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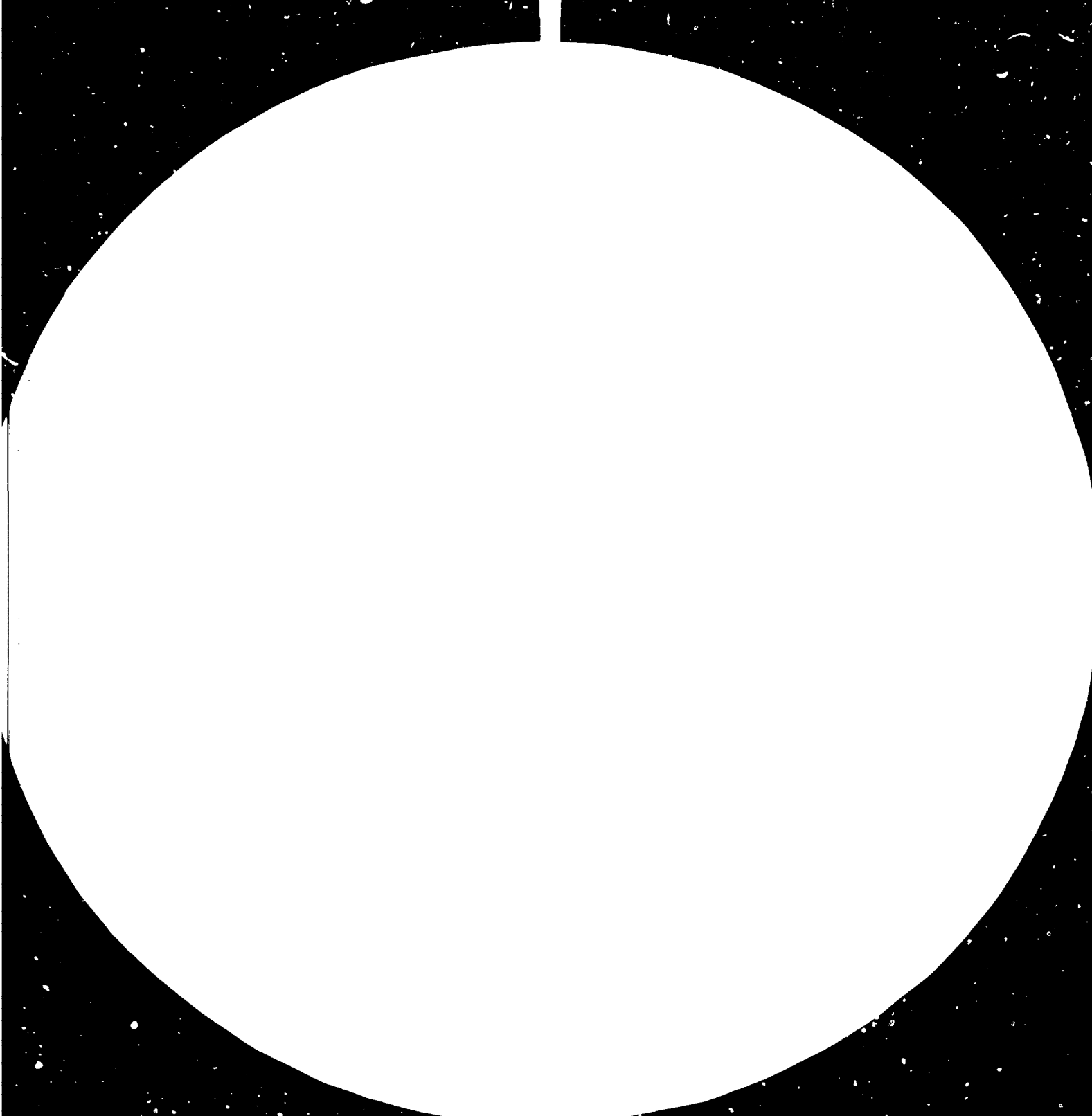

