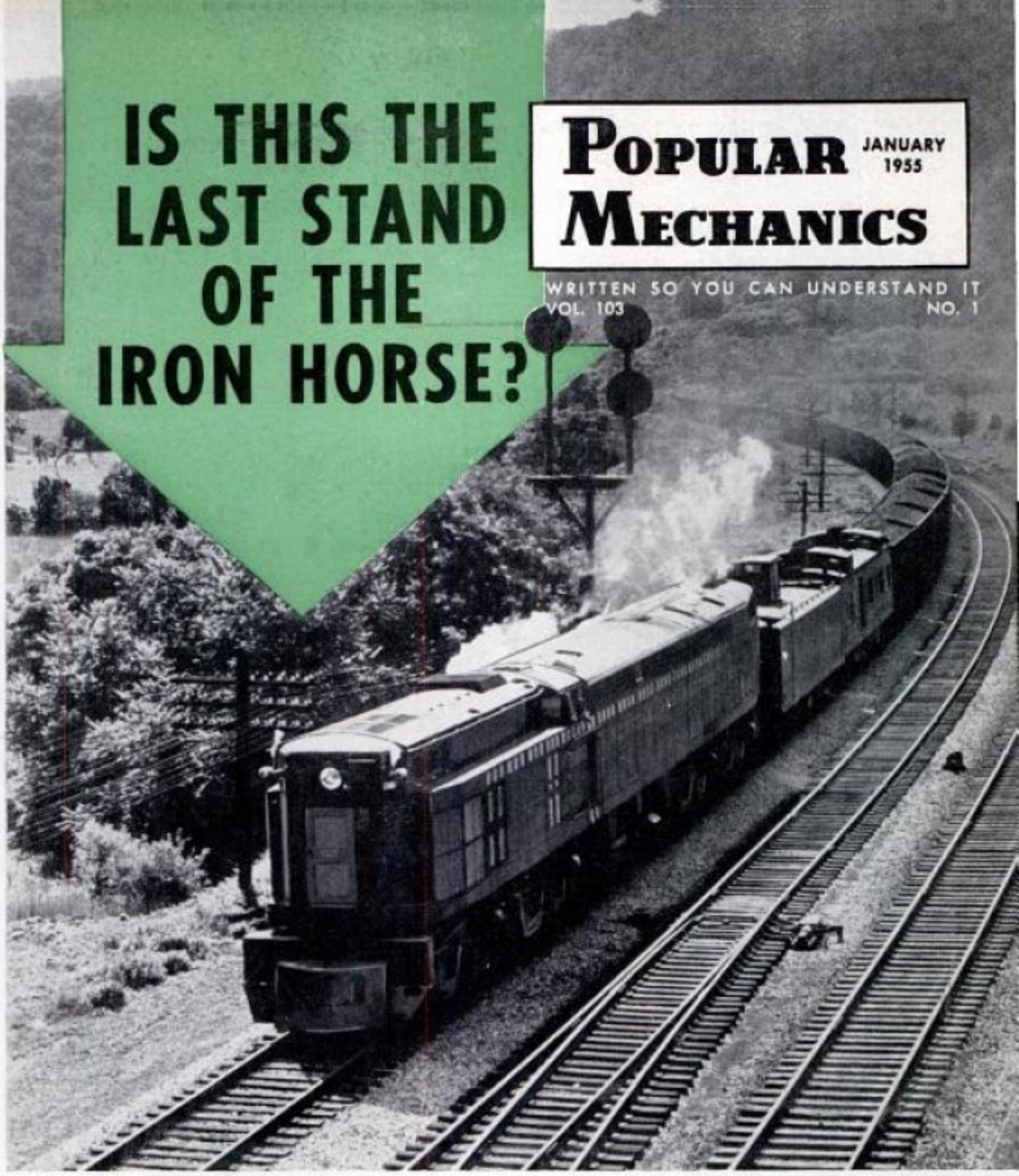
POPULAR MECHANICS
JANUARY 1955
WRITTEN SO YOU CAN UNDERSTAND IT
VOL. 103 NO. 1

IS THIS THE LAST STAND OF THE IRON HORSE?



