

July, 1960 - Number 174

The Society meets on the third Friday of every month. During the summer months, indoor meetings are suspended and replaced by outdoor meetings at points of railway interest. The next meeting will be held on July 15th and will consist of a visit to Scott Street Tower for a tour of the Union Station interlocking equipment. Scott Street Tower is immediately east of Yonge Street, south of the yard tracks. Members will please assemble BEFORE 8:00 P.M.

Past Meetings June 17th: - About 45 members and guests present for an interesting showing of slides of steam activity, mostly in - Western Canada.

Society Activities: By the time this *Newsletter* is read, the Society's excursions of July 9th and 10th will have been held. A report on them will appear in next month's issue.

The excursion Committee has been attempting to arrange an excursion on a Canadian National gas-electric car, to be held in the month of September. Unfortunately we have now been informed by the C.N.R. that such equipment is not available for charter, and it has therefore been necessary to suspend consideration of this excursion.

RAILWAY CLASSIFICATION YARDS

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(Reprinted and condensed from "*The Professional Engineer*", April, 1960)

As the name implies, a classification yard is one where freight cars received from many sources are sorted and made up into trains which depart in various directions. A classification yard is often referred to as "Marshalling Yard", "Hump Yard" or "Assembly Yard".

The term "Classification Yard" is generally used to describe the specific yard where freight cars are sorted into their various destination classifications. Trains arrive in a "Receiving Yard" and are then pushed over a "hump" 15 feet above the surrounding tracks and, under accurate control, allowed to run downhill into various tracks in the "Classification Yard". This yard, depending on local requirements, may comprise 12 to 72 tracks, each track being designed to handle up to 50 or 60 cars for a particular destination. These yards have been compared to a post-office because cars and letters are received and sent to every community in the country.

When a classification track is full, the cars are pulled out and placed in another yard known as the "Departure Yard". Quite often there are more than one "Departure Yard"; these yards are generally designed by the direction they serve and are located so as to be readily accessible to the main track going in that direction.

In addition to the three major yards mentioned in the foregoing, a Classification Yard comprises many other facilities which are needed to accommodate the train and engine crews, as well as maintenance and operating staffs, and for the repair and servicing of cars and locomotives. The average yard requires a land area of about 400 acres, reasonably level, up to 2,000 feet wide and two miles long. A modern yard usually costing 15 to 20 million dollars will classify over 3,000 cars in 24 hours.

The use of diesel locomotives and other railway improvements have permitted longer trains to be hauled and it has therefore been necessary for the railways to improve their

plant and equipment. Many scientific discoveries and new techniques make it possible for the railway to offer a service favourably competitive with other forms of transportation. The Classification Yard is but one of the modern devices now used to achieve rapid and efficient movement of the country's manufactured products and raw materials.

Where should a Classification Yard be built? Each city has certain inherent transportation problems and the railways serving industry in that community must locate their facilities so as to serve their customers speedily and economically. The older railway flat switching yards in practically every city have become surrounded by industry, homes and roads, making it very difficult to expand. When a railway must build several yards, it is usually possible to keep them 300 to 400 miles apart and constructed close to the heart of an important industrial and distributing area, such as Montreal Toronto or Winnipeg.

ARRANGEMENT OF YARDS

In 1953 the American Railway Engineering Association Committee produced a very complete report on arrangement of tracks in a Hump Classification Yard. They suggested that the following, major factors must be considered when selecting a site and designing a yard.

1. Volume of traffic: If the volume of traffic exceeds that which can be handled over one hump, two-hump classification yards are required.
2. "Consist" of the trains received: If trains consist of cars which move through the yard continuing in the same direction, a hump in each general direction of movement is practical. If trains consist of cars which are likely to move out of the yard in any direction, a single hump classification yard is preferable.
3. "Consist" of trains dispatched: Whether made up of one or more classifications, long or short trains, a road-freight train, or transfer to connecting lines, or delivery to industries.
4. Division of Traffic: Volume received from each direction with relation to the classification yard and direction of humping, and volume dispatched in each direction with relation to the same factors.
5. Type of Terminal: Whether intermediate or terminal, and whether all cars are humped or part of each train is "blocked through".
6. Time required in which to receive and dispatch cars.

