WALLS BY THE MILE

The story of plaster, lath and wallboard manufacture at the Long Beach Harbor plant of Kaiser Gypsum Company.



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Kaiser Gypsum Company's enlarged Long Beach plant. A 60 per cent expansion just completed increases the facilities annual capacity to 50,000 tons of hardwall and special type plasters and 210,000,000 square feet of gypsum board products.

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Long Beach's home-building boom is making history, but before the first new house could be erected back there at the start of it, somebody had to furnish the material.

Here is the story of how a Port of Long Beach industry — Kaiser Gypsum Company, Berths 45 and 46, Pier 1 — supplies an important material to not only local builders, but also builders throughout Southern California and Arizona. Kaiser Gypsum Company also supplies builders throughout the Pacific States from other plants located in the San Francisco bay area and the Pacific Northwest.

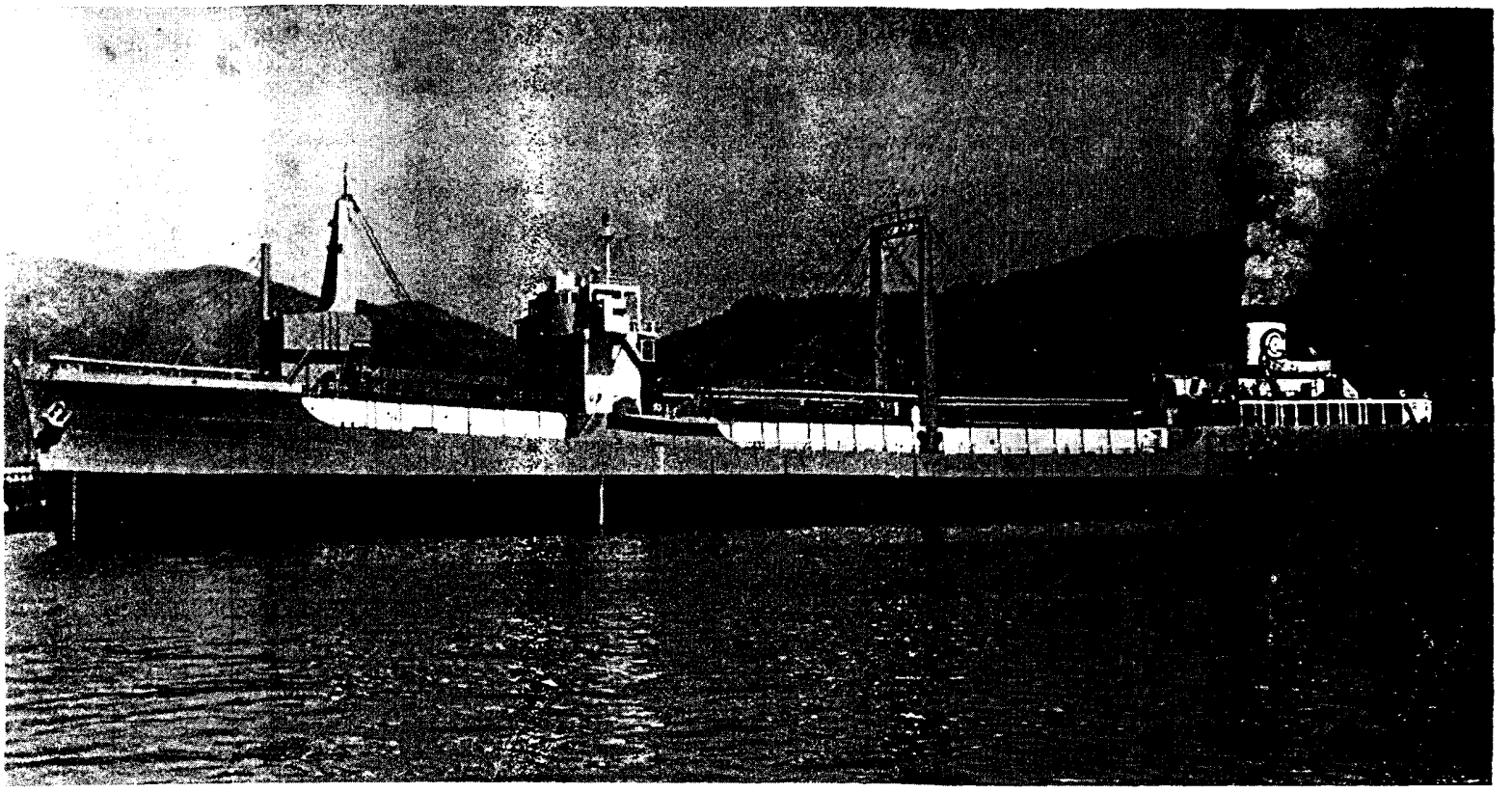
Gypsum, say the dictionaries, is hydrated calcium sulphate in crystalline (rock) form. It is found where, in the past, sea water has evaporated in enclosed places. This material the industry calls "ore."

