

The Lackawanna's original locomotive "Spitfire" at its last resting place behind the Scranton roundhouse

Power Over the Poconos

The Delaware, Lackawanna & Western, in common with many American railroads, is composed of a number of smaller lines originally projected and built at different times. Motive power on these lines varied with the periods and each had its own designs to suit local peculiarities of operation.

The Lackawanna's first two locomotives were used during construction of the first section of its main line—the Liggett's Gap Railroad—for which the present anniversary is being celebrated. One was a small 4-2-0 type named "Pioneer" (commonly known as "Old Puff"), acquired in 1850 from the Ithaca & Owego; it had been built by Walter McQueen at Albany, N. Y., in 1840 and was not too well adapted to the work. The other, purchased after the Liggett's Gap was re-named Lackawanna & Western in 1851, was the "Spitfire," a second-hand 0-4-0 machine that came from the Philadelphia & Reading. It had been built in England in 1838 and was continued in service on the D.L. & W. until 1859.

Because the Lackawanna & Western joined the 6-ft. gage Erie line at Great Bend, Pa., its early cars and locomotives were made to that width of track. With the opening of the line in October 1851, road locomotives were required, so three 4-6-0 freight and three 4-4-0 passenger engines were purchased from Rogers, Ketchum & Grosvenor of Paterson, N. J. The Cayuga & Susquehanna, successor to the Ithaca & Owego, later leased by the D.L. & W., also acquired two locomotives each of the same types as the parent road. Rapidly expanding business necessitated continued purchase of more locomotives. Engines from William Swinburne and Danforth, Cooke & Co., both of Paterson, were added to those from Rogers, Ketchum & Grosvenor.

Swing to Anthracite

All these locomotives burned wood, but the prevalence of anthracite in the Lackawanna valley soon caused the management to investigate the possibilities of using it for locomotive fuel. An experiment was made with a new

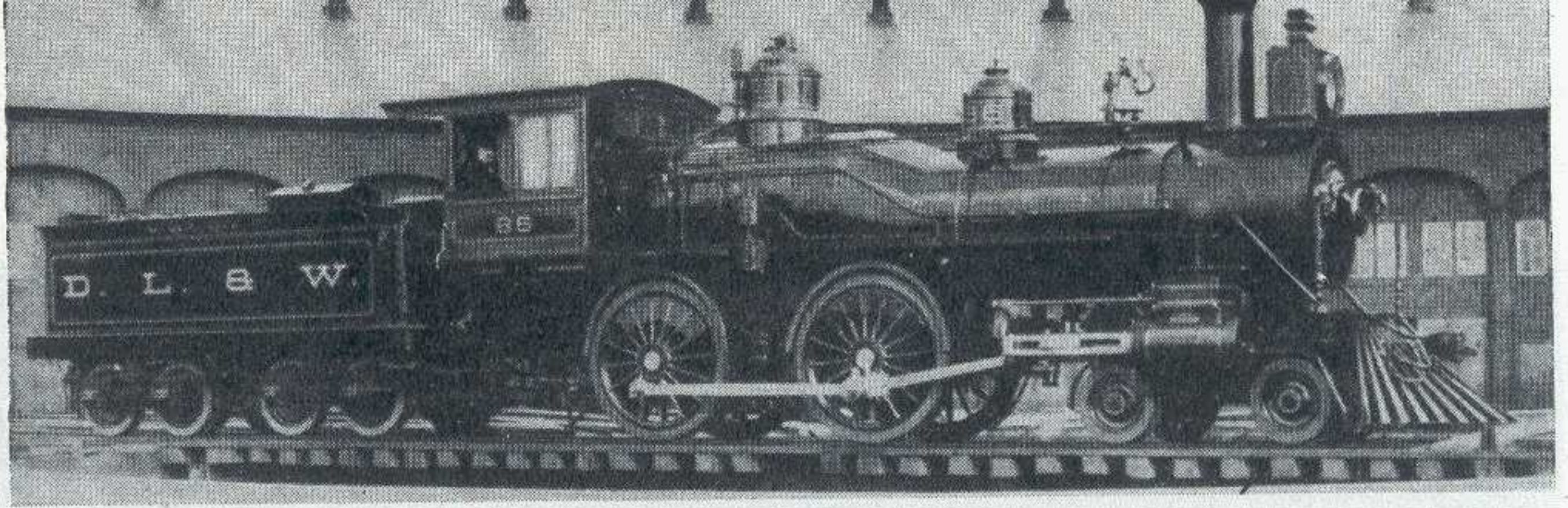
engine appropriately named "Anthracite," built by Danforth, Cooke in April 1854. It was similar to some locomotives then being operated by the Philadelphia & Reading, which was already burning hard coal. Continued search for coal-burning engines caused the road to purchase the "Carbon," an 0-8-0 Camel engine, built by Ross Winans of Baltimore, in October 1854. It was practically a duplicate of the heavy freight locomotives popular on the Baltimore & Ohio; five more were delivered to the D.L. & W. in 1856.

Swinburne, Smith & Co., of Paterson, also tried their hand and built an 0-6-0 coal-burning freight locomotive in 1856, named "Lehigh," which was followed by five others of the same construction in the next year. These engines somewhat resembled the B. & O. machines, but neither type proved greatly successful as anthracite burners.