By Walton M. Rock

A BIG, BLACK monster of a locomotive is growling up and down the boiler-busting grades of the southern Appalachians these days, pulsing a defiant challenge to the sleek diesels so rapidly replacing its coal-burning brothers.

This new power plant on wheels burns coal, too, like all the other engines operated by the Norfolk and Western Railway. But the resemblance ends right there.

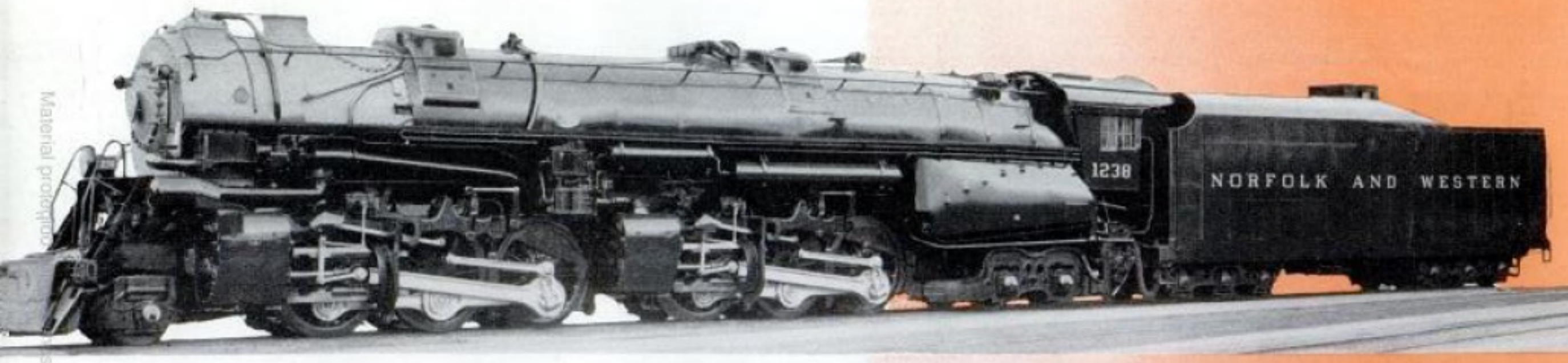
For this hulking brute is a coal-fired, steam-turbine-electric locomotive. Steam generated in the boiler at high pressure drives a turbine which develops 4500 horsepower at an electric generator supplying power to 12 traction motors, one for each axle.

But though this is a steam locomotive, the legendary Casey Jones and his mates of a bygone day would never recognize it as such.