Crushed and heated, gypsum ore gives up its "water of crystallization," much as cement does, and becomes a powder. Then when you add water to it and let it stand awhile, it "sets," and you have plaster.

For many years it was known as "plaster of paris," a name which is now given only to a particular type of gypsum products.

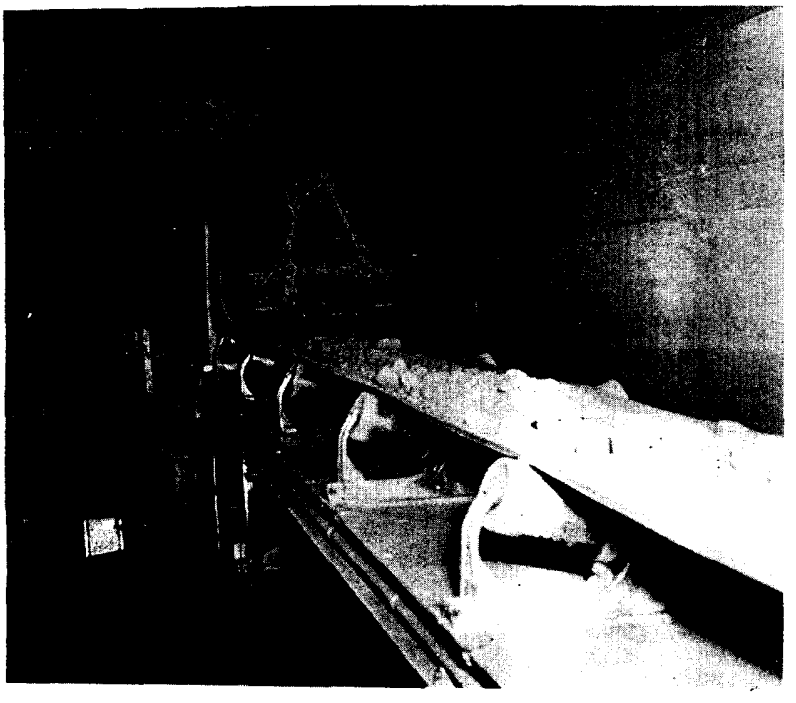
Gypsum ore comes to the Long Beach Kaiser plant by ship in the company's own ore carrier, S. S. HARRY LUNDEBERG. Another carrier is now under construction and will be added to the fleet when completed. With the advantage of a Harbor location, the company can ship its raw material direct to its own berth. And by means of self-contained unloading gear, the ship can discharge her cargo of ore in fourteen (14) hours or less.

The rock is dumped into dockside hoppers that let it down to a covered conveyor belt. On this belt the gypsum moves to the company's new dome rock-storage house, completed last year. A feature of the storage structure is that it has no ground supports or pillars to interfere with handling of ore. At the dome top, ore is distributed evenly in the enclosed area, and daily a bulldozer works it to keep it properly spread so it will feed by gravity down into the covered mill conveyor.