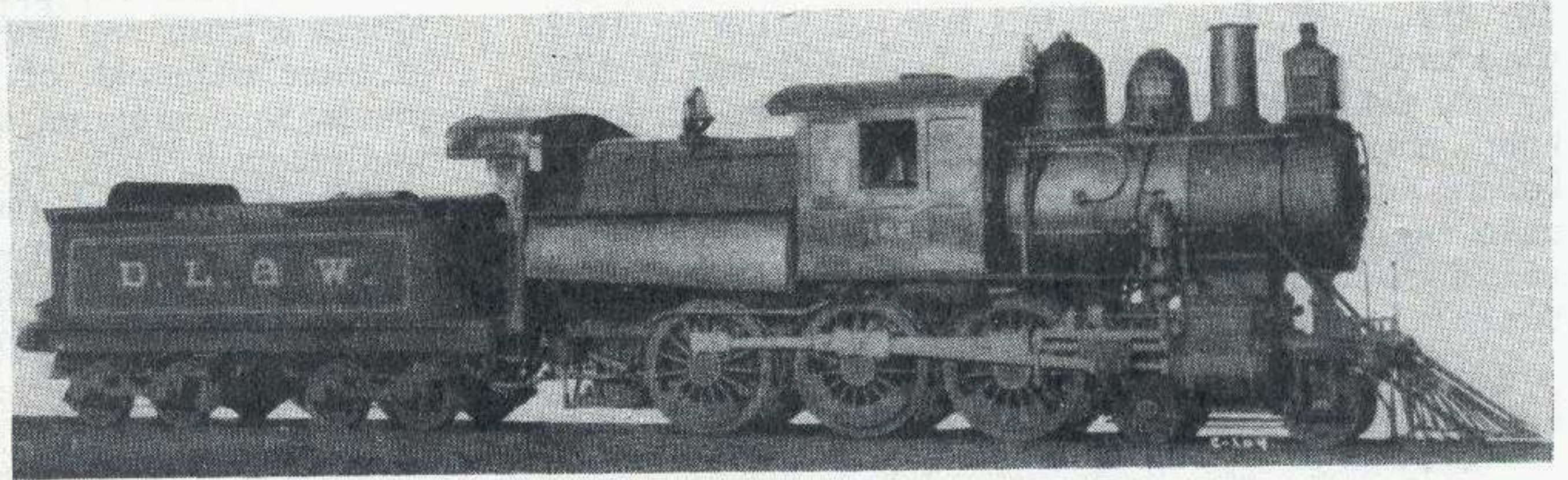
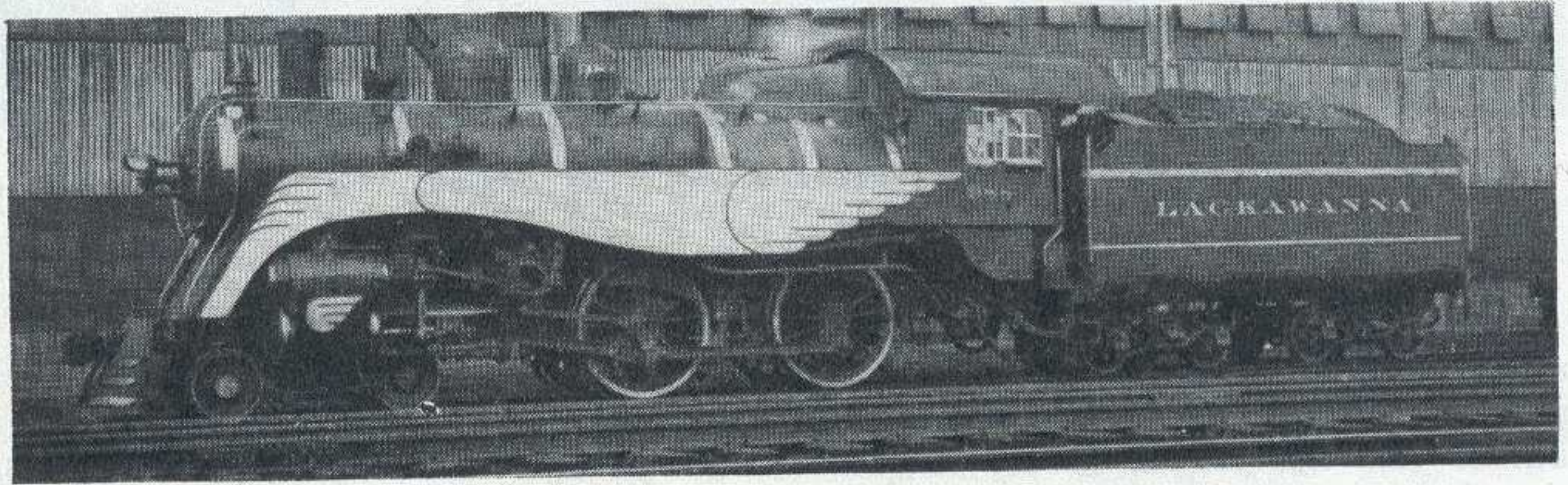
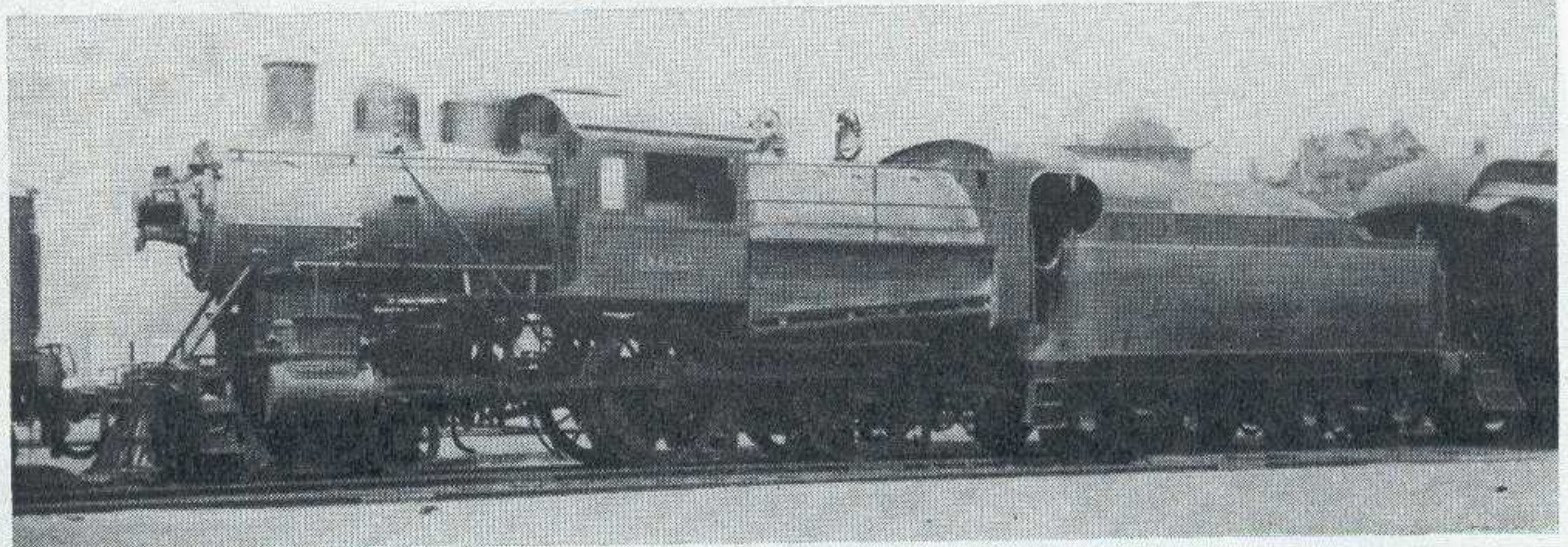
In the meantime, while the road continued to buy wood-burning 4-6-0 engines for freight service, the builders continued experimenting; and in 1855 Danforth, Cooke finally constructed two 0-6-0 engines, "Delaware" and "Black Hawk," that seemed to point in the right direction. Two more locomotives based on the knowledge of the combined experiments were constructed by Danforth, Cooke in 1857. These were appropriately named "Investigator" and "Decision" and had a 4-6-0 wheel arrangement. The success of these machines firmly established the 4-6-0 hard-coal burning locomotive on the D.L. & W.; a further development was the "Moses Taylor," pictured on page 72, built by Danforth, Cooke in 1859. Up to this time no passenger engine had been built to burn anthracite.

