nsylvania Rd., Eastern Lines; H. G. Kelley, President Grand Trunk Ry.; E. J. Pearson, Federal Manager, New York, New Haven and Hartford Rd.; E. H. Coapman, Federal Manager, Southern Rd.; J. J. Bernet, Federal Manager, New York, Chicago and St. Louis Rd.; G. E. Evans, Staff Officer, Operation, Louisville and Nashville Rd.; W. L. Park, Federal Manager, Chicago Great Western Rd.; G. E. Simpson, General Supervisor Transportation, Chicago, Milwaukee and St. Paul Rd.; W. C. Kendall, Manager, Car Service Section Division of Operation, U.S. Railroad Administration; J. W. Roberts, Superintendent Freight Transportation, Pennsylvania System, Lines West of Pittsburg; J. W. Nowers, Car Accountant, Atchison, Topeka and Santa Fe Rd.; J. A. Wagner, General Manager, Des Moines Union Rd.

These committees will organize their respective sections and serve until their successors are elected.

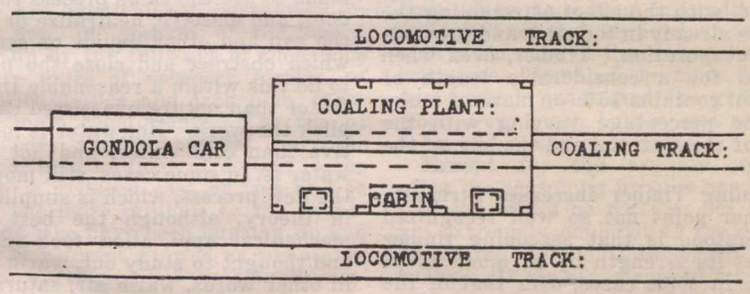
Locomotive Coaling Plants.

By J. A. Burnett, A.M.E.I.C., Consulting Engineer, Montreal.

The subject of coal handling for locomotives is one of considerable importance, and as improvements have been introduced within the last few years, it is thought that the subject may be of interest.

Formerly the ramp or gravity system was in use. This comprised a long ramp, or incline, of about 5% grade; then a series of bins or pockets. These bins were furnished with side chutes, to allow the coal to be dumped into the locomotive tenders. However, the Holman type of coaling plant was introduced, using the balanced bucket system and with a storage bin overhead. The advantages were many, among them being: saving in land area, less fire risk, and inasmuch as it frequently happened that a locomotive ran out over the end of the coal shed, it was a safer arrangement. It was also found that only light weight locomotives were able to climb the ramp, and these often had to be brought on from a distance, adding to the expense. It would be safe to say, therefore, that no more gravity coaling plants will be installed on our railways.

LOCOMOTIVE COALING PLANTS:



PLAN:

The balanced bucket type has been found easier to maintain than any hoist using the continuous bucket or conveyor system, and, where electric power is available, the electric driven hoist is preferred, and in most cases the cost for electric power does not come very high. The accompanying illustration shows plan and side elevations of the structure.

In general, it is found that the hoisting is done during the day time, and about three hours are needed to dump the gondola cars and hoist the coal to the bin overhead. The maximum load on the motor is about 10 to 12 h.p., the speed of hoisting being 70 ft. a minute. The buckets are designed to hoist 2,000 lb. a lift, but at times the weight runs to 3,000 lb.

The motor, if electric, is of the wound rotor type, and controlled by reversing drum controller, and solenoid brake. A powerful hand brake is also provided operated by a lever in the cabin, and applying by a band to the end of the cable drum. This is seldom used, and is merely a precautionary measure. The cabin should be quite small, about 5 x 9 ft., to save heating in winter, and should be well boarded in, with well fitted door and windows. The roof of this cabin should be well waterproofed, as water drips in quantity from the coal bin above.

The buckets are prevented from overrunning, by means of a limit switch, installed at top of each bucket shaft, and are actuated by means of a steel ear, rivetted to the bucket. The motor is at once cut off, and the solenoid brake holds the mechanism at a stop; meanwhile the coal is dumped and fills the bin overhead.

