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Rhomberg Sersa track workers align rails in a track renewal project in September 2018. Work progresses on Rhaetian Railway lines 150 to 200 feet at a time, nightly.



# LIKE CLOCKWORK

## THREE YEARS.

Yes, the tunnel track-work pictures you see were three years in the making.

That's how far in advance Switzerland's narrow gauge railroads plan.

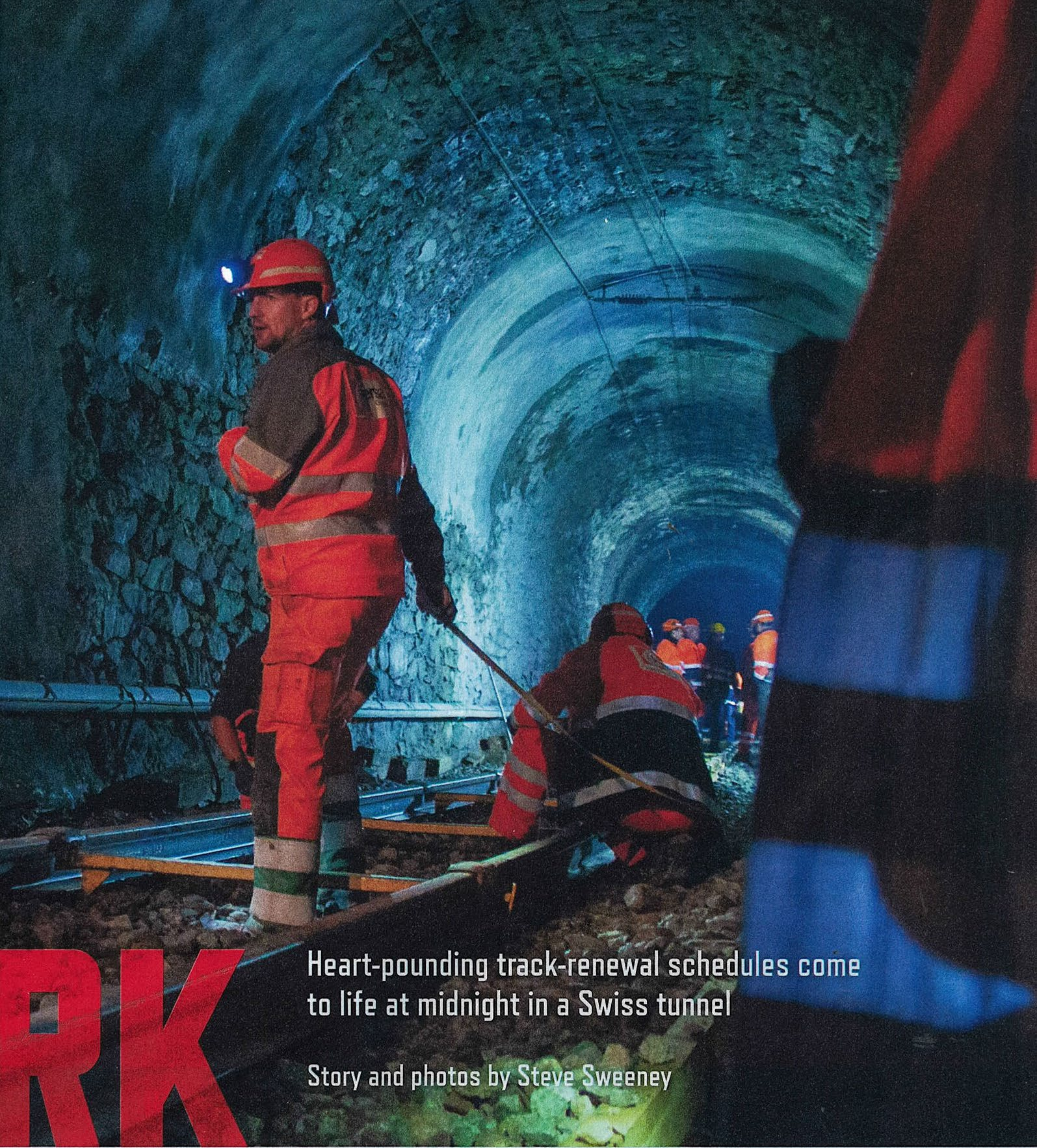
According to a printed foldout table,

managers know where the equipment will be each night, every night — and so on, for months at a time.

Visitors on TRAINS' 2018 Switzerland tour often commented that tracks in Switzerland are well-maintained, smooth to

ride on, pretty to look at. But dissuade yourself from any notion that near perfection comes only from fancy machines patrolling rights-of-way looking for defects to fix. The Swiss use manual labor and machines to build and maintain track





# RRK

## Heart-pounding track-renewal schedules come to life at midnight in a Swiss tunnel

Story and photos by Steve Sweeney

with one goal: pleasing passengers. This is how they do it.

### PLANNING AHEAD

This evening begins with a mashed German-English conversation about rail-

roading, track maintenance, and ice hockey in a trackside Italian restaurant in Davos — the remote ski town that hosts an annual global economic forum. Managers from Rhaetian Railway, the owner and operator of an extensive meter-gauge

network in Switzerland, and Rhomberg Sersa Rail Group, a Swiss-Austrian track-maintenance company, offer details about the night's construction work — in a tunnel.

