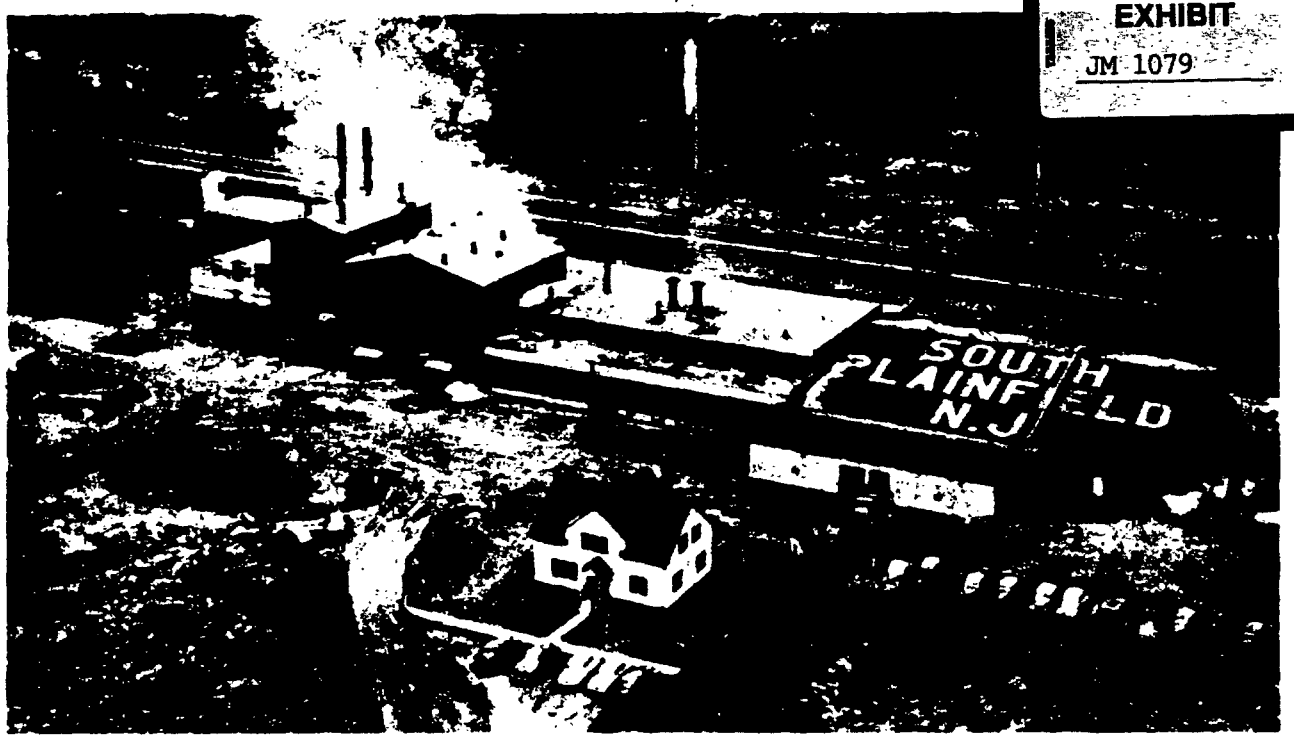
PLAINTIFF'S EXHIBIT
JM 1079



The South Plainfield, N. J., plant of the American Rock Wool Corporation, where a bulk handling system has drastically cut costs.

American Rock Wool Bulk System Pays Off in Lower Handling Costs

MTC 017225

A NEW bulk-handling system, built by the Gifford-Wood Company, Hudson, N. Y., has in its year of installation cut work-hour requirements by two-thirds and has eliminated the heavy manual labor at the South Plainfield, N. J., plant of the American Rock Wool Corporation. It is the opinion of company officials that the system will pay for itself within 2½ years.