B) Kaiser's 10,000-ton ore carrier, SS Harry Lundeberg, transports ore from San Marcos Island, Mexico, quarries to Long Beach and other Kaiser plants. The ship carries its own unloading gear, which can discharge the cargo in less than 14 hours.

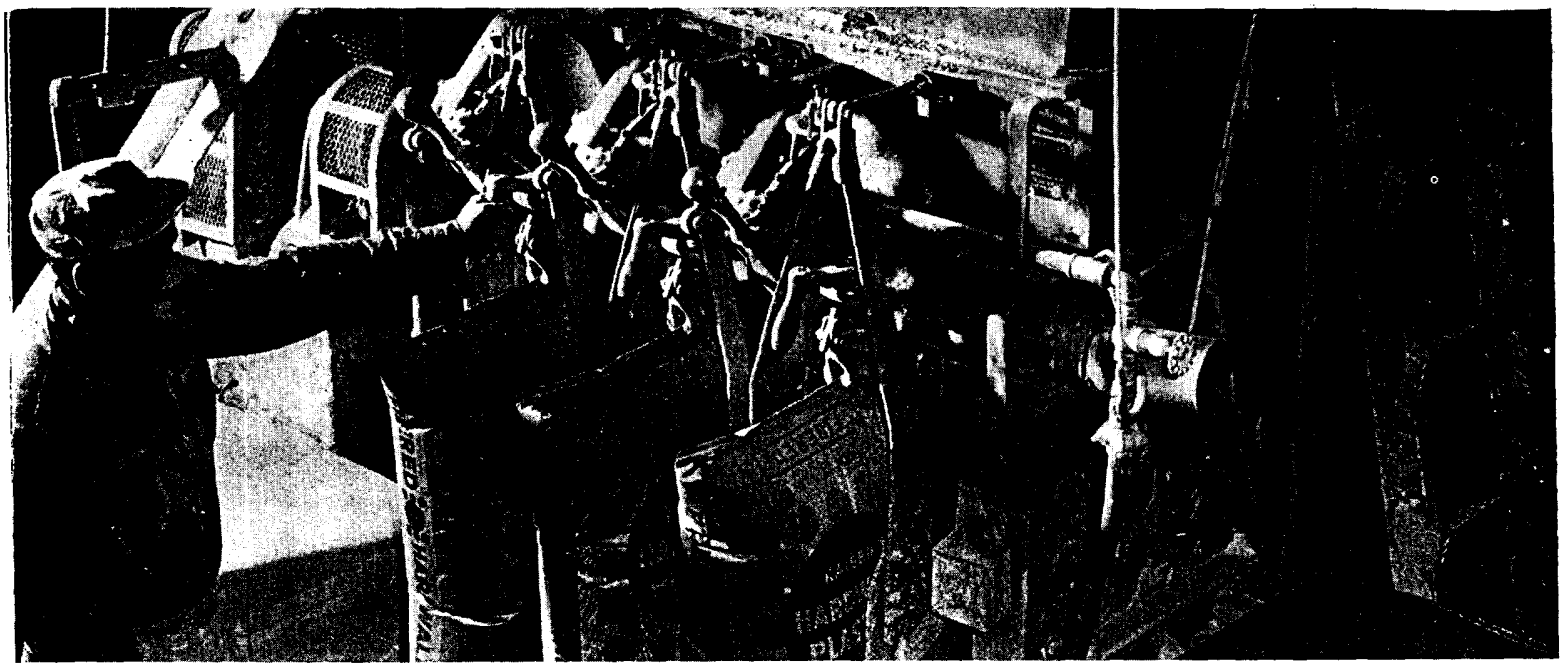
C) Gypsum ore off the carrier goes by covered conveyor to the dome storage building recently completed at the Long Beach plant. From there it is carried by this conveyor to a crusher. To clean the ore of "tramp iron" which might otherwies damage the machinery, an electro-magnet (left center) is suspended over the belt. "Tramp iron" means loose nails, bolts, and scrap picked up by the ore in transit.