The 4-6-0 type proved to be most popular for freight until 1870, when the first 2-6-0 was built for the D.L. & W. Thereafter, for 22 years practically all its new freight engines were either 2-6-0 or 2-8-0 types.

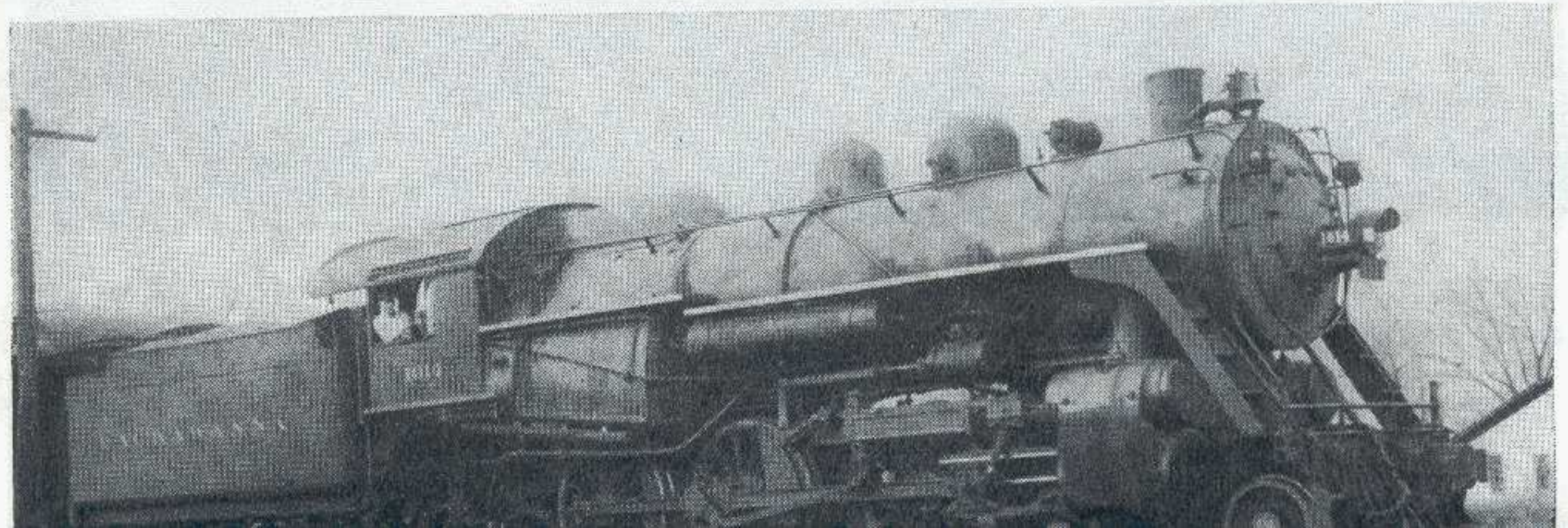
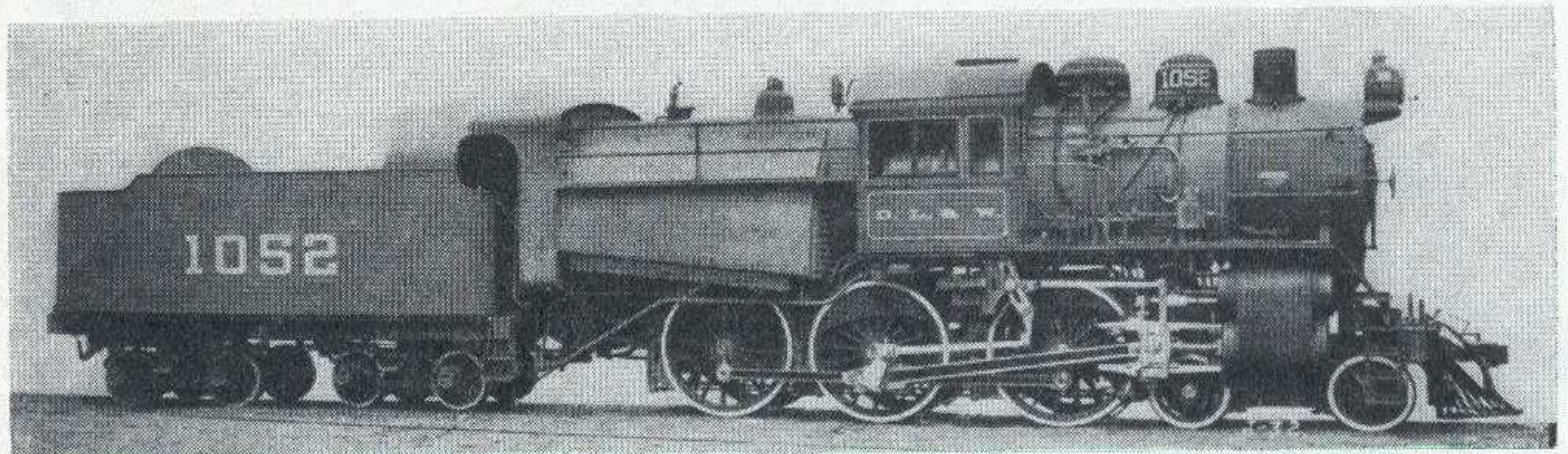
Another change in motive power occurred in 1876, when the D.L. & W. 6-ft. track gage was altered to standard gage. In anticipation of this event many locomotives had been built that were readily convertible with a minimum of shop work. One of the passenger

