GROOMING

By
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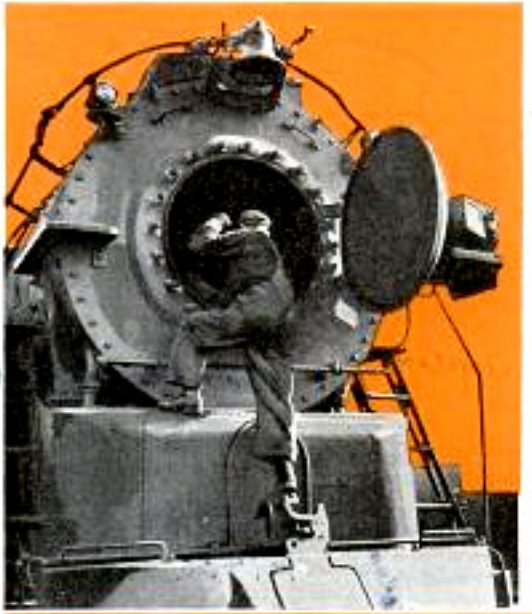


INTO the Chicago terminal glides the stainless steel Aeolus, dusty and panting from its 441-mile sprint from the Twin Cities at an average of sixty-six miles an hour. A long haul and a fast one for any iron horse.

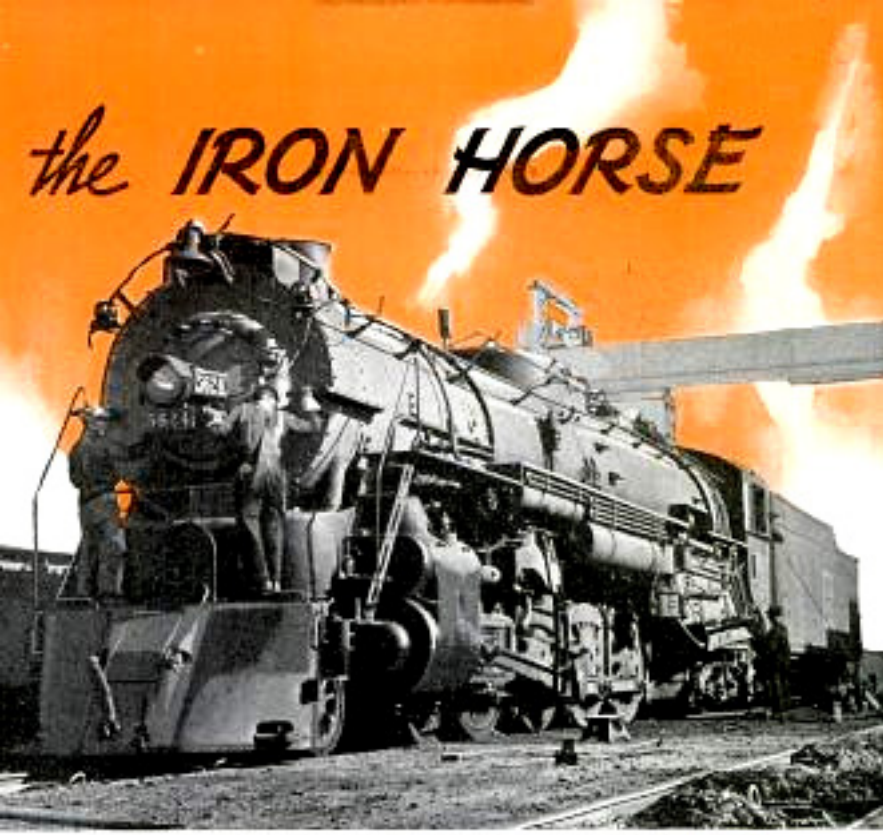
The engineer leans from the cab to get his orders.

"Take her out to the yards for a quick turn," he is told. "She is pulling the 'Zephyr' on a test run to Denver tonight."