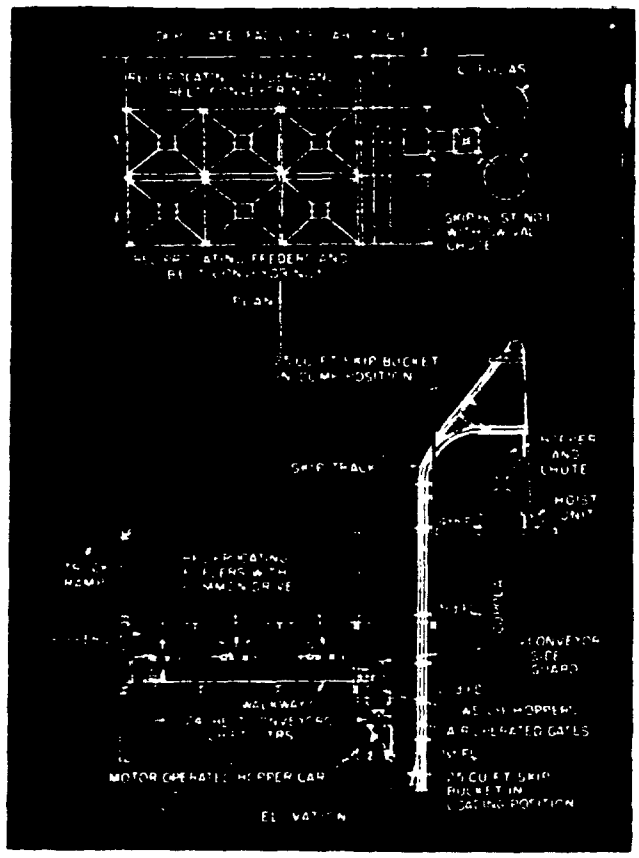
American uses blast furnace slag and coke as basic materials to manufacture and fabricate blankets, blocks, and other forms of insulation, chiefly for industrial uses. The new system delivers both the slag and coke from outdoor storage bins to the processing equipment within. The system which has been installed there can be modified to fit any given set of conditions in a plant handling a variety of materials, such as ores, sand and gravel, crushed stone, etc.

Essentially, the system at the South Plainfield plant comprises the following equipment, as shown in the accompanying cross-section sketches: (1) 12 reciprocating feeders, one located at the base of each storage bin; (2) four belt conveyors, each 24 in. wide by 28 ft. long, one located beneath each row of bins; (3) four weigh hoppers with air-operated gates, one at the delivery end of each of the four conveyors; (4) a rail-mounted transfer car which travels beneath the weigh hoppers; and (5) two 25-cu. ft. capacity skip hoists, located alongside the transfer car tracks. Each of the skip hoists charges two cupola furnaces.

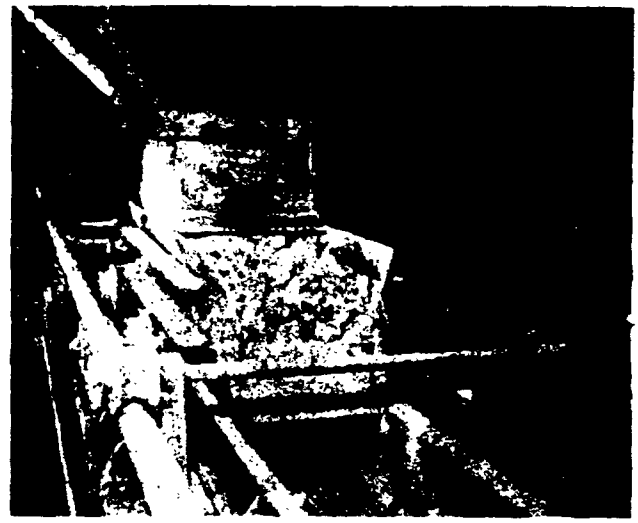
By ROY L. PECK

The reciprocating feeders deliver materials to the conveyor belts in an even stream, each belt receiving material from three feeders. Those delivering to a given belt are driven by a common motor and may be disengaged from the drive mechanism so that one bin (or two or three) in any one row may be discharging at a given time.

Each conveyor belt delivers to an individual weigh hopper equipped with automatic controls to stop the belt when a pre-set weight has been delivered. The hoppers store material until it is required by the two-compartment transfer car, which can receive materials from any of the four weigh hoppers. It discharges into the bucket of either of the two



Schematic diagram of the handling system showing cross-sections and the plan of bins, feeders, conveyors, weigh-hoppers, transfer car, and skip hoists.