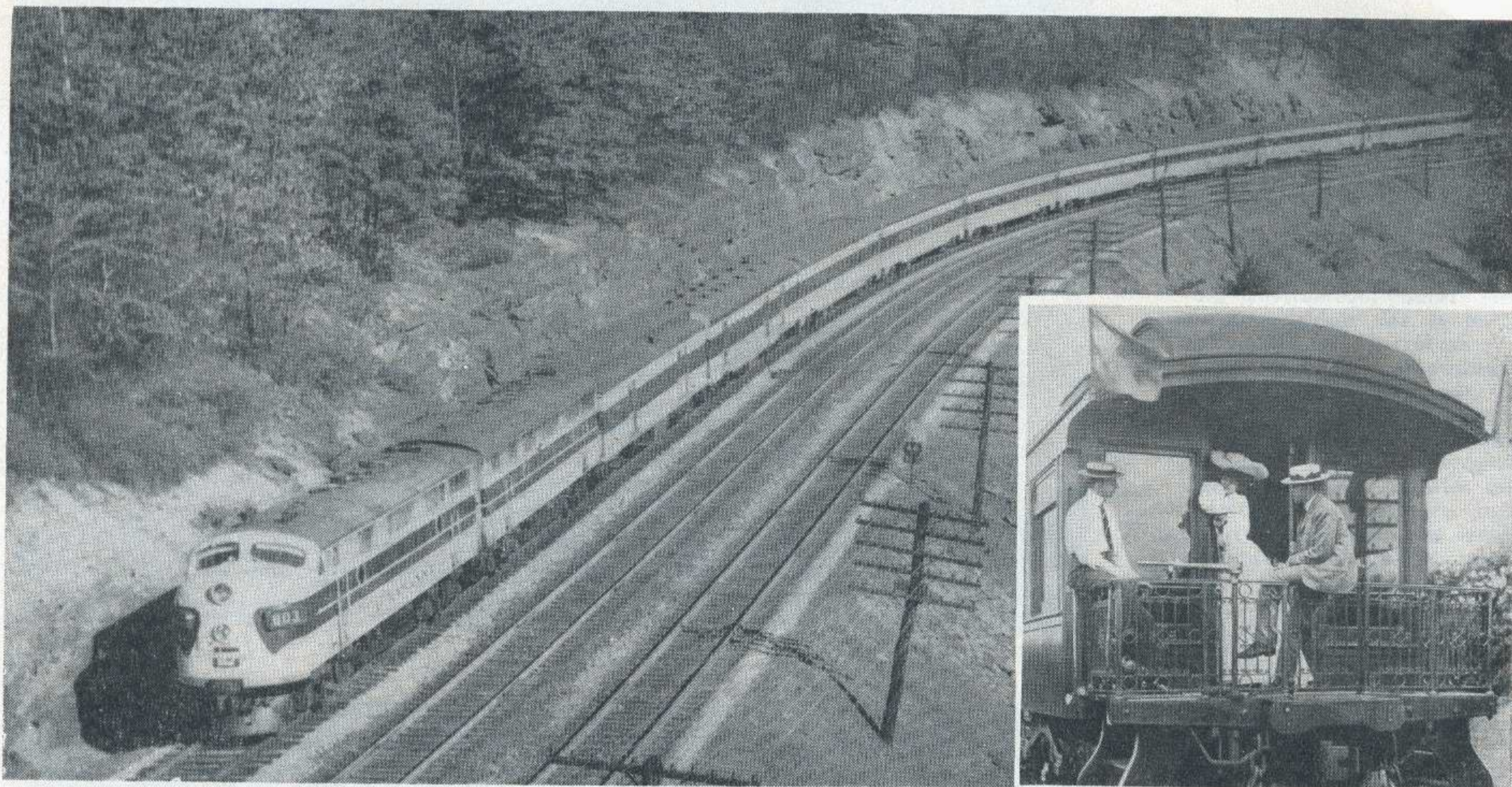


The three locomotives pictured at the right represent an evolution in design of Lackawanna passenger power. At the top is shown the former Morris & Essex Division No. 86, built at the Kingsland, N. J., shops of the railroad. The center picture, also one of the eight-wheel passenger locomotives, shows a "Mother Hubbard" cab arrangement with the Wootten type fire box. The lower picture is one of the rebuilt "streamlined" eight-wheelers after having been changed back to a single-cab design over the wide firebox



Another example of design evolution is this group of ten-wheel (4-6-0) type passenger locomotives. At the top is