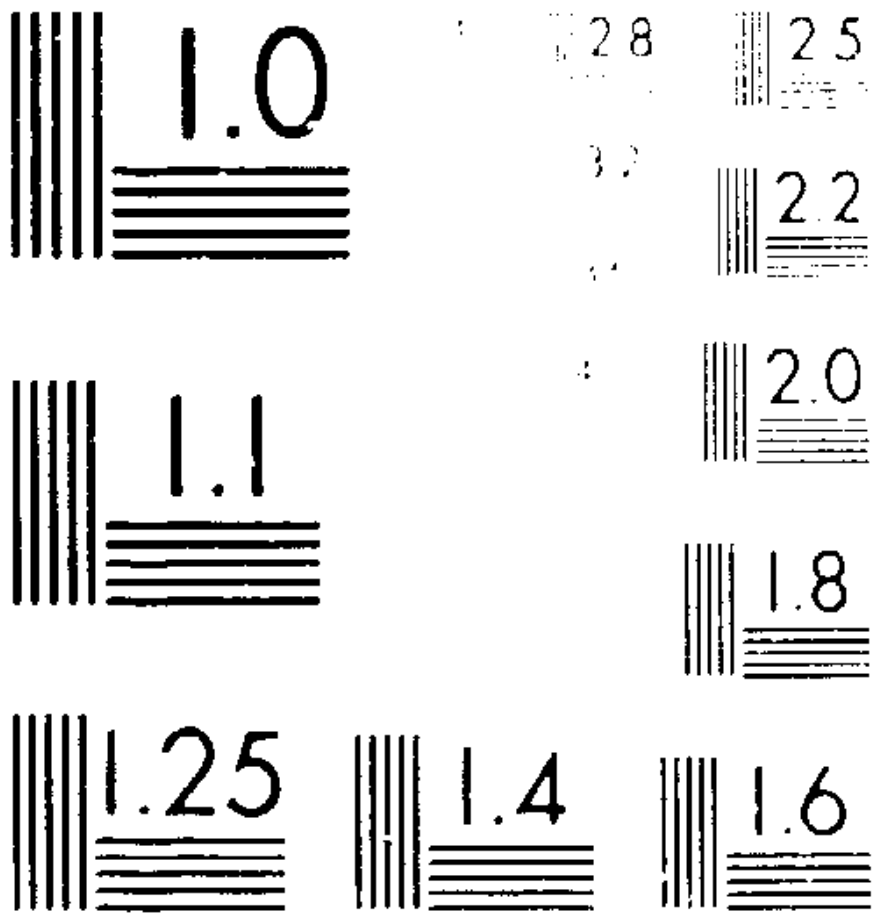
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PRODUCING BLOCK WITH MINIMUM CAPITAL - A PERSONAL EXPERIENCE*

by

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Introduction

Having inspected this morning a fully automated block plant I thought it may be of interest to hear something of a more labour intensive block production necessary when little investment capital is available.

Minimum Requirements

It is essential of course to have a suitable block moulding machine. A machine which properly regulates the feed of mix to the mould, adequately compacts the material in the mould and ejects the moulded block from the machine.

A means of feeding mix to the block machine and of taking moulded block away from the machine is also required.

When my company first commenced operation we made the mistake of starting with an unsuitable block machine. It was unsuitable because the nature of its operation required the block to be turned upside down as part of the moulding process. This led to distorted shape in the block. The compaction imparted to the block by the machine was also inadequate.

Having realized our mistake we then obtained a Columbia 5 Block Machine similar to that illustrated in the notes.
Using this machine production procedure was as follows:

Handling and Storage of Raw Materials

The gravel, medium sand and fine sand used in manufacture were dumped by the trucks on the ground near the mixer.
A Batch Box with compartments and pivoting on an arm was swung from one pile of raw material to another, the respective compartment being filled from each pile. The batch box was then swung by hand over the mixer and discharged. Cement was added from bags and water was volume batched from a container.

The mixer was a pan type mixer and after mixing was complete it discharged on to a short conveyor which fed into the block machine hopper.
The block machine moulded the block on to a wooden pallet which in our case consisted of marine ply. The pallets were fed into the machine one by one as illustrated.
When the block was ejected from the front of the machine it was then carried by hand to racks.

Curing

If the pallets used in block manufacture are inexpensive or the volume of production required is low enough, then it is possible to air cure the blocks.

However stacking green blocks on top of one another as illustrated is not recommended.

In our case we wished to steam cure the blocks so we used a form of trolley on a rail and built up racks made from star pickets to receive the hand transported pallet and block.

Production Capacity

The Columbia 5 Machine is capable of producing 1800 - 2000 actions with one 20.01 or equivalent per action in an 8 hour period providing sufficient labour is available to feed the mixer and take the green block away from the machine.

Moulds

In our case moulds were quite an expensive item because we had to produce a considerable range of block to compete in the existing market. However substantial economies can be made by producing full size blocks having planes of weakness from which fractional blocks can be obtained. In this way it is possible that only one mould may be required for each particular thickness of block.

Development of Increased Production

The plant as described is capable of being used as a nucleus of a much larger plant.

In our case we gradually increased production capability as follows:

a) We found it possible to convert the Columbia 5 block machine into a two block machine. This meant that we required larger wooden pallets on which to mould the block. We then found that two men were required to handle these pallets on to the racks so we built an off bearing device.

b) An offbearer is a hydraulically operated lifting device which lifts two pallets at a time from the front of the machine and the offbearer operator then guides the pallets and green block on to racks.

Where block is stripped from racks separately and when steel pallets are used on which to mould the block, magnetic off bearers can be used to return the steel pallets to the front of the machine where they are automatically fed through the machine ready for more production.

c) At a later stage to achieve increased production a rack loader and unloader was fitted in the front of the machine.

d) To improve mix capacity a larger mixer was installed together with overhead bins and bulk cement silos.

Conclusion

It is possible to establish a block operation producing quality block using little more than the basic block machine together with a mixer. Considerably more production labour is required compared with fully automatic plants.

Such a plant could then be expanded and automated in stages as production requirements increase and capital becomes available.