Materials are discharged from storage bins (above) onto conveyor belts. Reciprocating feeders (center) distribute them evenly on the belts.

skip hoists. The bucket then travels vertically upward along iron-angle guides and upends itself into the hopper serving the chutes leading to the two cupolas.

When the charge within a given cupola falls below a pre-determined level, a light goes on at the base of one of the skip hoists. The transfer-car operator then fills the skip-hoist bucket with coke and pushes the button actuating the motor drive, which causes the load to empty into the cupola. When this bucket returns, the operator fills it with slag and again sends it to the cupola. Two loads of slag complete the charge in the cupola.

While he waits for the next light to go on, the operator fills the two compartments of the transfer car, one with coke and the other with slag. Thus, when materials are needed, he can start replenishing the charge without delay and can pick up the second load of slag from the nearest hopper as the load of coke or first load of slag is being delivered. The one-man operation is a special feature of the entire system.

Under the old system bins were of somewhat different construction, and materials were shovelled into wheelbarrows, much as home coal bins are emptied. These wheelbarrows were then pushed by hand over to the top of the cupola and the contents of each barrow were emptied into it. This method required the work of three men each shift, and the job was heavy, dirty, and disagreeable.

In the cupola the coke is burned and the heat melts the slag. The molten slag is "poured off" past a high-pressure steam jet which disperses the molten stream and forms millions of small nodules, each having a thread-like streamer. These nodule - and -streamer combinations float down slowly onto a continuously moving belt conveyor which carries them to processing areas, where they are fabricated into mineral wool end products.

It is planned to install additional belt conveyors to take the raw materials from incoming cars or trucks to the bin storage area. At American Rock Wool's two Wabash, Ind. plants, feeders, conveyors, and bucket elevators handle raw mate-

(*Continued on page* 90)



After the conveyor delivers a load of material to the weigh-hopper (lower left), it is automatically stopped when the pre-set weight is delivered. Each conveyor serves three bins.

MTC 017226

Traylor TY gyratory tertiary crusher, which is driven by a Caterpillar D1600 diesel engine. This is set at 1-in. maximum opening, and its product is carried on a short belt conveyor back to the conveyor ahead of the screen.

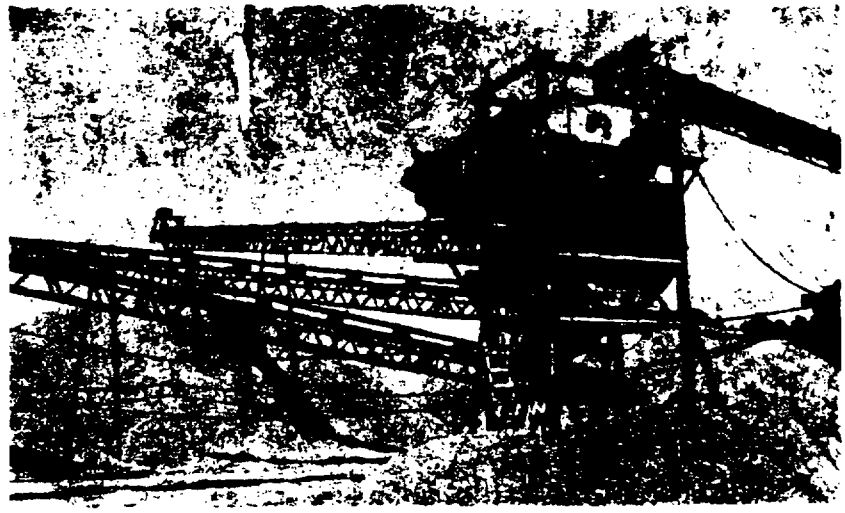
Minus 1-in. stone through the bottom deck of this screen is taken on a 30-in. by 120-ft. belt conveyor to the first sizing station. It is discharged onto a 5- by 14-ft. Seco 3-deck screen with 1-, ¾-, and ⅜-in. wire cloth. The three coarse sizes produced are carried on individual 18-in. by 75-ft. conveyors to stockpiles.

