

# The Grand Trunk Railway: Motive Power Acquisitions

By Raymond F. Corley

## Introduction

One of several factors influencing the course of a system's motive-power development is the impact of absorbed or acquired companies. In its 70-year tenure, the Grand Trunk became the owner of more than a score of such "local" systems, in turn representing amalgamations of over 100 smaller components. The extent and condition of their locomotive stock, and the rationalization of both the independent and integrated system services, imposed changes in planning and policy in the GTR's Locomotive Department, which in turn became the principal legacy of the Canadian National Railways for some 40 years thereafter.

The Grand Trunk's component acquisitions will be examined in context with the provision of new locomotives. To facilitate reference to locomotive numbers, or number groups, the chronology is broken down into specific locomotive roster periods corresponding to the five numbering systems of 1853, 1873, 1898, 1904, and 1910.

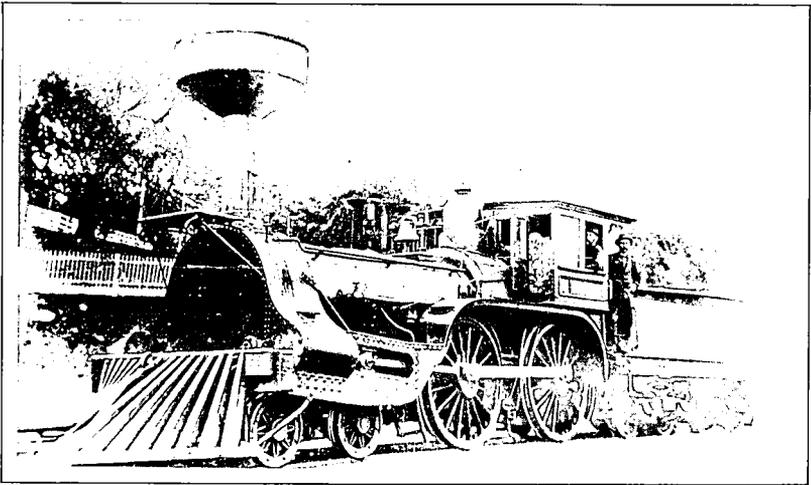
## First Period: 1853-1872

Taking the StL&A/A&StL rosters as the nucleus of the GTR system, the first locomotives represented the usual cross-section of 4-4-0s from the early North American builders in the period 1848 to 1854. Portland predominated, particularly on the portion of the system in the U.S.A.

Immediately after the GTR was formed, new stock acquisitions testified to the British corporate influence; almost the entire output of Kinmond (as established in Montreal), plus the 50 Birkenhead 2-2-2s, 2-4-0s, and 4-4-0s (via Peto, Brassey, Betts & Jackson) appeared in 1853-1857, with 10 "sequels" from Fairbairn in 1861.

In the same period came the first Canadian products—a few from Good (1854-1859) and Gunn (1857-1860) and the first ever built (in 1856) by the Ontario Foundry Co. of Kingston (eventually to become Canadian Locomotive).

Under its first locomotive superintendent, F.H. Trevithick, the GTR built its first engine (No. 209) at Point St. Charles works in Montreal, in 1859. This was, however, very much a "personal" experiment and memorial; Trevithick was succeeded by his assistant, W.S. Mackenzie, in the same year. The coming of Richard Eaton as



While not exactly a joy to behold, the Birkenheads were surely durable. This one, delivered to the GTR in 1856, became the Carillon & Grenville's *Ottawa* and remained in service until 1916. (Chaney Neg. 3445, Smithsonian Institution)

locomotive superintendent in 1863 resulted in production of 25 locomotives of sound design in the next decade; some of these lasted almost 40 years.

Portland, Canadian, Baldwin, and Mason also contributed, and in 1868 a very successful group of 25 engines came from Neilson.

### *Component Acquisitions*

After the completion of the Gzowski contract in Ontario (Toronto-Guelph-Sarnia), 25 of his Manchester and Amoskeag locomotives (Nos. 94-100, 147-164) were acquired.

In 1859 No. 317-321, the first five locomotives built by Manchester, were leased from the CB&Q and retained as 4'-8½" gauge, but they were retired prior to 1873. Presumably they were assigned special numbers other than 317-321 until about 1869.