The night attendant has only to keep guard, there being no hoisting of coal at night. At times, in severe winter weather, the night attendant will be obliged to trim the coal in the bin, to permit it to flow into the chutes, and thence into the locomotive tender.

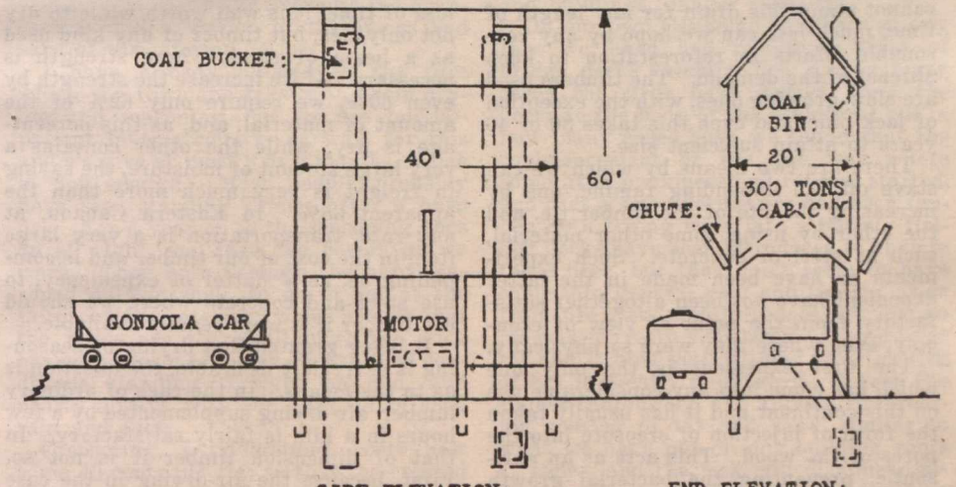
The bucket pits should be waterproofed below the ground line, and all pitches, for the flow of coal, should be steep enough so that the coal shall flow freely. Sixty degrees from the horizontal is recommended. Where fleeting sheaves are used, they should be of C.I., bronze bushed and equipped with grease cups. Where sheaves are running idle, they should be securely keyed to the shaft, and the shaft should turn in its bearings, in preference to the sheave turning in the shaft, as is sometimes done.

The electrical control should comprise an ammeter of rugged design, and main switch, mounted with fuses on a panel about 18 x 24 in. As the prevailing voltage throughout Canada is 550 for 3 phase service, the slate used must be carefully selected, otherwise metallic veins will result in burning and damage to parts. In connecting the limit switches, the wire used should not be smaller than no. 10 B. & S. gauge, as there is considerable vibration to the structure and a lighter wire will break.

The roof of the coaling plant should be covered with asbestos shingle, so as to fireproof the structure.

Costs relative to 300 ton coaling plant, operating at 80% capacity, or 240 tons daily, are as follows:

First cost	$15,000
Interest per year, $15,000, at 6%	900
Electric power, 10 h.p. at $30 per h.p.	300
1 day attendant, partly skilled, at 75c	900
2 day helpers at 60c	1,440
1 night attendant, unskilled, 60c	720
Maintenance, 5% on $15,000	750
Insurance, 2% on $15,000	300
Locomotive service in spotting 5 cars coal a day, $5 a day (nominal)	1,825
Total cost per year	$7,135



SIDE ELEVATION: END ELEVATION:

Coal handled per day .....240 tons.
Coal handled per year .....87,600 tons.
Cost per ton for storing and handling, 8.2c a ton of 2,000 lb.

In general, this type of coaling plant has been found to be safe, economical, and of pleasing appearance, and it can be operated by electric, steam or gasoline power.

The foregoing paper was read before the Engineering Institute of Canada in Montreal recently.

Railway Supplies for South Africa.—Lloyd Harris, Chairman, Canadian Trade Commission, London, Eng., states that big railway development is pending in South Africa, which should give Canadians an opportunity of getting a market for rails, cars, etc.