A TRIP THROUGH A CLASSIFICATION YARD

Let us assume that we are on a freight car in a long freight train arriving in Toronto from Montreal and about to pass through a classification yard where the cars of our train will be inspected, classified and divided into those which must remain in Toronto, and others which will proceed north, west and south. Previous to our arrival, through a system of Data Processing involving the use of punched cards, tape and teletype, the yard office at the Classification Yard has been provided with a list showing the car numbers, destination, contents and weight of each car in our train. This list is an "Advance Consist".

Our train leaves the main line some distance east of the city and enters the yard on what is known as the inbound freight main line. This track is parallel to the main track and connected to the Receiving Yard. As we enter the Receiving Yard, a television camera scans the train and an employee in the yard office a mile away watching a TV screen, checks each car in our train against the "Advance Consist". After making necessary corrections to the Consist for cars which may have been set out or picked up en route, a new "Hump List" is prepared, indicating the classification track number to which each car is destined, and this is teletyped to the Hump Foreman and retarder operator.

A switcher now takes over and moves the train to the Hump, half a mile or so away. This hump is the very heart of the operation where it is possible automatically to weigh and switch out cars to some 60 directions or destinations. As the switcher pushes our cars to the hump, we run over an electronic detector device which indicates to the Hump Foreman if there are any defects such as brake beams hanging down, broken flanges or dragging equipment. We then pass over an under-track inspection pit, from which a car inspector carefully examines the underside of all cars for any defects, while an automatic device squirts a measured quantity of lubricating oil into the car's journal boxes, which were opened in the receiving yard.

We are now at the hump itself, the point at which gravity takes over, where an employee known as a "pin puller" is stationed. This man's sole function is to uncouple cars as they go over the hump. Of course, not all of the cars have to be separated from each other; if two are headed toward the same direction and destination, they may move as a unit. Generally speaking, not more than two cars are humped at a time. The Foreman sits at a push-button console in an office near the hump and, as he instructs the pin-puller, he also pushes a button corresponding to the track number to which that car is destined and all necessary switches are automatically thrown in front of the car. In some yards even this push-button feature is dispensed with, the necessary information for throwing the switches being either cut on a tape or stored in a core memory at the time the hump list was made.

Our cars have now been separated from the rest of the train and we have begun to roll free down the hump. Our cars first roll by a Hump Clerk in the Weigh-Master's office. This clerk watches the cars as they pass and places the waybill for each in the proper rack so that it may later be sent along with the train in which the car will move. For cars that require weighing, there is an electronically or mechanically operated scale which weighs the car while it is in motion and automatically stamps the weight on a card.

Beyond the weigh scale, we come to the master retarder, which is actuated by an electronic computer located in a nearby retarder tower. In earlier hump yards, an individual had to ride each car and apply the brake manually, but in modern yards a mechanical retarder grips the sides of the wheels of each car and slows it down at a pre-determined speed.

While we were approaching the master retarder, our cars passed through a series of test sections utilizing radar, photo-electric cells and treadles to determine our weight and acceleration. The computer took these factors, combined them with other factors involving wind resistance, weather conditions and track grade, and made a calculation to determine tangent track rolling resistance and the speed at which we should leave the master retarder, to pass through the approaching switches at a safe speed.

We have now passed through a switch and are going around a curve headed toward a group retarder. As we take the curve, more test equipment measures our curve rolling resistance. The computer makes another calculation combining this information and that previously taken, with factors involving the distance we have to travel to our classification track, and the running qualities of that track. It comes up with the speed at which we should leave the retarder and couple with the cars already on our classification track at not more than four miles per hour. The group retarder is the last slowing device at the hump and usually controls a group of eight or nine classification tracks.

Even in this age of automation, there are factors that cannot be fitted into the general pattern and very probably there may be some cars in our train such as explosives or passenger cars which have "no hump" cards. Such cars are placed in the "no hump" track and are later switched into their proper classification tracks.

Let us assume that our freight train had some 80 cars. It has been moved through the

retarders and its cars assigned to the proper classification tracks. Our cars are now pulled out of the classification track and taken to the Departure Yard where they are coupled to others already there. Soon there is a sufficient number of cars for our new train, an engine and van are attached and we leave the yard some three hours after arriving at the terminal.

Ancillary services include a repair yard where 150 to 200 freight cars may be repaired daily. Diesel servicing facilities are located between the receiving and departure yards. Long under-track inspection pits are provided to check the engines at the end of their runs. Yard buildings include a general yard office building, a retarder tower building, a bunkhouse or hotel with restaurant, and many other smaller offices and shelters. Facilities must be available to supply ice to cars carrying perishables. Other facilities include wash and locker rooms, lunch rooms, access roads, signal systems, lighting systems and IBM punch-card machines, with a host of other devices for handling records and office work, permitting the railway to deliver cars faster and with less possibility of damage to contents.