The first stop of the ore, on the way to the mill, is through a hammer mill which reduces the rock from a 4" minus size to a 1" minus size. Thereafter it is conveyed to storage bins which feed the crushed rock into Raymond mills where it is ground to a powder, fine enough to be blown by an airstream back to another storage bin. The ground gypsum now goes to the kettles for cooking or as the industry calls it, "calcining." It is in these kettles that the whitish-gray powder is heated until it actually "boils" in its own water of crystallization. When it leaves the kettles, three-quarters of its water content has been removed and it will absorb water at the first opportunity.

Kaiser products of plaster, lath, wallboard and structural gypsum contain not only gypsum but also certain additives that improve the material for the uses to which it is put. To provide for a uniform product these added ingredients have to be accurately measured almost to the ounce. You imagine three or four seasoned veterans up there in the plant chosen for their sense of weight. shoveling the mix together with a skill nobody could duplicate! Not so.

A machine with a "brain" and a "voice" does the job automatically, tirelessly all day long. Manufactured by Jeffrey of Columbus, Ohio, it is known as a "Waytrol." Not only does it feed and control the mix of the "stucco," as it is called, but when it makes a "mistake," it literally "hollers."



G) Three-spout bag-packers — the 100-pound bags are filled and automatically weighed at 20 tons per hour. Self-sealing valves, situated in the filling hole of the bag, close when the bag is tipped and are kept sealed by the weight of the contents.

As it moves down the line the temperature of the material will increase approximately 20° from the chemical reaction created as the water recombines with the calcined gypsum, and the board gradually hardens, and is cut to specified lengths and automatically marked with the Kaiser stamp. At the line's end a device flops each piece over and sends it through the long dryer.

Kaiser people are proud of their product for its many fine points, and at the end of the drying process you see one of them. Kaiser wallboard is made oversize on the line, then sawed smoothly to the exact length in a finish cut.

The gypsum lath is packaged five to a bundle, the wallboard two to a bundle, and the plaster and other loose products are bagged. Fork trucks shuttle around the place, loading the output on flat cars and in box cars.

Kaiser Gypsum is said to be one of the largest — if not the largest — single user of railroad cars among Long Beach manufacturers.

With all the complex mechanisms around the plant, the company nevertheless has maintained an excellent safety record. This in the face of a 60% expansion in facilities over the past year and a half, with consequent employment of many new workers.

Because gypsum is fireproof, it makes an ideal protective covering for the wood or steel supports in a home or building. The length of time a wall covered with gypsum lath and plaster or wallboard will contain a fire is commensurate with the thickness of the gypsum covering.

In addition to lath and other products, the company makes a joint cement to fill the seams in wallboard joints left by the tapered edges, much as the seams in a boat are calked.