One hour to clean the firebox, take on fuel, water, sand. A quick inspection. Then back to the Union Station and off for Denver at a mile a

Left, shoveling cinders from under the stack at the end of a night's run. Below, shaking and raking the firebox clean

the IRON HORSE



Just in from Minneapolis, No. 5624 submits to thorough inspection by electricians and mechanics in Chicago yard while fire is "pulled." Note ash buckets in adjoining track

minute. Nine hundred sixty minutes to go 1,039 miles. Minneapolis to Chicago to Denver, 1,480 miles with one hour's rest.

Ten years ago they'd have told you it was impossible. No steam engine could do it. Why, it took two or three changes of engines between Chicago and Denver.

Well, the Aeolus did it. How? The foreman of the roundhouse in Chicago's Burlington railroad yards explains:

"They could have done it years ago. They just didn't have the nerve. The steam locomotive has always had plenty of speed and power. But I'll tell you what keeps it pounding the rails on longer runs today—roller bearings and packed lubrication."

The old picture of the grimy engineer poking the two-foot spout of an oilcan into the elbows of his engine is now obsolete. They don't do it that way. The streamline Aeolus, much the same old horse under its stainless-steel shrouding, could go 1,475 miles without seeing an oilcan. But don't think for a minute that locomotives ramble along day after day with no more than a trip to the coal chute and water tower and an occasional dumping of the ashpan. There's a daily ritual of inspection and testing and cleaning that involves hundreds of operations.

Any ordinary horse could expect a night's rest after a day on the milk-wagon route. But not the iron horse. From the moment No. 5624 eases under the coal tower in the Western avenue yard at Chicago after her overnight trip from Minneapolis until she emerges sleek and snorting under a 250-pound head of steam to start the northbound run with the nineteen cars of the North Coast Limited, there's never a pause.

"Heavy" repairs occasionally include torch work on the stoker screw, which delivers coal from tender to locomotive firebox

No. 5624 is last in the morning parade to the Burlington railroad's roundhouse. At the water tower the engineer clambers down, takes a final look around for parts needing repairs and makes out his report of engine condition while the hostler takes over the locomotive. From the engineer's report and subsequent findings of engine inspectors, the roundhouse foreman determines what repairs are needed beyond the regular daily regimen.

Down the inspection track the procession moves like cars on a production line. No. 4002 of the "Blackhawk," in from the early trip from Minneapolis; No. 3001, the "Fast Mail"; No. 3012, which brought the "Ak-Sar-Ben" from Omaha; No. 7016 of the "Empire Builder," from the Twin Cities, and finally No. 5624 of the North Coast Limited. The hostler fills the 18,000-gallon water tank in the tender, then moves her along to the next tower for sand and coal. Twenty-four tons of bituminous stoker coal are carried, and the chute drops a bit of coarse coal at the last for hand-firing to start the fire.

A few yards down the track a lever on the side of the engine is thrown and the ashpan is dumped into huge buckets in the pit between the rails. Shaker and poker clean out every remnant of fire from the firebox and a hose flushes the pan and drenches the ashpit.

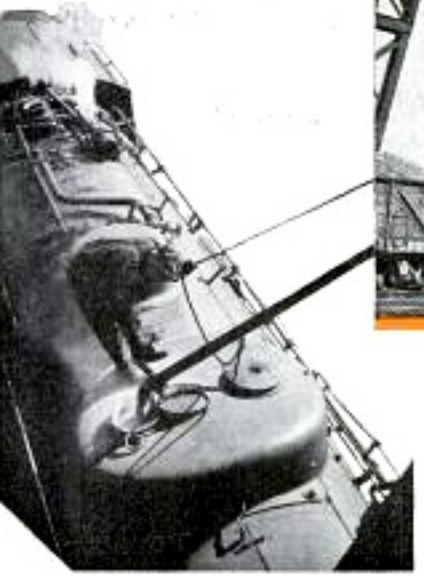
On down the line the washers take over. From spray guns carried over the shoulder they shoot a mixture of light oil and hot water and air under pressure, washing the grit and dust of the road from the engine, from stack to coupler. Meanwhile steam and water are blown from the bottom of the boiler, carrying out any sediment that may have settled. The amber headlight gets a good polishing, then the nose of the locomotive is swung open and any soot and cinders that have settled under the stack are shoveled out.