Morris & Essex No. 162 built by the Cooke Locomotive & Machine Co. in 1896. Locomotive No. 1052, in the center, was originally built by the Rogers Works of the American Locomotive Company for high-speed passenger service and a similar locomotive of the ten-wheel type, shown at the bottom, was rebuilt about 1931 with the single-cab arrangement





Fifty years of "Phoebe Snow". The original "gal" in 1900 and the Lackawanna's new train of today

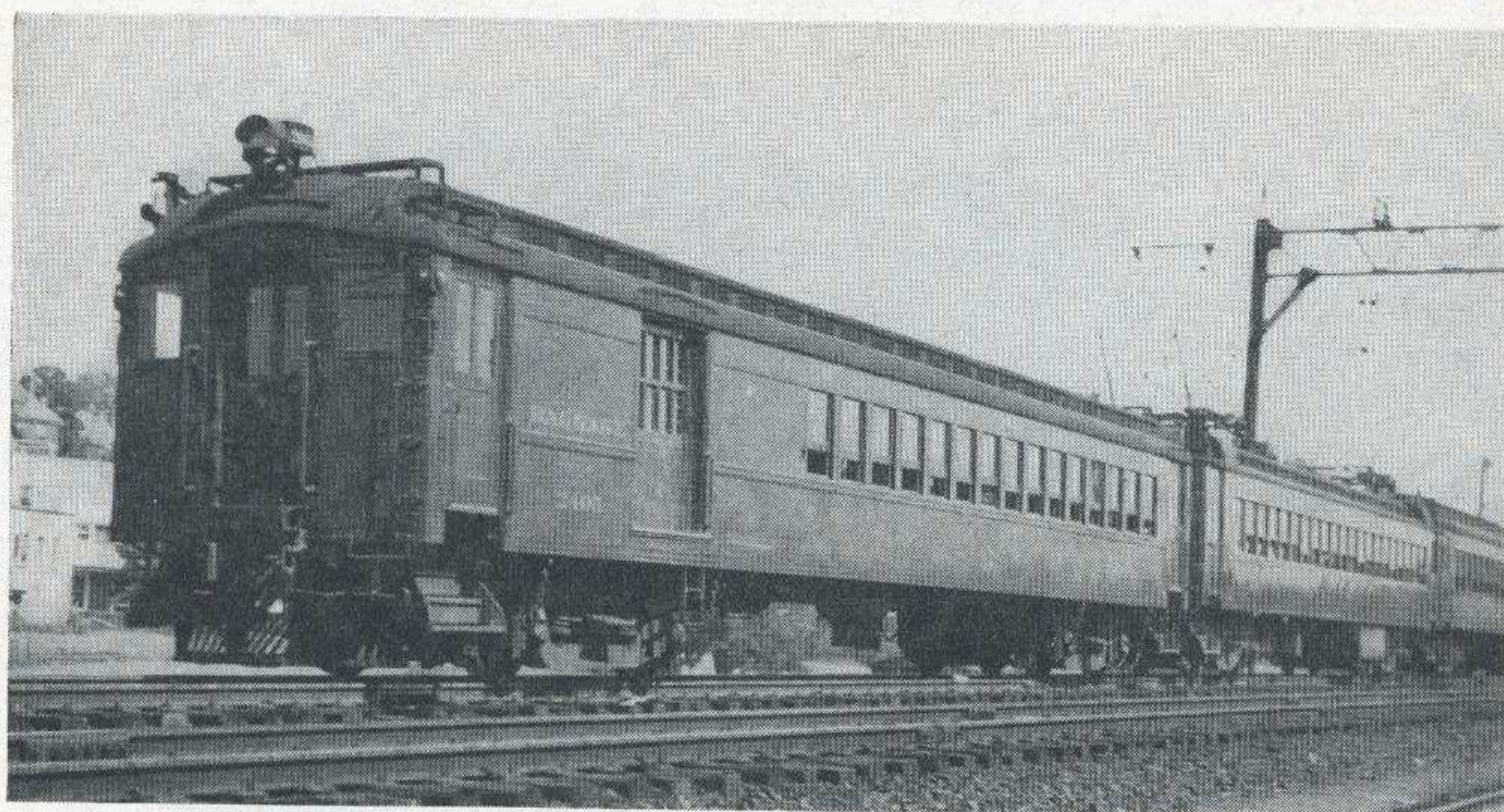
engines changed was the "Sam. Sloan," named for the president of the railroad. This engine had been a wood burner and was rebuilt to use lump anthracite at the time its gage was changed.