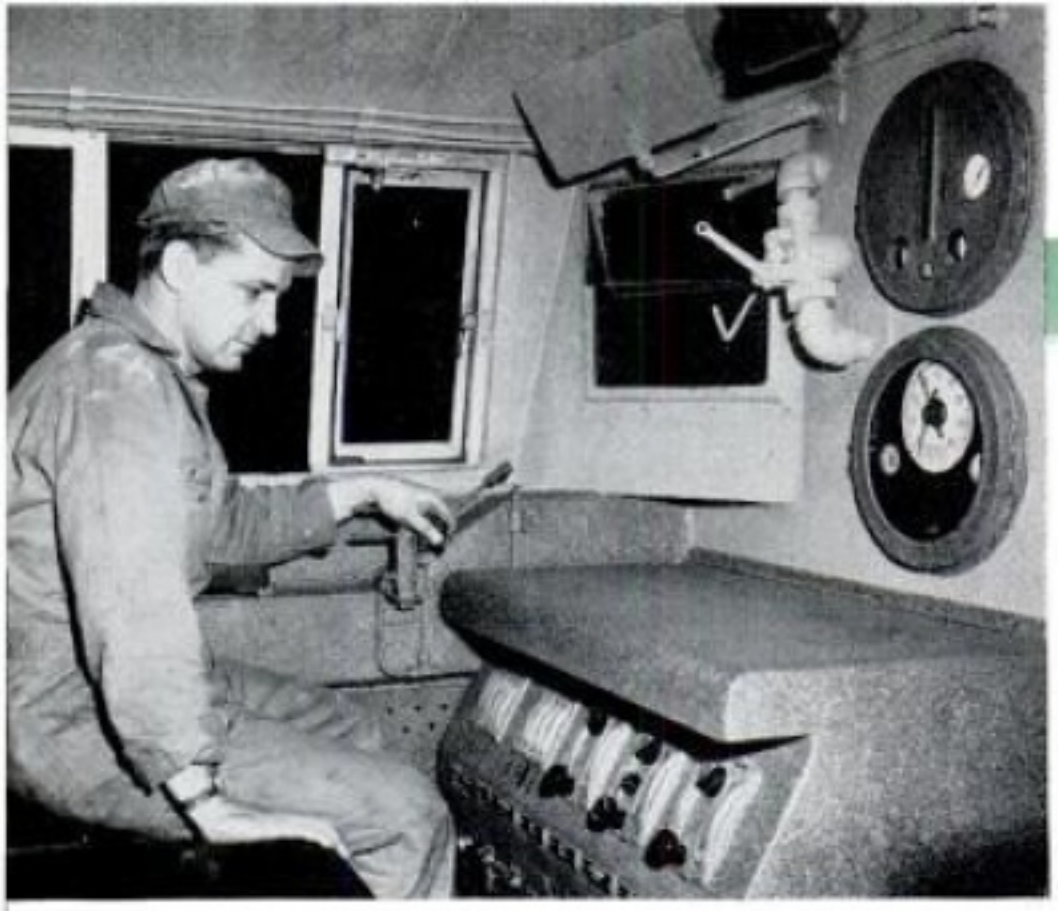
In size alone, it beats anything Casey ever saw. Together with its tender, it is a little over 161 feet long and weighs 586 tons.

The black giant is so long that, with its tender, it cannot be handled on existing turntables. When it is necessary to turn it around, the tender is uncoupled, the huge

Norfolk and Western had some pretty-good-sized steam locomotives pounding its high iron before No. 2300 came along. But the big steam-turbo-electric job, with its 586-ton weight and 161-foot, 1½-inch length, puts them in the little-brother category. Former record-holders in the weight and length divisions were these articulated giants. The 2-8-8-2 Class Y6 (above) weighed 495 tons, while Class A 2-6-6-4 locomotives (below) were the road's longest, 121 feet, 9¼ inches. Both were made in N&W's own Roanoke shop



Designed for the heavy work of hauling coal over Appalachian grades, giant "Jawn Henry" is big and black and powerful, dwarfing sleek No. 600, a bullet-nosed, streamlined passenger locomotive. The Norfolk and Western is the only major railroad in the United States that has stuck to steam for all freight and passenger operations. With the great part of its revenue coming from haulage of coal, the road uses coal-fired steam for motive power. No. 2300 is the latest N&W effort to prove the diesel experts wrong



Automatic stoking in this coal burner takes the sweat out of the fireman's job. His cab has a minimum of simple controls

locomotive is turned, and the tender hitched onto the other end. It is nearly 40 feet longer than the N&W's longest conventional engine.

Casey and his friends would find a few other items turned around, too. Coal, 20 tons of it, is in a compartment of the engine itself, in front of the cab. The boiler is behind the cab, along with the turbine and generators. The tender contains only water (22,000 gallons) and a special water softener, with a brakeman's cupola perched jauntily on top.

Coal is fed from bunker to boiler by an automatic stoker. The softened, de-aerated, preheated water, preheated air for combustion and steam pressure all are fed and maintained at the proper levels by automatic controls. Even the ashes are removed automatically. The grate travels like an endless belt, depositing the ashes as it makes its turn.

Incidentally, one glance at the steam-pressure indicator would have sent Casey and his fireman jumping from the cab for their lives. The needle holds at 600 pounds per square inch, twice that of a conventional steam locomotive.

Locomotive 2300, the official designation given the engine by the N&W, is many things to many people.