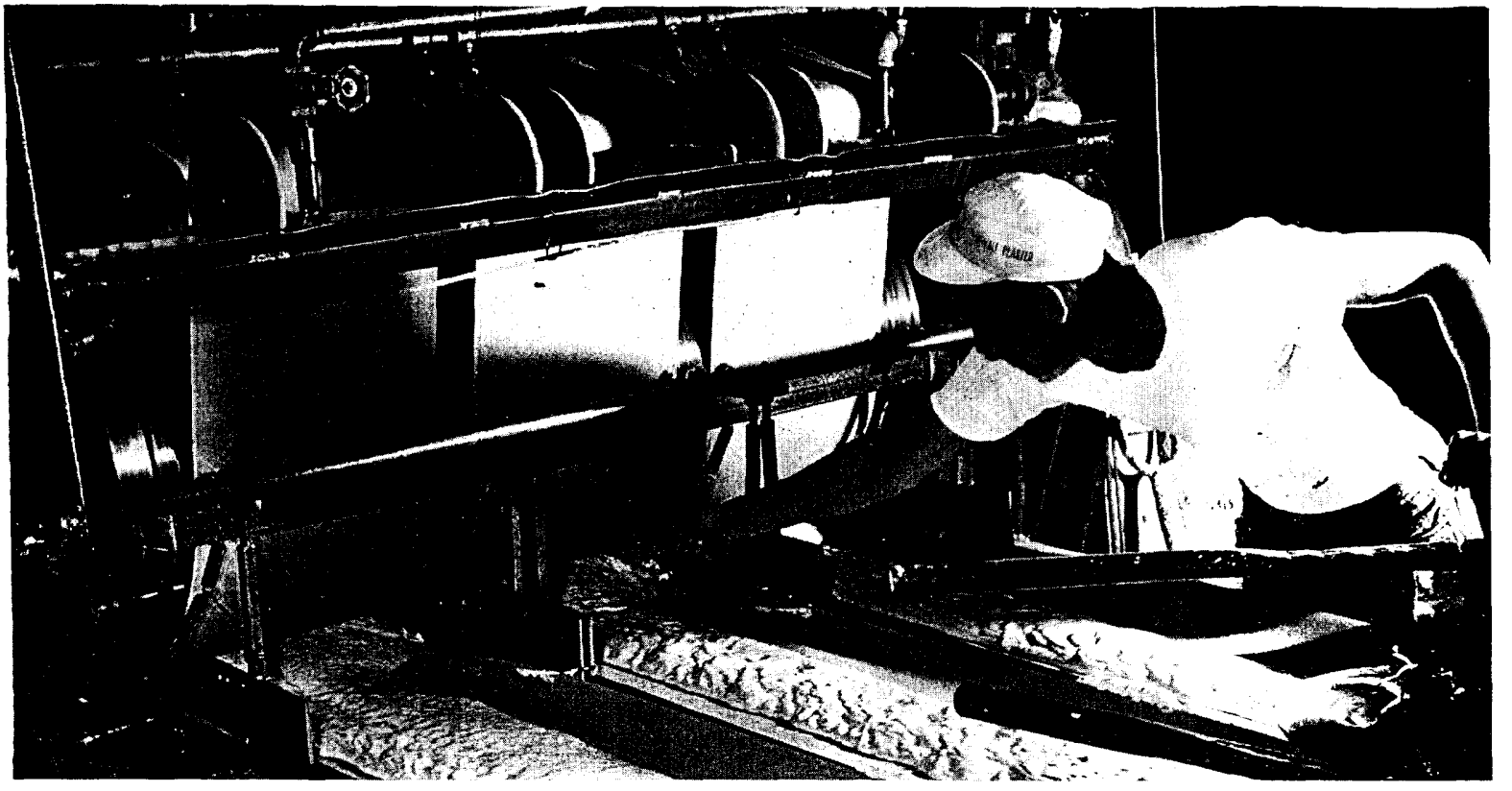
It is reported that lumber is the only building material more commonly used than gypsum in the construction of homes. Recently the National Association of Home Builders reported that the two most critically short building materials were cement and gypsum. Although Western building construction exceeds the national rate, no West Coast construction has been known to be held up because of lack of these two materials. Kaiser Gypsum's increased production has helped to minimize shortages in this area.

As with most industry, salvage is big business at Kaiser and everything that can be turned to use again is used.

"So far we've encountered only one salvage problem we can't solve," said Phil Harrigan, the company's public relations director here. "That is the part that is left over after the holes in perforated gypsum lath have been punched out. We are in the same fix as the baker, when people ask him what happens to the hole in the doughnut. We don't know yet, but our research department is working on the problem and we anticipate finding a way to utilize this material in the near future."

H) Structural gypsum — a gypsum concentrate, for use as roof decks on industrial and commercial structures, is here being laid by workmen.





On the floor below, where the wet mix and paper layers meet and are united into lath and board under the forming rolls, a large instrument panel stands at one side of the area. Dials tell the operating story of the Waytrol there.