Most of these Lackawanna lump burners, as they were called, had long, narrow fireboxes equipped with water-tube and bar grates. This style remained in service for many years, until the advent of the Wootten firebox, with its wide grate intended to burn culm anthracite. The D.L. & W. first tried this type of boiler in 1882, when two 2-6-0 locomotives were built, followed in 1887 by two 4-4-0 passenger engines. Many older single-cab lump burners were rebuilt with new Wootten type boilers and their useful life extended. The success of these engines caused the railroad to concentrate upon wide-firebox, double-cab construction until 1907, when the last double-cab engine was built. The wide firebox,

however, was applied to many single-cab locomotives in later years.

A general consolidation of the various lines leased by the D.L. & W. took place in 1899 and the new management inaugurated a system of ordering locomotives according to a common standard instead of using separate designs for each division. In 1900 the Lackawanna owned 600 locomotives; 84 per cent of these were on the three principal parts of the road, the Main Line, Morris & Essex and Buffalo divisions. Nearly 70 per cent of these were old, of light construction and moderate power, so a program of acquiring modern locomotives was planned.

Because of road restrictions, reasonably light axle loads prevailed, and it was not until 1912 that the Lackawanna purchased its first modern locomotive equipped with trailing wheels. In 1899 the heaviest engines on



The Morris & Essex division was electrified in 1930, using multiple-unit cars with 3,000-volt d.c. overhead catenary power distribution

the road were 15 4-8-0 machines weighing 205,000 lb. and used in pushing service out of Scranton. They were built by the Brooks Locomotive Works at Dunkirk, N. Y., and five more came from the Dickson Manufacturing Company of Scranton in the following year. Thereafter the heavier freight engines used on the road were 2-8-0 types, until in 1912 the first 2-8-2 type was built. Between 1903 and 1911 several orders were placed for light freight engines of the 2-6-0 wheel arrangement. These were of both the wide firebox, double-cab type and single-cab type and were scattered over the system in local freight and branch-line service.

The necessity for heavier freight engines became apparent when the New Jersey cut-off was finished and 15 2-8-2 locomotives came from Schenectady in 1912, followed by several orders up to 1924, when the last of this type was purchased, the road then having over 100 in service. In an endeavor to secure a more economical freight engine, the Lackawanna had 35 4-8-2 three-cylinder locomotives built by the American Locomotive Company, Schenectady (N. Y.) Works in 1926 and 1927 and they were in use until recent years. The latest steam freight locomotives were of the 4-8-4 wheel arrangement and were acquired from 1929 to 1934. These locomotives were also used in passenger service prior to the advent of diesel power.

Switching and Passenger Power

Following the standardization of motive power in 1900, a large group of 0-6-0 types were built between 1901 and 1911. Approximately 120 engines of this type were in service, half of which had wide fireboxes. Supplementing these were some 0-8-0 transfer locomotives, built between 1906 and 1917. These were augmented from 1929 to 1935 by 60 0-8-0 locomotives which were rebuilt from 4-6-2 and 2-8-2 road engines.

At the turn of the century the Lackawanna ordered a number of 4-4-0 type locomotives capable of handling express trains. These were duplicated over the years from 1901 to 1911. In 1900 seven engines of the 4-6-0 type were built, but these engines did not perform too well and were relegated to heavy suburban runs. A newer type of 4-6-0, acquired in 1905, hauled through passenger trains successfully. They were duplicated in a number of orders until 1908. In 1912 the first 4-6-2 type engine was placed in service. These locomotives had extremely

wide fireboxes, with the cab placed at the rear, a style that in later years was followed in rebuilding some of the 4-4-0 and 4-6-0 double-cab passenger engines. About 80 4-6-2 locomotives were acquired between 1912 and 1924 in a number of sizes to accommodate varying traffic. One group was built with comparatively small driving wheels and large cylinders and boiler, for either light freight or passenger service.