More unusual were two ex-London & North Western (England) 0-6-0s (Nos. 237-238) acquired in 1864 and rebuilt in 1865. As rebuilt (to 4-4-0) they were retained as 4'-8½" gauge for use on the recently-leased Montreal & Champlain Railway. This system, originating with the pioneer Champlain & St. Lawrence Railroad of 1836, possessed a fleet of honorably ancient locomotives which were not considered viable by the GTR. While some were kept in service for a short time, the two converted L&NW engines were hastily-conceived replacements, presumably for frame and boiler salvage, and were so extensively rebuilt that they carried Point St. Charles shops serial numbers. Moreover the ex-M&C locomotives appear never to have been integrated into the GTR roster, presumably in deference to

their age and their “non-standard” (i.e., non 5'-6" gauge) configuration, although they *could* have had numbers from 323 upwards assigned.

In 1869 the acquisition of the Buffalo & Lake Huron brought a relatively modern group of 27 locomotives (Nos. 290-316) into the fold, with all but seven (five from Springfield and two from Hinkley) built by Schenectady between 1854 and 1859. Presumably their condition was poor, since only the two Hinkleys survived into the 1873 renumbering and rebuilding.

During the gauge conversion, the GTR found itself short of broad-gauge power and—in the midst of new 4'-8½" purchases in 1871—secured 11 almost-new engines (Nos. 341-351) from the Great Western Railway of Canada (GWR), which had already completed its change of gauge.

## Second Period: 1873-1898

### *Renumberings*

Coincident with Richard Eaton's retirement in 1873 and the appointment of Herbert Wallis, the first general renumbering scheme was evolved to reflect the standard-gauge era. This program was devised too quickly to have taken stock of new deliveries and conversions, and, in less than two years, 59 of the numbers assigned were changed (50 on locomotives from the 1853 list, and nine on new locomotives). These “interim” allocations, while forming part of the 1873 system, have been treated separately as they were not the “final” numbers chosen.

In all, only 163 locomotives were retained and renumbered (including the 50 above), which left the growing system with a shortage of equivalent-type power that had to be replaced—in kind—with new units.

### *New Stock*

Within two years 270 new locomotives had been acquired from a cross-section of builders. While almost all were American standard 4-4-0s (the so-called “Road” type of the GTR), ten 2-6-0s (Nos. 323-332) appeared from Rhode Island in 1874. The evolution had commenced, and the GTR committed virtually its entire shop output to Wallis-designed “small” Moguls from 1877 (when No. 436, the first, was built) until 1882. The exceptions were two 4-4-0s in 1881 and two 0-6-0 saddle tanks (the first tank locomotives—Nos. 20 and 23) in 1880.

Some of the small Moguls (from 1880) were the oldest GTR engines to survive until the CN takeover more than four decades later (CN 541-565, Class E-5-a). The last of them was still in service until

1936. Almost 100 of the later production of slightly larger engines survived as CN 566-660 (Class E-6-a), the last until 1942.

The tank locomotives were a new venture, a recognition that for the demands of yard service it was necessary to develop new designs rather than adapt superannuated stock. Six such locomotives were first purchased from Portland (Nos. 9, 10, 11, 12, 11, 12—the latter two replacements for the previous numbers transferred to the C&GT as Nos. 104-105).

As designed by Wallis, the saddle-tank configuration was the standard, though eight engines were built with side tanks in 1887. After the 0-4-0/0-4-2Ts were acquired from the GWR (in 1882), the GTR purchased three similar units from BLW in 1890-92.

In 1883 another type of tank locomotive appeared, also "home-built," a 4-4-2T for suburban service in Montreal. The ten (Nos. 190-199) were similar to two Rhode Island 4-4-0s converted to 4-4-2T by the GWR for Toronto service, which had come to the GTR the previous year. The final suburban tank production was a group of five more 4-4-2Ts (Nos. 39-43) for the short-lived Toronto Belt Line service in 1892, the last of which survived until 1934.

In 1891 the construction of the St. Clair Tunnel necessitated the purchase of four mammoth 0-10-0Ts from BLW (Nos. 598-601) which survived until well after electrification, although converted to tender engines soon after acquisition.

When compounding was in vogue, Wallis was among the first to experiment on a Mogul (Nos. 326) which was built in 1895 to the "Rhode Island" system. Several years were to pass before production groups were planned, as will be related later.

The GTR casually experimented with Belpaire boilers between 1896 and 1904, applied on 4-4-0s which had been built by the company between 1882 and 1890.

### *Component Acquisitions*

The quarter-century following 1873 was the period of the system's largest acquisitions from other roads—305 engines primarily from Canadian lines, plus "integration" of 220 locomotives of the U.S. subsidiaries that were to become the GTW. Of the former group, three roads, the Great Western, the Midland, and the Northern & North Western, contributed almost the entire stock.

