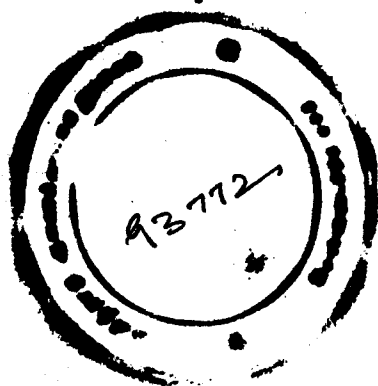
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IN THIS ISSUE

	PAGES
SOME ASPECTS OF THE MANUFACTURE OF CEMENT BY THE SHAFT KILN PROCESS	1-4
A NOTE ON BENZALDEHYDE AND ALLIED ORGANIC CHEMICALS	9-10
NEWS AND NOTES:	
Establishment of a Community Canning & Preservation Centre at Madras	15
Maintenance of Electrical Equipments	19
Production of Sulphuric Acid and Soda Ash	23
Committee for the Improvement of Starch Industry	25
Three more Industrial Estates Inaugurated	27-28
TELEVISION	29-30
REGISTRATION AND LICENSING OF INDUSTRIAL UNDERTAKINGS	31-70

SOME ASPECTS OF THE MANUFACTURE OF CEMENT BY THE SHAFKILN PROCESS



GENERAL

The methods of manufacturing Portland Cement may be divided broadly into two processes, viz., the wet and the dry process. According to the dry process, calcareous and Clayed materials are separately crushed and dried, compounded in suitable proportions, pulverized and then heated to incipient fusion in a kiln. The resulting clinker together with gypsum is finely ground into a fine powder viz., Portland Cement. In the wet process, on the other hand, no drying is effected at the raw material stage and the materials are pulverized and fed into a kiln in the form of a slurry containing upto 40% water. In other respects the wet process is the same as the dry process.

While the cement industry in India employs both the processes, the wet process is predominant. There are certain variations of the two fundamental processes which also lend to manufacture of cement under special circumstances, as for example, the semi-dry and the shaft-kiln processes. In the semi-dry process, raw materials as used in the dry process are sprayed with water (approximately 10%) and granulated at the Kiln inlet and fed into the Kiln. The Lepol system, in which besides a drum type granulator an endless travelling grate is used for feeding the granules into the kiln, is most common. In other respects, however, it does not differ from the dry process. The shaft kiln process is also similar to the dry process. The granulated raw materials are fed to the kiln and fired in the vertical kilns. As the Kiln performs also the work of cooling, a separate cooler is not required.

The first kiln for the manufacture of cement was built by Joseph Espdin a little more than a hundred years ago. The Kiln resembled the

conventional lime kiln. Modern methods of cement manufacture have been introduced since the last fifty years when the importance of correct chemical composition of the raw mix, the high temperature of burning and a fitness of cement were duly recognized. There has, therefore, been a continuous improvement of manufacturing techniques and in consequence, the quality of cement and economy of operation of cement plants have steadily improved. The early modified kilns used in the cement manufacture were shaft kilns. The Operation of these kilns were difficult, a larger manual labour was employed and the quality of cement was inferior. Later the shaft kilns were discarded by the cement industry as obsolete and replaced by rotary kilns. The rotary kiln plant represented a great improvement as it permitted the blending of raw mix in the form of slurry which, in turn, made it possible to achieve the required chemical composition in efficient and cheap operation. Thus with the introduction of rotary kilns, manufacturing operations in Cement Plants have become mechanised.



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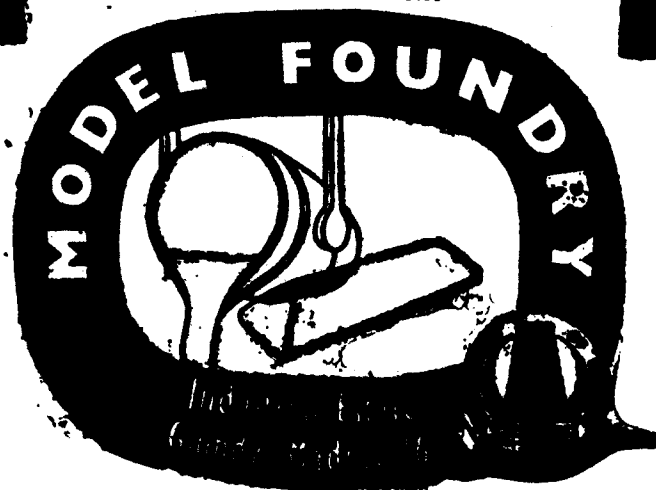
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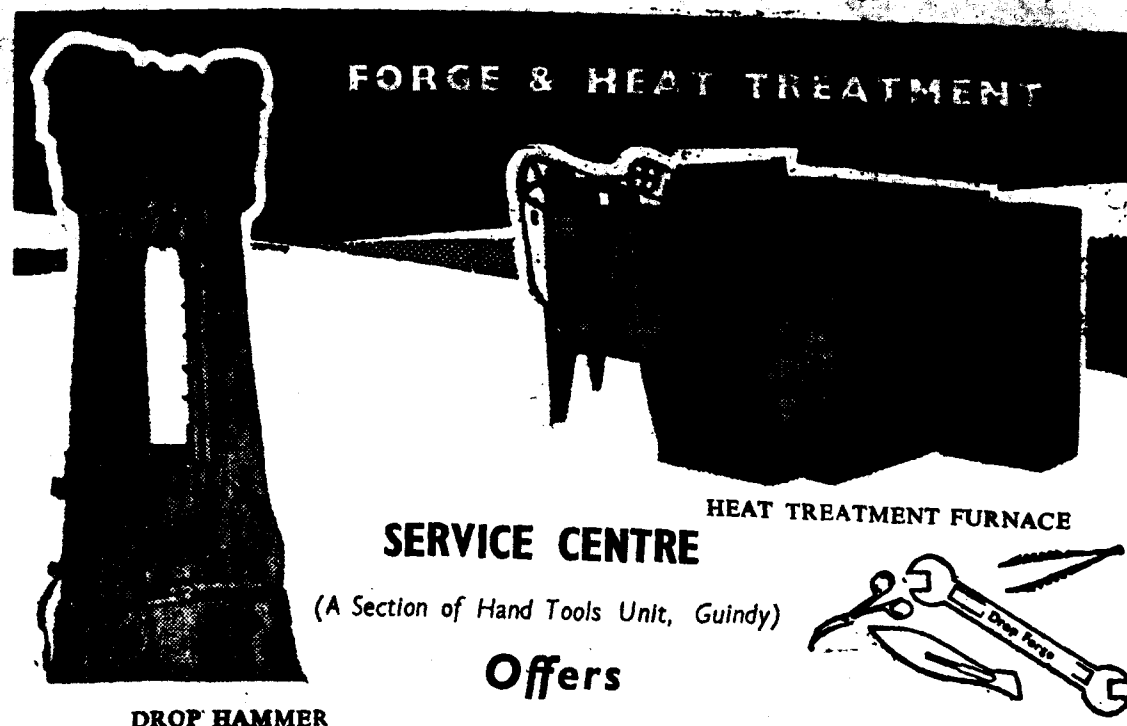
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A NOTE ON BENZALDEHYDE AND ALLIED ORGANIC CHEMICALS