The target tunnel is about 110 years old, and lies nearly 7 miles southwest of





Track workers place a hand-pumped jack to lift a new rail over ballast and into place inside a Swiss tunnel.



Track renewal means getting new ballast. Here track workers use shovels to help the Tyrex clear stone and debris until they reach the tunnel's floor.

Davos. It is located on the line to Filisur.

When TRAINS visited in early September 2018, the line saw eight passenger trains a day — four out, four back, using two sets of equipment. A rare narrow gauge “crocodile” electric locomotive in regular service leads one consist. The other is standard Rhaetian passenger EMU equipment. These are in addition to freight trains that move as needed.

Work plans are so intricate that these managers could say, with certainty, what equipment and workers would be in place on which, exact, 150-to-200-foot section of track in this tunnel. Even better, managers schedule maintenance among the several meter-gauge Swiss railroads so

they can avoid duplicating costs.

Rather than working during the day, the companies typically only schedule maintenance after the last train passes during the night. Managers position materials and workers so that they can replace rails, ballast, and ties — track renewal — about 150 feet at a time so the line can reopen before the first train rolls the next morning.

“For railway clients, it’s better,” says Christian Schnyder, Sersa Switzerland’s marketing chief. “You can travel by train, everyday.”

In Switzerland, the riding public has little tolerance for delayed or canceled trains. That is why maintenance projects typically include no outages for daytime passenger trains. The thought is that trains should always run frequently and reliably — minimizing inconvenience.

Schnyder mentions the expense of Swiss train travel several times throughout the evening and points to this passenger demand for reliability as a prime cost driver. One Swiss citizen TRAINS spoke with says he pays about \$4,000 a year for an all-inclusive transportation pass. A commonly purchased 15-day second class tourist pass, for comparison, cost \$511 in mid-December.

#### HELP WANTED

Access to the tunnel is only a 15-minute drive from Davos Platz and another 5-minute walk through the edge of a conifer forest breathing in the last of summer. Flood lights seen from just off the road appear almost extraterrestrial.

Work this night will go on for hours and starts methodically: take out old rail, bolt in new; hammer in gauge bars; take out old ties and ballast, and insert new.

Sounds easy, but the work is hard. Schnyder says his company has a difficult



time finding laborers to do this work in summer’s heat, winter’s cold, and through snow and rain — largely with shovels, pry bars, hand-cranked jacks, and mallets.

Watching a gang of seven men on pry bars lining a new rail offers a lesson in teamwork. Occasional shouts in the Swiss-German dialect are all any of them need to cooperate, lift and gauge rail correctly, or the only prompting required to scurry 50 feet to grab a jack needed to lift rail web over the ballast.

It’s a place without idle chatter.

“If you know of people who want to do this, bring them to Switzerland,” Schnyder says, half-joking.

It’s both the method of working and the result of the work that matter. By the time they finish, workers will replace 70-pound rail with 100-pound rail to increase axle loadings from 13 to about 17.5 tons (286,000-pound cars in North America have nearly 36-ton axle loads).

Workers will also lower the ballast nearly 8 inches for better overhead clearance, and replace dusty, fouled ballast with fresh stone from nearby Sargans, Switzerland, about 40 miles to the northwest.

New tie plates will have holes for four bolts or screw spikes, replacing plates with space for two and make their gauge-holding power that much better. Heavier rail will also enable the Rhaetian Railway to increase regular train speeds from about 34 to 37 mph. The maximum safe speed is about 44 mph.

These changes may sound marginal, but they improve on service without



A look at the Davos Platz passenger station mid-morning. Passenger trains arrive here throughout the day, but only a handful make their way southwest through a tunnel to Filisur.



compromising the reliability passengers demand, and receive.

A manager from the railway unwittingly emphasized this point by gesturing to a wooden tie near his feet, calling it defective. Despite the darkness, the tie feels solid to step on and retains the dark-coloring of creosote treatment. Plenty of shortline and tourist railroads have seen a lot worse. In a tunnel, in this condition, that makes the tie what, 10 years old, 20 at most?

Checking a date nail, the manager confirms something different: workers installed the tie in 1958.

Despite being “defective,” the tie held its own 10 years more than expected as the Rhaetian plans for a track life cycle of 50 years. Unreal.

### MEETING A ‘T-REX’ UNDERGROUND

You may think dinosaurs went extinct millions of years ago. Yet, the Swiss maintain one “Tyrex” (pronounced T-Rex) that lives on ballast.

Nearly an hour after arriving on scene at this tunnel, track workers secured the new rails well enough to allow Tyrex to come through. Looking much as its name suggests, this 1970s-era track machine leads with a backhoe that scoops and feeds ballast to a well-lit conveyor belt. That belt winds past an operator and over the top of five or six hoppers where it’s dumped in near total darkness and hauled away at the end of that night’s shift.