All spic and span, the engine ambles another few yards nearer the stable and submits to the thump test. The hostler levels off the rods on one side of the engine to "dead center"; on the other side an inspector holds a caliper at various points on the driving rod and crank arm to measure

Before entering roundhouse, entire locomotive is bathed with mixture of hot water, light oil and air shot from spray gun

the jump when the hostler, setting brakes hard, gives it a "thump" of steam. If the caliper shows more than ½2-inch slack, there's shop work to be done. Today, for example, No. 5624 shows too much wear on the shoe that carries the main rod, and the inspector jots an order on the report to remove the shoe for tinning.

At last No. 5624 is ready for a rest. She glides down to the turntable and noses into her stall in the roundhouse. Here it is eleven o'clock, she had her last bite of coal before she pulled into the downtown depot, two hours ago; the fire has long since been dumped, yet she still has steam up. How long can she keep up a working head? Five hours, if not overworked. In cold weather, however, the pressure may drop too low for work within an hour and a half.



With the fire out but the temperature still 200 degrees, inspector takes a look inside firebox. Top, Right, gantry crane empties ash bucket from trash pit. Left, taking on a fresh supply of sand

Now for "the works." An electrician tests dynamo, lights, everything electrical, and changes the tapes on which a continuous log of the engine's speed has been recorded. A boiler washer blows her down, and inspectors go over every valve and connection for steam leaks, they inspect the gauge cock and water glass and clean them out, they dive into the pit to make any necessary repairs from below. Ham-

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Grooming the Iron Horse

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mers rap steel while expert eyes and ears look and listen for flaws. One fellow climbs into the still hot firebox for a quick, thorough inspection with flashlight, watching

Monthly inspection includes whitewashing all moving parts to show up any tiny flaws in steel

for loose rivets and cracks. He stays there about five minutes, at 210 degrees.

Then come the washing and refilling of the boiler, the blowing of flues, filling of grease cups on the rods and application of a grease gun much like that used on your automobile. One man spends an hour starting a new fire, four men spend fifteen minutes giving the locomotive a final bath, a supplyman sees that all essential tools and supplies are aboard and by three p.m. the locomotive should be ready for inspection on the outbound track. It has taken thirteen man-hours to put No. 5824 through her servicing routine. Probably she could have omitted most of it, run right back to Minnesota with a mere shake of the ashpan and a quick "once over." The Aeolus did. But the railroads play safe. When a load of lives is riding at seventy miles an hour behind a million pounds of steel, every pound of that iron horse must be fit.

If she keeps her health for a month without a day off, the engine may roll up 15,000 miles. Then one day every month she must go to the shops for monthly inspection; cylinders and valve heads are removed and all moving parts whitewashed to show up any minute flaws in the steel. The tank is washed, hose inspected, stay-bolts hammer-tested, and superheater coils examined under high water pressure.

Add to the daily and monthly routine a quarterly checkup which includes the replacement of all gauges, tests of water pump and lubricator, whitewash inspection of drawbar and safety bar, valve stems and piston rods and examination of rod bushings, and to this a semi-annual inspection of air-brake equipment. Add to all this an annual program of removing, washing and hammer-testing air drums, a hydrostatic pressure test to drums, boiler and tubes, removing safety valve and dome cap, and cleaning all water columns. And still you have a general overhauling of every locomotive every two to five years, as its general health demands.

It's more than 100 years old now, but the iron horse still thrills as it roars down the track at seventy, eighty, ninety miles an

Measuring slack in driving rods with caliper while hostler sends "thump" of steam against set brakes

hour. Smooth, efficient, powerful, it is a symbol of might. But it is the grooming in the stables, day after day, that keeps the iron horse mighty—and mighty safe.