The single most significant motive-power acquisition in the GTR's history was that from the Great Western Railway of Canada on August 12, 1882. Left out of the final organization of the "Grand Trunk Main Line" concept in 1852, the GWR had progressively developed in 30 years into the most efficient of the Canadian systems—through innovation, efficiency, sound management, and technical competence. Its locomotive stock reflected these policies,

with 203 modern engines (in the 701-907 number group), of which 162 were Rhode Island 4-4-0s (acquired new for the 4'-8½" gauge), accompanied by other modern (or rebuilt) 4-4-0s and a respectable fleet of 0-4-0/0-4-2 tanks.

The Midland Railway of Canada system, whose latter-day activities had been "steered" towards takeover by the Grand Trunk, brought an interesting collection of 43 units, principally Portlands (new to the Midland) and Manchesters (second-hand from the GTR), all less than ten years old, but including two Birkenheads sold by the GTR to the Grand Junction Railway, and inherited via the Midland. While the road was not acquired until January 1, 1884 (two years after the GWR), the locomotive numbers assigned (601-643) *preceded* the 700 series, indicating the takeover strategies in the 1880-1884 period.

The last system acquisition, on January 24, 1888, was the Northern & North Western Railway, covering the territory to the north and northwest of Toronto and Hamilton. In contrast to the GWR and the Midland, it brought a varied selection of 51 locomotives (Nos. 641-691) dating back to 1853 but including 17 from Canadian and 12 from Brooks less than ten years old. Again the allocation of the GTR road numbers (641-691) indicated the prior planning of the takeover.

### Third Period: 1898-1904

#### *Renumberings*

Following Frank W. Morse's appointment as Mechanical Superintendent, a second general renumbering was instituted—both to integrate the U.S. lines into a non-duplicating block of numbers (albeit in the series above 1000) and also to expand the scope to accommodate new power, while leaving blocks of numbers for each type. 1,103 locomotives were integrated from the concluding 1873 series roster, of which 199 were from the U.S. lines.

In December 1902 an interim realignment of 171 numbers was carried out, most of which set the stage for identities that were carried unchanged into the 1904 scheme. The key move was to create space for the new "heavy" Moguls in the 8XX block (being used up in typical GTR reverse order from the 9XX group). The earlier Moguls (in 8XX) moved into the 6XX block, displacing the 0-6-0Ts which in turn became 1-59. To accommodate them, the few remaining early 4-4-0s in this series were reassigned into blank spots with their fellows in the 1XX group.

#### *New Stock*

The era of the 4-4-0 as the basic road locomotive had faded, and three new types appeared, plus a development of a fourth, answering the needs of increased capacity and specialization.

## Railroad History

The first Ten-Wheelers (Nos. 992-999) arrived from BLW and Schenectady in 1898, followed by GTR production in 1909. Included (in 1904) were the first locomotives built by the Locomotive and Machine Co. of Montreal (later MLW) as Nos. 954-958.

One of Morse's outstanding designs was the "heavy" Mogul which appeared as a basic simple locomotive design from BLW and Schenectady in 1898. The GTR, along with three other builders, increased the total to 56 engines by 1901, followed by 25 more in 1907-08.

Advancing the design were 124 Richmond Compounds built between 1901 and 1906, the first 99 by the GTR, the rest by MLW and CLC. These were to become the mainstay of CN's branch-line and way-freight power as the E-7-a class; the last, No. 674, was retired in 1959.

In 1899 the system experimented with its first Consolidations—ten compounds from BLW—which were not successful and were sold to the GTP in 1907. Another seven years were to pass before any more 2-8-0s appeared, in 1906.

The need for heavier switching power brought the first new 0-6-0 tender engines to the road (Nos. 60-84), built by the GTR in 1903-04.

### *Component Acquisitions*

In 1901 the shops built four 4-6-0s for the newly-controlled (but independently operated) Central Vermont as Nos. 220-223, distinctively lettered in the GTR style. The next year they were returned to the parent company and became Nos. 969-972—the only acquisitions in this roster period.

## Fourth Period: 1904-1910

### *Renumberings*

A further (third) renumbering became necessary in late 1904, as a refinement of the 1898 scheme and the interim renumbering of 1902. Not only did it segregate locomotives by type, but also by builder (within the type), while continuing to distinguish the GTW assignments by a separate block of numbers from 1000 upwards.

While this system provided for new types of power being added, lack of foresight allowed little "space" for growth, and the numbers were all concentrated to just past 1300. To commence the system 998 locomotives came from the 1898 scheme, which took most of the allocated numbers at the very outset.

By 1905 an alphanumeric classification system for locomotives had been introduced and appeared in the official stock book for the year.