Tyrex’s sole operator controls all the moving parts and deftly handles ballast scooping and tie plucking. Workers swoop in with shovels after an area is mostly dug to the tunnel’s floor, dislodging the last remaining stones for removal.

As with all the other track work, it’s methodical and continuous.

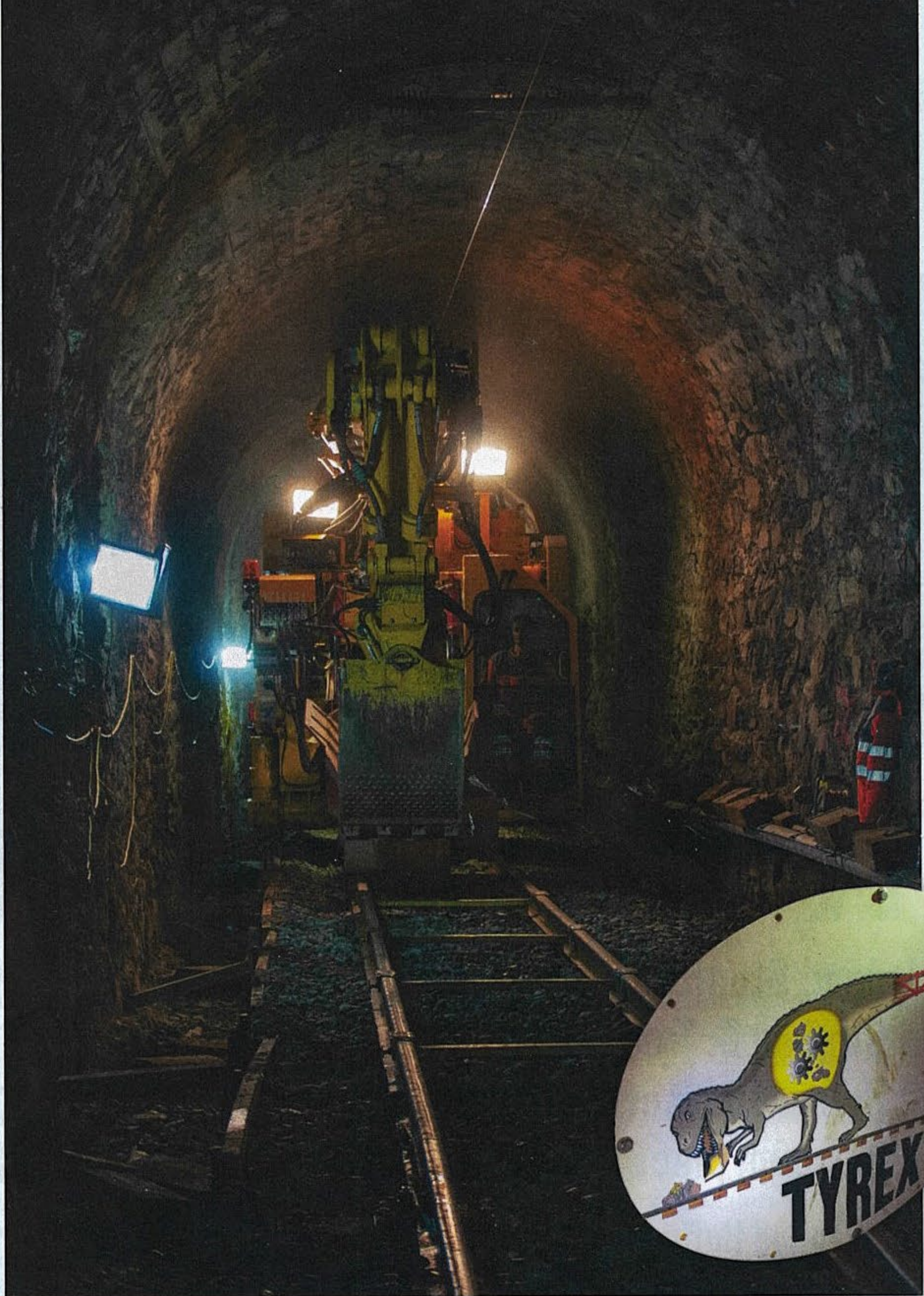
This close to the tunnel’s walls, you can see water seeping into the ceiling and places where Rhomberg Sersa workers have sprayed concrete in an attempt to patch up walls, as water leakage is unacceptable.

When tonight’s crew reaches the end of the new section of track, crews will come in with hoppers of fresh ballast to pour into place, install ties, and place a speed restriction on the work until it’s welded in and the track settles.

And, except for emergencies, that is all the track renewal that will happen in this tunnel for 20 years. That’s when new crews are expected to come in to widen the tunnel and line it with concrete.

“We cannot do everywhere at the same time,” one manager tells TRAINS. “It takes us maybe 50 years to get all the way through” the network.

“But for now, for the next two decades, we have to work [with] this,” he says. **I**



A look at a “Tyrex” that Rhomberg Sersa uses on the Rhaetian Railway to remove ballast and move crossties. The machine’s logo is inset at right.



From the Davos Platz passenger platform, one can see yellow maintenance-of-way equipment as well as standard Rhaetian Railway passenger coaches being readied for another day of service.