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# The Contractor

## *For the Man on the Job*

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### Night Work Faster Than Day Work

**Good Lighting System Converts Night Into Day on Two-Million Bushel Concrete Elevator Job—Fifty-One Bins Over a Hundred Feet High Concreted in Nineteen Days Working Twenty Hours a Day—Yardage Concreted Per Man Greater on Night Shifts**

**A**N average of 450 cu. yds. of concrete was poured daily for 19 days in the new elevator at Cedar Rapids, Iowa, for the Quaker Oats Company. Work was carried on 20 hours a day, an elaborate system of electric lighting making the work of the night gang as efficient as that of the day gang. In fact more concrete per man was placed at night, though the night gang being smaller, the volume of concrete placed was greater for the day shift. Rapid concreting was aided by installing two concreting plants, one supplied with local material by trucks and the other from a huge stock pile kept supplied by railway from more distant sources.

The diagram plan shows the group of new bins built and the locations of stock piles and towers. The available railway track ran along one side only of the bin structure. On this side a concrete plant was located so as to allow about 1,000 cu. yd. stone storage and 200 cu. yd. sand storage. Normally the stock came by railway to these storage piles, but to make certain that no shortage of materials would occur arrangements were made whereby a local material man could also deliver either by railway or by truck. On the opposite side of the building another plant and set of stock piles were supplied with materials from local sources by trucks. Here the streets gave room for sand and stone piles of about 200 cu. yd. each.

The concrete mixers at the bottoms of the towers were changed by wheeling from the stock piles. The tower hoists delivered to hoppers at concreting level and delivery to the forms was by two-wheel carts.

The moving form system was employed for concreting the bins. By this system the inside and outside segmental forms are hung upon yokes carried by threaded rods in the bin walls. Screw jacks operating on the threaded rods hoist the forms a little at a time

as the concreting proceeds. The form construction for the bins being described is illustrated by the line drawings and general view.

The sketch plan shows the bin grouping and indicates the location of stock piles, cement houses and towers. The bins indicated by heavy lines are the ones built under the contract to which this account refers. Work was begun July 6 on the 15,000 cu. yd. of excavation. On August 9 concreting of the footings was begun and one day later the framework for the basement. The tank forms were started September 6, and were finished on September 21. The forms for all bins were erected together and the bins were all concreted at the same time. Bin concreting was begun September 22, and the bins were finished to a height of 102 ft. on October 8. A month later the roof had been completed.

In concreting the bins two 10-hour shifts were worked, each taking an hour in the middle of their time to eat. Generally the day crew was larger than the night crew, men preferring to work in the daytime. The volume of concrete laid on day shift was, because of the larger day gang, greater, but it is interesting to note the volume placed per man was generally greater at night. A comparison on a typical day about the first of October is as follows:

The day crew, consisting of four foremen, four engine runners, 16 carpenters, seven cement finishers, five iron workers and 128 laborers, a total of 164 men. This crew concreted a total of 3 ft. of bin wall aggregating about 250 cu. yd. of concrete. The night crew was made up of four foremen, three engine runners, five carpenters, five iron workers, one electrician and 63 laborers, a total of 81 men. This crew poured 166 cu. yd. of concrete.

Part of the carpenter work done by the day gang



## Contractor Personally

Forty-one years ago the contracting organization now known as The A. Bentley & Sons Co. was founded with a single name—that of A. Bentley. That was little more than a generation ago, but those forty-one years have witnessed more progress in building construction than was shown in the entire century that preceded them.

When in 1883, A. Bentley undertook the rebuilding of the Hall Block, at the corner of St. Clair and Jefferson, Toledo, after a fire which destroyed the building which previously stood on that site, the word "skyscraper" was unknown, buildings of steel and tile construction were not even dreams, and monolithic structures of concrete were described only in the histories that told of certain curious buildings of ancient times.

The Hall building stood five stories high and was, when it was rebuilt, regarded as pretty nearly the last word in business blocks. At that time it was hard to see how anything erected for practical commercial purposes was likely to show marked improvements over it. Today men look down from the twenty-first story of the Second National Bank building (Toledo's tallest structure), and see the "commodious" Hall Block merely as a low, flat-roofed structure, with scarcely an outer characteristic that is in keeping with the present day idea.

During the forty-one years of its life, the firm had not merely kept abreast of the times, but has been well in advance of them. Today the name stands for one of the biggest contracting firms in the middle west. Established under the name of A. Bentley, it has successfully been known as A. Bentley & Son, A. Bentley & Sons, and since 1907 as the A. Bentley & Sons Company. During the more active months of the year, the company employs from 4,000 to 5,000 men, in addition to its large force of shop employes, who usually number about 150 during the building season.

Under the system employed the Toledo shop is, from a mechanical standpoint, the heart of the organization. Here a completely equipped plant houses the concern at the intersection of 13th street and the Clover Leaf Railroad, Toledo. Here are located the machines that are used in fabricating the steel rods employed in reinforced concrete work, and the special machin-

## Toledo's Biggest Building Contractors

### The A. Bentley & Sons Company

ery employed in making and repairing the tools and appliances needed by the company. Here also are located the great stores of steel and other building material which ensure the steady and regular progress of any structure



JAMES BENTLEY.

undertaken by this company. A stock of steel ranging from 100 to 1,500 tons is constantly maintained, in sizes up to 60 feet in length.

The company is known best by its early adoption of concrete for construction work, and for the progress that it has individually developed with this material. Its specially devised methods of fabricating steel rods for reinforcing concrete have proved so valuable, that in addition to supplying its own work, it has constantly been called on to fabricate for other contractors.

Among the more notable buildings erected by this company, in which concrete construction was predominant,

that of the General Electric Co., at Pittsfield, Mass., was the largest. In 1917 the firm was one of the selected contractors for constructing the National Army cantonments. It built Camp Sherman, near Chillicothe, O., and is now at work on Camp Johnston, near Jacksonville, Fla. A. Bentley's two sons, James and Thomas, now carry on the work of their father. James devotes all of his time to work outside of Toledo, while Thomas looks after the local business.

Frederick Wickenden, builder of the first railroad in Peru, died at San Luis Obispo, Cal., January 2, aged 93 years. He was sent to Peru by the British government in 1849 to build a railroad out of Callao. In 1852 he located in California, where he married the daughter of William Foxen, the first boat builder of that state.

Thomas Rathwell, one of the oldest bridge-builders in southern California, died in Los Angeles in that state Dec. 22. He was born in Canada in 1850, coming to the United States in 1871. He was one of the builders of the Eads bridge in St. Louis. He superintended the construction of the first wharf at Catalina Island, off the coast of California. For a long time he was connected with the Santa Fe Railroad Company as superintendent of bridge construction. His wife and two married daughters survive.

Frank W. Linard, 63 years old, and a pioneer resident, died Jan. 2, at his residence, 2421 Indiana Ave., Chicago. He was a contractor and for more than fifty years had lived within a few blocks of the Indiana Ave. address. With his father, also a contractor, he superintended the building of the old Lyon & Healy block. A number of other early skyscrapers were erected by him. He was born in Laporte, Ind., where he will be buried. His widow and four children survive.

The W. B. Lauer Co., Chicago, Ill., comes to the service of the contracting business with a brand new 200-page general equipment catalog called "Lauer's Red Book." About every kind of equipment and tool that is ordinarily used in engineering construction is pictured, with needful text, and all equipment is classified and indexed.