### *New Stock*

Additions of the "heavy" 2-6-0s were completed by 1908, and 34 more 0-6-0s were acquired. To support branch-line services, rebuildings of selected 4-4-0s continued.

A "light" Ten-Wheel design patterned after the 1898 original was introduced in 1906, and 40 were produced by 1908 (Nos. 1000-1039) by four builders.

The Consolidation type, which had made a brief and undistinguished debut in 1899, returned in 1906 as a more powerful and successful type from MLW, but still a compound. 135 were built in 1906-10, followed by a final 37 in 1910-11, all from the Alco family plants.

The other new design to appear was the BLW 3300-volt AC electric, six of them for the St. Clair Tunnel Company, which in 1907-08 relegated the 0-10-0 locomotives of 1891 to a backup role for the next ten years.

### *Component Acquisitions*

The last major (and only) system acquired in this period was the Canada Atlantic, stretching across southern Ontario from Parry Sound on Lake Huron to Ottawa, Coteau, and the United States.

Because there was no room for the mixture of 64 locomotives of six types to enter the numbering scheme in 1905, they were all grouped at the end of the roster (Nos. 1312 to 1375). While two-thirds of the fleet was ten years old or less, all were relatively light or specialized designs for the terrain, and their service in CN days was localized and limited. In the group came the only Atlantics owned by the GTR (Nos. 1332-1334) which had been purchased in 1899 and 1901 for the premier passenger service between Ottawa and Montreal (and which competed with their CPR counterparts until scrapped in 1917 and 1919 as Nos. 1500-1502).

## **Fifth Period: 1910-1923**

### *Renumberings*

The fourth (and final) system renumbering in 1910 had the same objectives as the one in 1904—to regroup power logically and permit expansion—but there was a different underlying philosophy.

Of the 1,177 units remaining in 1910, the principal road engines (Pacifics, Ten Wheelers, Mikados, Consolidations) took the low numbers, and the higher numbers were kept for the small 4-4-0s and 2-6-0s followed by the special St. Clair Tunnel locomotives. Ample room was provided for new additions, although by 1923 the 2-8-2s (at No. 607) were beginning to "squeeze" the 2-8-0s, as were the 0-6-0s (at No. 1851) the 0-8-0s.

## Railroad History

No attempt was made to segregate the GTW power, which was integrated (by type) into the roster—as the CN would do with its U.S. subsidiaries a decade later.

### *New Stock*

Four new types appeared on the system, together with upgrading and replacement of existing stock.

The largest GTR passenger power, Pacifics, first arrived in 1910, and by 1920 105 engines in the 1XX class (69-inch drivers) or 2XX class (73-inch drivers) had been added.

In 1913 the first of 160 Mikados appeared, with eight more on order when the CN took over.

To replace the aging 4-4-2Ts in suburban service, six robust 4-6-4 Forney locomotives, with rear bunker and tank, were acquired from MLW in 1914.

While progressive delivery of over 100 0-6-0s was made, the GTR acquired its first 15 0-8-0 switchers in 1920, with 12 on order as of 1923 (together with 13 0-6-0s).

Noteworthy was the new “medium” Mogul design (Nos. 1000-1024), specifically for branch-line mixed-traffic duty, of which 25 came from CLC in 1910 (and were still extant half a century later).

All of these four new designs were efficient and effective, and, with the prior 2-6-0, 2-8-0, and 0-6-0 types, became an important legacy for the CN in the years to come.

Upgrading of the fleet included superheating, simpling compounds, and adoption of other than Stephenson valve gear.

### *Component Acquisitions*

A series of minor additions occurred in the closing years. Eight small engines (Nos. 2334-2338 and 2531-2533) came to the GTW from the Pontiac, Oxford & Northern in 1910, and three GTP Moguls were “re-inherited” in 1915 (Nos. 2533-2535). Similarly, in 1916 the CV sold a Pacific (No. 233) to the GTR (as No. 289) in exchange for Mogul No. 1394. (A few years later, as CN 5608, it was leased briefly to CV and relettered CV 238, but oddly enough only a handful of people recognized it as “old 233”!)

Finally, in 1917 the GTR snapped up 12 of the ex-Panama Railroad 11-year-old 2-6-0s (as Nos. 1100-1111) since they were similar to the 1000-1024 series of 1910. Unfortunately they were not as sturdy as their protégés, and were retired after only a few years with CN.

## Canadian National Railways—1923

The final general renumbering of 1,349 Grand Trunk locomotives surviving as of March 1, 1923, entailed their incorporation into the CN numbering system set up in 1919. For most engines it was the last application of a new identity—but not for all. When dieselization forced expansion of number series on the CN in the 1950s, some were *again* temporarily renumbered for their final days—notably the Class E-10-a Moguls and some of the Class 0-9-a 0-6-0s.