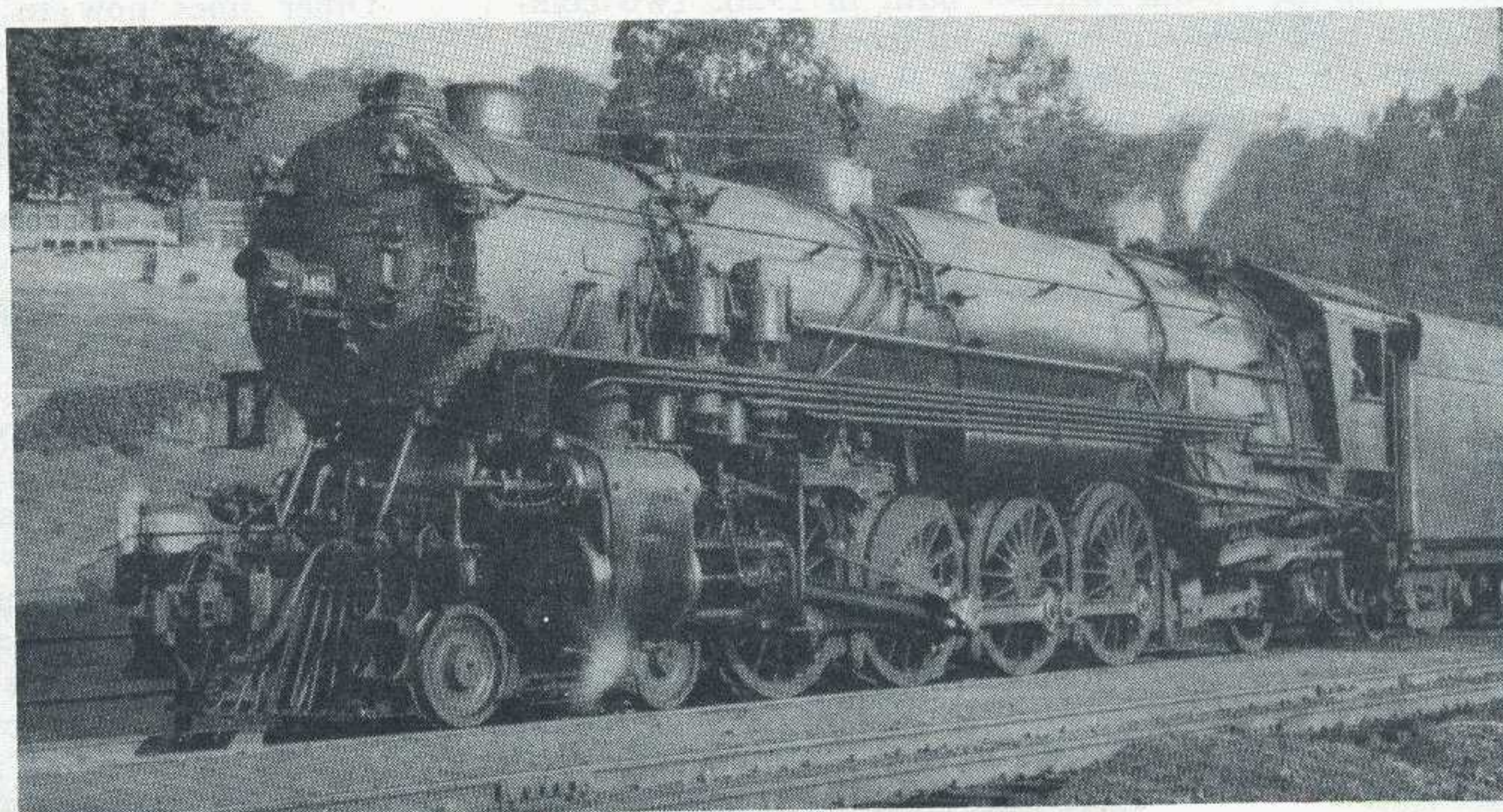
Increasing weights of trains caused the D.L. & W. to purchase five 4-8-2 type locomotives in 1924 and these were augmented by five more in 1925. The latter engines were three-cylinder machines, but frequent mechanical failures necessitated a rebuilding to two cylinders in 1930 and 1931. A group of five 4-8-4 passenger engines with large drivers came on the road in 1927 and these were the last of that type intended for through trains prior to the building of the dual purpose 4-8-4's already mentioned.

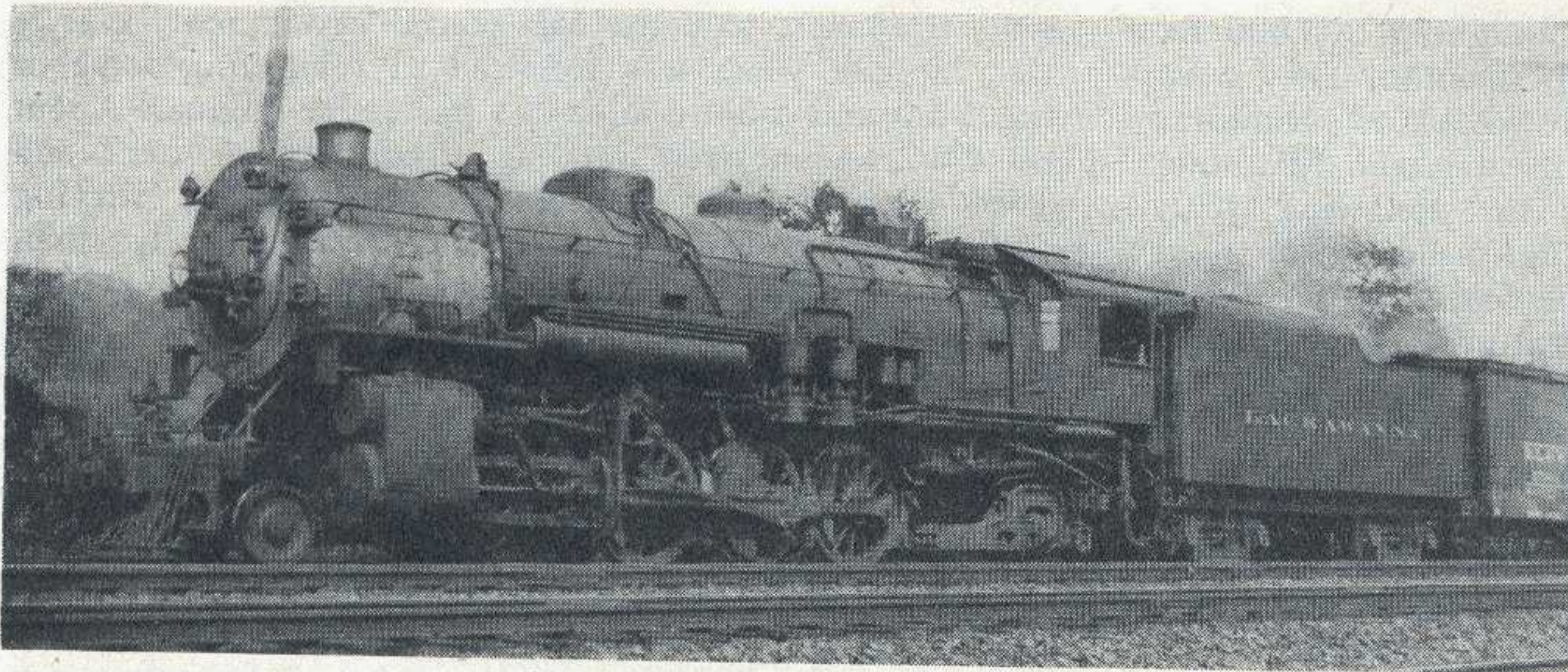
The last steam passenger locomotives constructed for the D.L. & W. were five 4-6-4 heavy duty machines that came on the road in 1938. They ran in through service for a while and later descended to suburban service.