To the mountaineer watching from his lonely shack, or the town dweller along the right of way, it is a long (the engine itself is nearly 112 feet), angular "shoebox" on wheels that can haul a mile-long string of coal cars past his place at 60 miles per hour. Such smoke as there is comes from a stack that is little more than a hole in the roof, and there is no puffing. The sound that comes from No. 2300 could best be described as a dull roar.

Coal men look on it hopefully as a development that may restore to them a once-great market that has been shrinking steadily since the advent of the diesel.

The N&W people see it as the answer — maybe — to the diesel power they have so far scorned. The N&W, alone among major railroads, has stuck to the steam engine for both freight and passenger use.

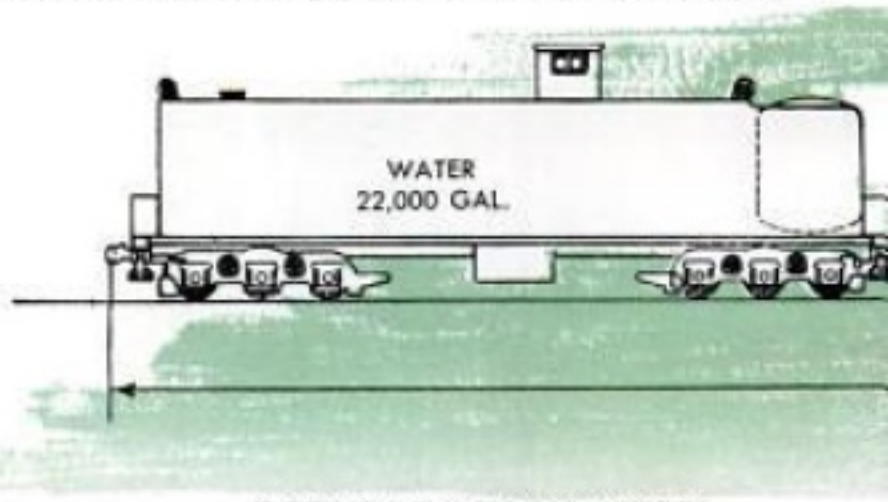
A quick glance at the railroad's operations shows the reasoning behind the N&W's position. Economically, Norfolk and Western makes a major portion of its living hauling coal out of the rich southern Appalachian field, and is not disposed to slap its best customer by using diesel power.

Moreover, it's good coal. And, by virtue of its availability, it's the cheapest fuel the railroad could burn.

Technically, N&W motive-power men believe they have developed the steam locomotive to the highest possible degree of efficiency. The railroad builds many of its own in the huge shops near Roanoke, Va., to fit the road's requirements. It has developed servicing facilities designed to get the best out of the huge locomotives. And aside from the lower initial cost of the steam engine as compared with the diesel, there remains the fact that, as one N&W motive-power man put it, "a steam engine is just getting broken in good when it's 30 years old."

So efficient are the N&W's giant "A" class (12 drivers) and "Y-6" class (16 drivers) locomotives that the road long ago tore down 208 miles of overhead wire and scrapped an entire fleet of electric locomotives once used to haul the long coal trains over some of the toughest trackage in the nation.

Nevertheless, N&W engineers recognize along with railroad men everywhere that electric drive is the best way to deliver power to the wheels of a locomotive. Electric drive means smoother operation and higher tractive effort. There are no reciprocating parts to eat up the power. It is easy



N&W's 600 series are big passenger haulers, but one is small when alongside No. 2300. Despite lack of rods, stack and cylinders, the giant is a steam locomotive

on the rails. Its light, standardized running gear means easier work for shop crews.

The most direct answer to this, of course, was the old electric locomotive. But the cost of stringing overhead wire or laying third rails over miles of track was prohibitive in most instances.

Then came the diesel-electric. To many railroads, this self-propelled power plant with its relatively high efficiency and low-cost operation was the answer to the rising coal cost and increasing obsolescence of the old steam locomotive.

But not to the N&W. It stuck to coal and made the best of it.

Electric drive was still in the back of the minds of the N&W

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Steam-turbine pressure, generator output and power delivered to each of 12 axle motors, are all controlled by one throttle lever