This concludes a brief description of Railway Classification Yards. The heavy expenditure incurred clearly indicates that the railways are prepared to meet today's competition and have faith in the future of rail transportation.

PUBLICATION

The Vancouver Island Railway Historical Association has published a bulletin on the large logging-railway operations of Canadian Forest Products Limited, located in an inaccessible part of northern Vancouver Island. This Bulletin, illustrated and with maps and roster, deals with the remarkably diverse motive power of this operation which includes such wonders as dieselized Shays and Canada's only Mallet. Price \$1.00 (no cheques) from the Association, 587 McKenzie Avenue, Victoria, BC.

MOTIVE POWER NOTES

- C.N.R. engines in storage at Brockville, Ontario, early in June:
2437, 2552, 3253, 3282, 4048, 4072, 5251, 5295, 5559, 5562, 5583,
6216, 6227, 8329, 8348, 8355, 8414, 8416.
- C.N.R. 4-8-4 6167 was in use in transfer service in the Toronto area on June 27th and 28th, on test, for the Society's July 10th excursion to Niagara Falls.
- The following diesel locomotives, severely damaged in wrecks as noted, have been written off and scrapped by the C.N.R.: - 6517, 6608, 4564, 4583 (all wrecked in collision at Osawin, ON, February 13, 1960); 3014, 3017, 3028, 3030 (all wrecked in collision at Pomquet, NS, February 18, 1960); 9090 (details of wreck unavailable).
- C.N.R. Diesel locomotive deliveries:

1068		April 14	1362	May 5
			1377	June 14
			1518	April 1
1069		April 8	1363	May 10
			1378	June 14
			1519	April 1
1070	April 8	1364	May 10	
	1379	June 14		
1071		April 14	1365	May 10

							1380	June 17
							4700	
							February 28	
1072						April 22		
							1366	May 13
							1381	June 17
							4701	
							February 24	
1073						April 22		
							1367	May 13
							1382	June 22
							4702	
							February 24	
1074						April 26		
							1368	May 17
							1383	June 22
							4703	
							February 26	
1075						April 26		
							1369	May 17
							4704	
							February 28	
1076				April 29		1370	May 24	
				1511	March 25		4705	March 1
1077				April 29		1371	May 25	
				1512	March 25		4706	March 1
		1372		May 31		1513	March 25	4707
				March 9				
1358		April 20		1373	June 3	1514	March 26	
1359	April 20		1374	June 3		1515	March 26	4950 March
		12						
1360		April 29		1375	June 9	1516	March 29	
		4951	March 15					
1361	May 5	1376	June 9	1517	March 30	4952	March 15	

ADDENDUM TO BULLETIN 53

The following interesting letter has been received from Member F. H. Howard of London, Ontario, commenting on Bulletin 53 on C.P.R. 3100-series 4-8-4s:

It was interesting to read your Bulletin 53, on the Canadian Pacific 3100 class locomotive.

You mentioned that in the summer of 1947 it was believed that a number of locomotives of this kind were to have been ordered for service between Toronto and Fort William. That is quite correct, although I cannot remember whether the number was 12 or not, but I do recall that other wheel arrangements were thought about. I believe a 2-8-4 was contemplated, and most interesting, a 4-cylinder locomotive of the type that the Pennsylvania was then coming out with. This was, I think, a 4-6-6-4. Apart from the elevations, which I think were even coloured with the red and gold then

in use, and a table of principal dimensions, very little work was done because the diesel was even then being demonstrated, and even tested out with a dynamometer car.

NEW RAILWAY PROGRESS IN CANADA

Since the end of World War II, Canada has been in the midst of another "railway age" with many thousands of miles of new trackage built to serve new sources of traffic and untouched areas of the country. The expansion continues, as lines long and short are projected or construction is started. The following may be noted:-

➤ A 14-mile railway from Chibougamau to Bear Bay, Quebec, where a large mining project is being constructed by the Sulphur Converting Corporation, Montreal. Estimated cost of the railway line is \$1,400,000. Contracts will be let during July.

➤ A 3.22 mile branch from the C.N.R. at St. Anaclet, Quebec to a large new government wharf at Father Point. The line will be built by the C.N.R. and rented to the Department of Public Works on an annual basis.