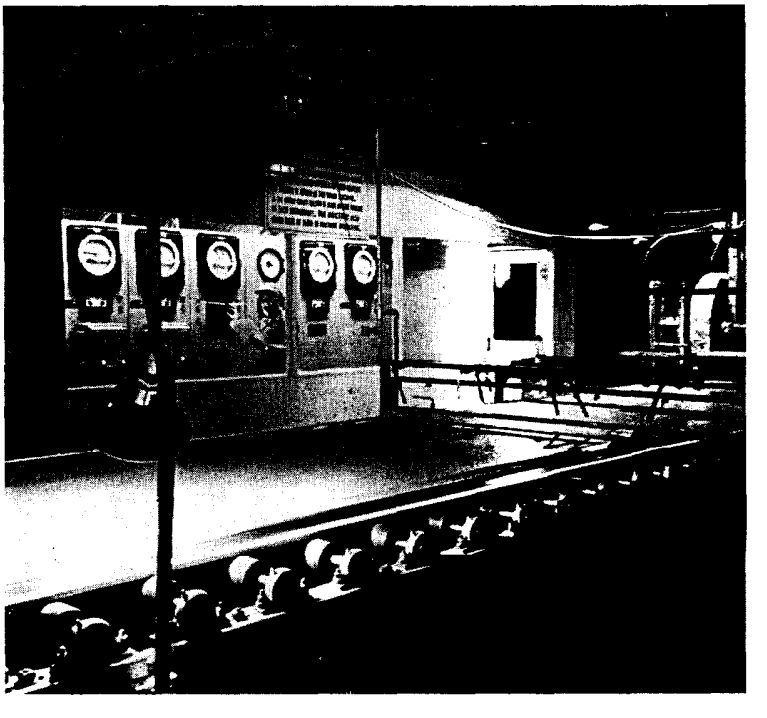
Also on the panel are fast winking red and green lights for each ingredient. When the light is green the particular ingredient being fed to the mix is light and when the light is red, the ingredient is heavy in proportion to the amount desired. Every second or so, as you watch, a green or red light flickers. The weight ratio is off, perhaps only for an instant before the "intelligent" machine corrects it. But frequently, so delicate are the requirements laid on this device, the mix gets out of normal, and instantly a bell rings over the operators' head on the floor below.