The D.L. & W. has always been noted for straightforward and conservative design of steam locomotives. Only two compound locomotives were ever built at a time when this type of engine was being ordered in large numbers on other roads. The only deviation from conventional construction was when the road purchased the three-cylinder locomotives, but they were not repeated. D.L. & W. never had any 4-4-2, 2-6-2 or articulated engines, which types were common on other neighboring roads.

An interesting sidelight on the motive power problem of the Lackawanna is that, about 1921-22, extensive studies were made with the objective of electrifying the mountain grades east and west out of Scranton. In 1922 this project was finally abandoned and the operation on these heavy grades was simplified by the purchase of 50 heavy 2-8-2 type locomotives, which made it possible to handle the average freight train with two locomotives instead of five or six of the older units. The higher locomotive-mile costs of the proposed electrification, in relation to existing traffic volume at that time, may have been one of the factors which weighed against electrification. So, today, with the diesel-electric, which after all, is but an electric locomotive carrying its own power plant, the Lackawanna has finally "electrified"

The Lackawanna, like a few other railroads, tried out the three-cylinder design in both passenger and freight service. Here is Locomotive No. 1451 at Paterson, N. J.





Wayne Brumbaugh

About 1921, the Lackawanna considered the electrification of the Pocono Mountain grades, in order to eliminate the use of three and four pushers on a single freight train. For economic reasons, the electrification program was abandoned and heavy Mikados such as the one at the top left were built by the American Locomotive Company for use on these grades. Two of these 2100-type locomotives were then able to handle the same train as four or five Consolidation types. The most modern Lackawanna steam freight and passenger power, the 1600 Class 4-8-4's, is shown in the lower picture

its mountain grades with a power facility having satisfactory economic and operating characteristics.

During the years 1929-30 the Morris & Essex division was electrified from Hoboken to Dover, N. J. To operate this service 141 motor cars were built new and 142 coaches, parlor cars and combine cars were rebuilt as trailers. The motor cars were built to operate on 3,000-volt direct current drawn from an overhead wire.

The first oil-electric locomotive on the D.L. & W. was a 300-hp. 66-ton switcher built in 1926. Two combination trolley-electric-battery-oil locomotives were built in 1930 for freight transfer and switcher service. These could operate from the 3,000-volt d.c. overhead wire or by their own engine. It was not until 1933 that the road bought another diesel-electric switcher, which was followed in 1934 by seven others like it. These were put at work in Hoboken terminal, replacing several 0-6-0 steam switchers. Since that time many other diesel-electrics have been purchased.

All the road's freight and passenger diesel-electrics are of the 1,350-, 1,500- or 2,250-hp. single-unit types.

Motive power on the M. & E. consisted in the beginning of two small 4-2-0 locomotives built by Seth Boyden, Newark, N. J. The 4-4-0 type came into use quite early and continued to be the favorite passenger engine until 1899. Some 4-6-0 and 2-8-0 engines were in freight service, but most of this service was operated with 2-6-0 locomotives. After wood burning was discontinued, all engines burned lump anthracite, except

a few culm burners with wide fireboxes. After the consolidation with the main line, more modern locomotives began to be used, but some of the original M. & E. engines were in light service for several years after.

When the New York, Lackawanna & Western was opened to traffic in 1882 from Binghamton to Buffalo, new motive power was purchased to operate it, but eventually main line engines began to be used and all original N.Y.L. & W. machines were rebuilt or scrapped.

Other lines now in the Lackawanna fold that had their own motive power were the Lackawanna & Bloomsburg; the Syracuse, Binghamton & New York; and the Oswego & Syracuse.

Passenger and Freight Cars

Lackawanna's rolling stock has always been kept abreast of the times, in both passenger and freight service. The road was one of the first to use all-steel cars, which, incidentally, were open platform suburban coaches built by the American Car & Foundry Co. in 1911 (see picture on page 72). Through-line equipment soon followed and today the latest designs of lightweight passenger cars make up the consist of the "Phoebe Snow" and other through trains.

Freight equipment is about evenly divided between open top and closed cars. The large amount of coal originating on the line requires over 6,000 hopper cars to handle the traffic on "the road of anthracite."