Benzaldehyde and allied organic chemicals used in small quantities in many other such as Benzyl alcohol, Benzoic acid, and miscellaneous industries. Benzoic acid finds Benzyl Benzoate are important fine chemicals particular use as a preservative in foodstuffs. Finding wide application in a number of Following are the companies to whom licences industries. Benzaldehyde in particular is used have been issued for the manufacture of follow- in the dyestuffs and intermediate industry. ing chemicals. Of this, a capacity of 372 tons pharmaceutical, perfumery and food industries has been licensed for benzaldehyde, benzyl etc., Besides, these organic chemicals are alcohol, benzoic acid and Benzyl benzoate.

		M. Tons/ Year		
1. Hyderabad Chemicals & Pharmaceutical Works Ltd., Hyderabad.	Benzyl Chloride	... 180	No definite Progress so far.	
	Benzyl Acetate	... 84		
	Benzyl Alcohol	... 42		
2. S. H. Helkar Ltd., Bombay.	Benzyl Chloride	... 180	do.	
	Benzol Chloride	... 9		
	Benzyl Acetate	... 100		
	Benzyl Alcohol	... 35		
	Phenyl Acetic Acid	... 10		
	Benzaldehyde	... 4		
3. Aniline Dyestuffs & Pharmaceuticals (Private) Ltd, Bombay.	Benzyl alcohol	... 108	do.	
	Benzaldehyde	... 60		
	Phenyl acetic acid.	...		



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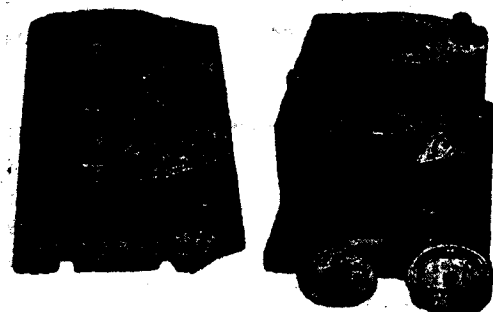
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PROFORMA REFERRED TO IN ITEM 11 IN FORM D (1)

**STATEMENT SHOWING THE RAIL TRANSPORT REQUIREMENTS OF M/s.....
FOR THE MOVEMENT OF RAW MATERIALS AND FINISHED GOODS FOR THE MANUFACTURE OF.....**

Exact location of the undertaking and railway station which will serve it	Commodity required to be manufactured	Quantities of finished products in tons required to be moved by rail year by year during the next few years		The direction-wise breakdown of traffic as stated in col. 8 on a daily basis indicating important stations / areas to which the despatches are to take place	Name of each raw material
		Annual movement (tons)	Daily average (tons)		
(1)	(2)	(3)	(4)	(5)	(6)

Source of supply of each raw material indicating stations and areas etc	Quantity of each raw material		Brief indications of special facilities if any required at the despatching and receiving stations including special types of wagons	Any other information relevant to railway transport requirements
	Annual movement (tons)	Daily movement (tons)		
(7)	(8)	(9)	(10)	(11)

PROFORMA REFERRED TO IN ITEM 14 IN FORM D (1)
STATEMENT SHOWING THE REQUIREMENTS OF COAL/COKE OF M/s.....

Exact location of the Undertaking and the Railway Station which will serve it	Grade, Class, etc., of coal/coke required		Quantity of coal/coke required per month	
	Coal	Coke	Coal	Coke
(1)	(2)	(3)	(4)	(5)

Source of supply indicating stations and areas	Date of commencing of the works	Type of burning equipment used
(6)	(7)	(8)