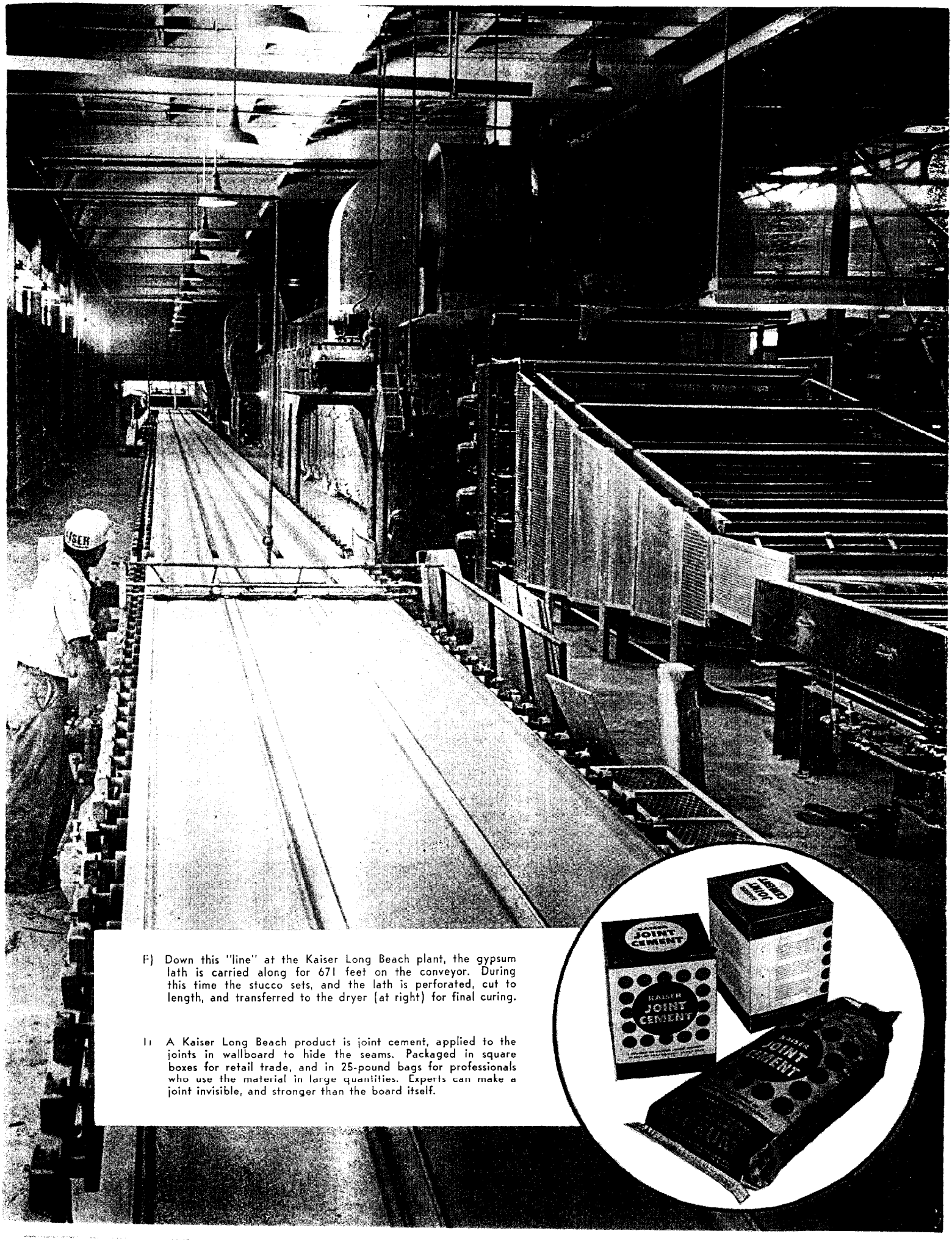
When that bell rings, the men at the mixing machine have fifteen seconds in which to adjust the machine before it sounds a horn. When the horn sounds, the whole continuous, several-blocks-long lath and wallboard making mechanism stops dead. The bell and the horn are the mechanism's voice, calling out warning that it has got over its depth in this business of apportioning the ingredients, and won't somebody please help!

The newly formed gypsum lath and board products, with their various shapes and sizes, slide out of the forming rolls on a conveyor so long you can hardly see what is going on at the other end.

D) Making gypsum lath — the lath, like wallboard, is essentially composed of two layers of paper with a thickness of "stucco" between. Stucco from a "Waytrol" mixing-weighing machine overhead has been deposited wet on the strips of bottom paper. Forming rolls shown in the photo iron out the stucco and spread the top papers evenly on the mix. Thus the "stucco sandwiches" begin their run down the long board machine to harden.

E) What the operator sees of the "Waytrol". The machine dry-mixes the various ingredients including calcined gypsum, weighing each accurately. A metered amount of water is added. Winking lights denote the weighing, and if something goes wrong with the batch, the machine rings a bell, and 15 seconds later, toots a horn to stop the whole process.





F) Down this "line" at the Kaiser Long Beach plant, the gypsum lath is carried along for 671 feet on the conveyor. During this time the stucco sets, and the lath is perforated, cut to length, and transferred to the dryer (at right) for final curing.

I) A Kaiser Long Beach product is joint cement, applied to the joints in wallboard to hide the seams. Packaged in square boxes for retail trade, and in 25-pound bags for professionals who use the material in large quantities. Experts can make a joint invisible, and stronger than the board itself.