Minus ⅜-in. material through the bottom deck of this screen is carried on a 24-in. by 80-ft. belt conveyor to the final screening tower, to be discharged on a 4- by 10-ft. Cedarapids 2-deck screen. Only one deck is being used, and this has ¼-in. wire cloth. The plus ¼-in. product is carried on a 24-in. by 80-ft. inclined conveyor to a stockpile. The dust through this screen is chuted into a bin, from which it is stockpiled by trucks. The tunnel feeders are controlled from this point.

The four crushed stone stockpiles are over a single 400-ft. reclaiming tunnel. Syntron feeders at openings under the piles feed single sizes or any desired blend onto the 24-in. by 390-ft. reclaiming belt conveyor. At the end of the tunnel a 24-in. by 100-ft. belt conveyor at right angles feeds to a 150-ton truck-loading bin. Trucks are loaded from this bin for delivery or for stockpiling. A Lorain truck-mounted shovel is used for loading to and from stockpiles.

All shipments are now being made by truck, but a railroad siding will be put in as soon as possible. The company owns no delivery trucks. Contractors do their own trucking, and small users buy from haulers. All shipments are weighed on a 50-ton Howe truck scale with a Weightograph attachment and a platform long enough for any truck-trailer used in this area.

This company is prepared to generate power at its widespread operations which are often in areas far from any power lines. At this location the existing power line was too small to serve the entire enlarged plant; so a portable diesel generating set, a Caterpillar D1600, was installed to supply power for two screens, six conveyors, and two feeders. The three crushers are driven by individual diesel engines. Purchased power is used elsewhere, including the quarry. The diesel engines are all equipped with Hastings Manufacturing Company oil filters.



The first sizing station, where three coarse sizes are stockpiled by boom conveyors.

All belt conveyors are driven through Dodge speed reducers and V-belts by 10-, 15-, and 20-hp. motors. The belt conveyors were supplied by E. F. Marsh and the Continental Gin Company, and most of the conveyor belting is Goodyear.

The company's local office is at the plant, which is on Georgia Industrial Home Road about six miles west of downtown Macon. Roy Foster Jr. is general manager, Guy F. Jenkins is office manager, James L. Clement is plant superintendent, and E. K. Parker is quarry superintendent.

Reducing Water Content

(From page 83)

consequently lower dust-carrying capacity of the gases.

As already mentioned, the additive described is, like most other additives, very sensitive to Ca-ions. As a result of the dust circulation in the kiln, the slurry in the chain system will be contaminated with calcined dust, which transmits Ca-ions to the slurry. This will have a great effect on the viscosity of the slurry in the cool region of the kiln. The dust content in the exit gases will vary because of fluctuations in kiln operation. The amount of dust precipitated in the chain system will therefore vary, causing variations in slurry viscosity.

This variation in viscosity is particularly pronounced when an additive sensitive to dust is used. If the kiln is provided with a simple chain system, this variation will, as a rule, have no pronounced effect on the material transport in the kiln. If, however, the kiln is provided with other heat exchange and dust-collecting devices, the material transport in the kiln may be more irregular, due to greater variations in viscosity caused by the additive. In such case it is easier to obtain a uniform material transport, and therefore a more regular kiln operation, if no slurry additive is used.

It is generally believed that a reduction of slurry water content by additives will cause an increase in exit gas temperature. However, this is not always the case. Experience has shown that the exit gas temperature is approximately the same when the kiln is operated without additive and 33 percent water in the slurry as with additive and 27 percent water in the slurry, provided that the kiln output is the same in both cases. High water content in the slurry will tend to increase heat transmission in the cool region of the kiln and thus tend to lower the exit gas temperature. Additives may, on the other hand, improve the nodulizing properties of the slurry and thus bring about a lower dust concentration in the kiln gases and better heat transmission in the kiln. The reduction in the quantity of kiln gases when an additive is used also tends to lower exit gas temperature.

It is not always easy to decide whether the use of an additive pays or not, as many factors have to be taken into consideration. It is usual simply to compare the saving in fuel resulting from less water in the slurry with the total cost of the additive. This is not, however, sufficient, because use of an additive does not mean merely less water to evaporate. It also changes the nature of the slurry and consequently affects slurry grinding, slurry handling, and kiln operation.

American Rock Wool

(From page 72)

rials from the cars to storage bins.