Several engines carried five GTR numbers during their lifetime, and some of these ultimately carried a sixth (CN) identification. The most renumbered locomotive (although the writer has not exhaustively researched each unit) appears to have been GWR 142, which successively carried GTR numbers 777, 34, 119, 292, and 2123, and finally CN 135. □

## Suggestions for Further Reading

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- G.R. Stevens, *Canadian National Railways*. Toronto: Clarke Irwin & Co., two vols., 1960 and 1962.
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Summary of Locomotives  
By Numbering Systems

| System                  | Renumbered<br>From<br>Prior System | New         | Second-<br>Hand | Renumbered<br>Within<br>System | Total<br>Locomotives | Total Roster<br>Numbers |
|-------------------------|------------------------------------|-------------|-----------------|--------------------------------|----------------------|-------------------------|
| 1853                    | —                                  | 324         | 71 a            | —                              | 395                  | 395                     |
| 1873<br>(Nov. 1872)     | 173                                | 551         | 305 b<br>220 c  | 157 d                          | 1249                 | 1406                    |
| 1898<br>(Jan. 1898)     | { 904<br>199 e                     | 237         | 4 g             | 254 f                          | 1344                 | 1599                    |
| 1904<br>(Nov. 1904)     | 819<br>179 e                       | 239<br>26 e | 64 h            | 8<br>34 e                      | 1327                 | 1369                    |
| 1910<br>(Jan. 1910)     | 1177                               | 477 j       | 24 i            | 6                              | 1678                 | 1684                    |
| CN 1923<br>(March 1923) | 1349                               | —           | —               | —                              | 1349                 |                         |

## Notes Regarding Summary

(Excludes StL&A/A&StL)

|     |     |                    |         |                           |
|-----|-----|--------------------|---------|---------------------------|
| a - | 25  | Gzowski            | 1856-57 | (94-100, 147-164)         |
|     | 2   | L&NW               | 1864    | (237-238)                 |
|     | 1   | Contractor (Wood)? |         | (127)                     |
|     | 27  | B&LH               | 1869    | (290-316)                 |
|     | 5   | CB&Q               | 1860    | (317-321)                 |
|     | 11  | GWR                | 1871    | (341-351)                 |
| b - | 2   | Mich. A/L          | 1877    | (1-2)                     |
|     | 4   | PD&LH              | 1880    | (501-503/05)              |
|     | 1   | S&H                | 1880    | (504)                     |
| 305 | 43  | Midland            | 1884    | (601-643)                 |
|     | 1   | Det. Extn.         | 1885    | (473)                     |
|     | 51  | N&NW               | 1888    | (641-691)                 |
|     | 203 | GWR and WR         | 1882    | (701-909 less 728-733)    |
| c - | 165 | C&GT               |         | (1-165) inc. ex GTR locos |
|     | 6   | TS&M               |         | (194-199)                 |
| 220 | 41  | DGH&M              |         | (201-240)                 |
|     | 8   | CS&M               |         | (245-252)                 |

|     |  |        |            |                        |
|-----|--|--------|------------|------------------------|
| d - | Includes 59 interim 1873 numbers                             |        |            |                        |
| e - | U.S.A. lines   |        |            |                        |
| f - | 171 were the December 1902 renumbering                       |        |            |                        |
| g - | CV 220-223   |        | (969-972)  |                        |
| h - | CA engines in 1905   |        |            |                        |
| i - | 8  | PO&N   | 1910       | (2334-2338, 2531-2533) |
|     | 3  | GTP    | 1915       | (2533-2535)            |
|     | 1  | CV     | 1916       | (298)                  |
|     | 12   | Panama | 1917       | (1100-1111)            |
| j - | Does not include engines ordered by GTR but delivered to CN: |        |            |                        |
|     | GTR 600-607  | (GTW   | 3740-3747) |                        |
|     | GTR 1839-1848  | (CN    | 7509-7518) |                        |
|     | GTR 1849-1851  | (GTW   | 7519-7521) |                        |
|     | GTR 1873-1877  | (GTW   | 8222-8226) |                        |
|     | GTR 1878-1884  | (CN    | 8215-8221) |                        |

## Note Regarding Roster

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but merely the source from which the print was obtained. The editor wishes to express his profound gratitude to Mr. Corley for making available to the readers of *Railroad History* this remarkable documentary record of the motive power of the Grand Trunk and its constituent parts.