➤ Further track will be laid on the roadbed of the abandoned Canadian Northern Railway in suburban Scarborough Township (Toronto). After total abandonment as a main line, and after lying derelict for many years, track has gradually been laid on the old grade to serve the many new industries that have located in this section of Scarborough Township. A new development is now to be built between Kennedy Road and Markham Road, south of Highway 401, and the "railhead" will be pushed onto new sections of the abandoned roadbed.

➤ The largest project under way in Canada is the Pacific Northern Railway, to which reference has been made in the *Newsletter* previously. This line, projected by the Swedish Wenner-Gren interests with co-operation from the British Columbia Government, is to be 700 miles long ultimately, running from Summit Lake on the Pacific Great Eastern Railway 50 miles north of Prince George, to a point on the BC - Yukon border near Atlin Lake. Actual construction began on the Summit Lake terminal on June 29th, and the railway company has been authorized to undertake preparatory clearing work on the first 100 miles of the line by the Provincial Government. Some opposition has developed since this permission was given directly by the Government without reference to the Public Utilities Commission under whose jurisdiction the line, like the P.G.E. comes since it is (or will be) wholly within the Province of British Columbia. The company says that application to the P.U.C. will be made within a year, and the City of Prince Rupert, 500 miles away, has applied for an injunction to force stoppage of work.

MISCELLANY

➤ At the present time a major piece of railroad construction is under way in Montréal which will end main-line C.N.R. operation through Lachine, and replace it by operation over what is now the C.P.R. main line between Dorval and a point near the south end of St. Luc yard, at which point the new main line will run over what is now a freight-only single-track branch to Turcot Yard. Part of the present main line will be retained for freight service. The C.N.R. is building a new main line for the C.P.R. a few hundred feet north of the present main line over which the C.N.R. will run. The C.N.R. is also constructing a new hump yard to the west of the C.P.R. St. Luc yard. A new union passenger station will be built at Dorval to serve both lines, and will become a regular stop for Pool Trains 6 and 15. The present trackage layout at Dorval will not permit these trains to stop, and accordingly during the construction period they will stop at Pointe Claire, immediately west of Dorval. Train 6 will arrive at Pointe Claire at 10:00 and Train 15 at 3:58, E.S.T.

➤ A short section of the Canadian Pacific main line near Wapta Lake (Hector, BC) is to

be relocated in connection with construction of the Trans-Canada Highway through the mountains.

➤ At the end of May the Canadian Pacific Railway discontinued Trains 41-42, Winnipeg - Saskatoon - Edmonton, known as the "Great West". On June 30th, Trains 43-44, Winnipeg - Regina - Moose Jaw, were scheduled to be discontinued also. This means that the only passenger (as distinct from mixed) service on the C.P.R. in Western Canada apart from the main line is Calgary - Edmonton, Calgary - Lethbridge, the Kettle Valley line and the "Soo-Dominion" run to Portal, North Dakota.

➤ On July 2nd the C.N.R. discontinued passenger service over its Hamilton - Allandale - Meaford line, noted for its long-standing service by gas-electric cars. On the final day of operation approximately 200 passengers were carried, almost all for short runs from one station to the next. Only four passengers, all U.C.R.S. members, made the complete round trip in the traditional "Last Run" Manner.

➤ The C.N.R. has sold its abandoned water tank at Delburne, AB for an unusual use: it was purchased by the village as a reservoir for a new water works. The 40,000 gallon tank was sold to the village for \$1,600.

➤ The C.N.R. has called tenders for a new station to replace the antiquated structure at Windsor, ON, and for a new and very substantial bunkhouse for Montreal Yard which will be a far cry from the typical wooden Railroad "Y".

➤ Further to the report in last month's issue that C.P.P. Goderich engine house is to be scrapped, it is now reported that the metal engine house from Chatham is to be transferred to Goderich to replace it.

T.T.C. NOTES

➤ Single-truck subway track grinder RT.5 (ex-passenger) was returned to Davisville Carhouse from Hillcrest Shops on July 5th by float, following a body overhaul in which plyboard was substituted for its wood slat side sheathing and dashers.

➤ Laying of new steel on Queen Street from Bathurst to Spadina was recently completed.

➤ St. Clair Avenue trackage is being levelled from Bathurst Street to Dufferin Street, with new steel installed where necessary.

➤ A safety zone has recently been constructed at the westbound car stop on Queen Street at Spadina Avenue.