American Rock Wool Corporation operates eight plants, located at the following points: South Plainfield, N. J.; Wabash, Ind. (2); Birmingham, Ala.; Torrance, Calif.; Red Wing, Minn.; Cleveland, Ohio; and Tacoma, Wash. Officers of the corporation include James R. Addington, president; W. T. Tillotson, vice-president in charge of manufacturing; C. L. Neumeister, vice-president; G. D. Sudlow, vice-president in charge of sales; and W. H. Owens, chief engineer. At South Plainfield Carl Setterberg is manager and Hubert Miller, assistant manager.



The 2-compartment transfer car receives loads from the weigh-hopper and delivers them to the skip-hoist buckets.

New Case-Terra Trac Equipment Put Through Paces at Preview

At a "Tractorama" preview held on Dec. 10 at Churubusco, Ind., more than 50 representatives of the trade and business press witnessed demonstrations of new industrial wheel tractors, TerraTrac crawler units, and heavy earthmoving equipment now in production by the newly merged firms of J. I. Case and American Tractor.

Following a tour of the recently expanded Churubusco plant (which now covers about 250,000 sq. ft.) located near Ft. Wayne, Ind., Marc Rojtman, executive vice-president and general manager of the merged organization, noted that the new Case-TerraTrac industrial line includes three separate equipment packages, for which distribution will be made through the J. I. Case farm dealers, industrial dealers, and heavy construction equipment distributors.

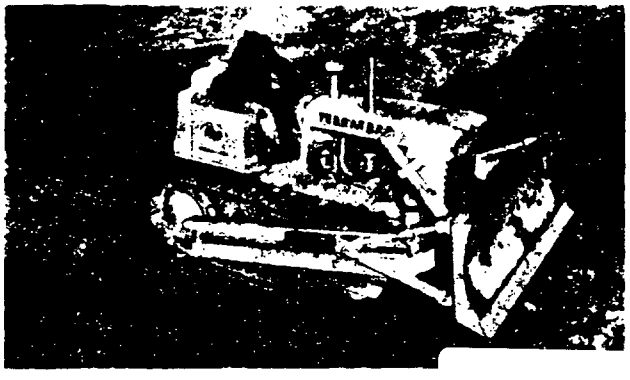
The complete line was described as covering 20 gasoline and diesel-powered tractors that range from 40 to 80 hp. in rubber-tired units, and up to 100 hp. in crawler models. Over 50 combinations of matching backhoes, loaders, bulldozers, angledozers, forklifts, and other attachments are available.

During the exhibition of various units, the visitors witnessed a demonstration of technical features which company officials describe as being "firsts" in incorporation as standard items on the 800 and 1000 crawlers (80 and 100 hp.). These included a new counter-rotating Terramatic power-shifting transmission which provides independent control of each track (for both speed and direction), torque converter drive, "non-stop" from forward to reverse speeds, hydraulic controls for either foot or hand operation, and power brakes.

Two other features, for which patent rights have been requested, according to company heads, are a torsion bar track suspension and an automatic lower track wheel lubrication system. A graphic demonstration of the former was provided for the visitors when one track of a crawler unit was run up on a 12-in. obstacle while the other track remained flat on the ground. Loader buckets and dozer blades mounted on the demonstrating tractors were seen to remain perfectly level. In providing full equalization of load, as well as cushioning action, this feature is said to enable the tractor to deliver full power and traction on both tracks when operating in rough terrain.

With the new two-point centralized lubricating system for the lower track wheels, a pair of sealed reservoirs (one on each side) extends the full length of the track frame and feed track wheels through individual lines. The manufacturer claims that the centralized system takes only about ten minutes once a month to lubricate all lower track wheels, due to a constant head of semi-fluid grease on each wheel.

The new Case-TerraTrac crawlers are available with a full line of hydraulically-controlled equipment, including 1½- and 2-cu. yd. tractor-shovels, straight, and angle dozer blades, and pushbutton starting. As with all other units made by the firm, according to Mr. Rojtman, both tractors and attachments will be sold and serviced as complete units – engineered and built by one firm.



Turning in its own tracks, this crawler tractor has one track operating in reverse while the other is driving forward.

MTC 017228