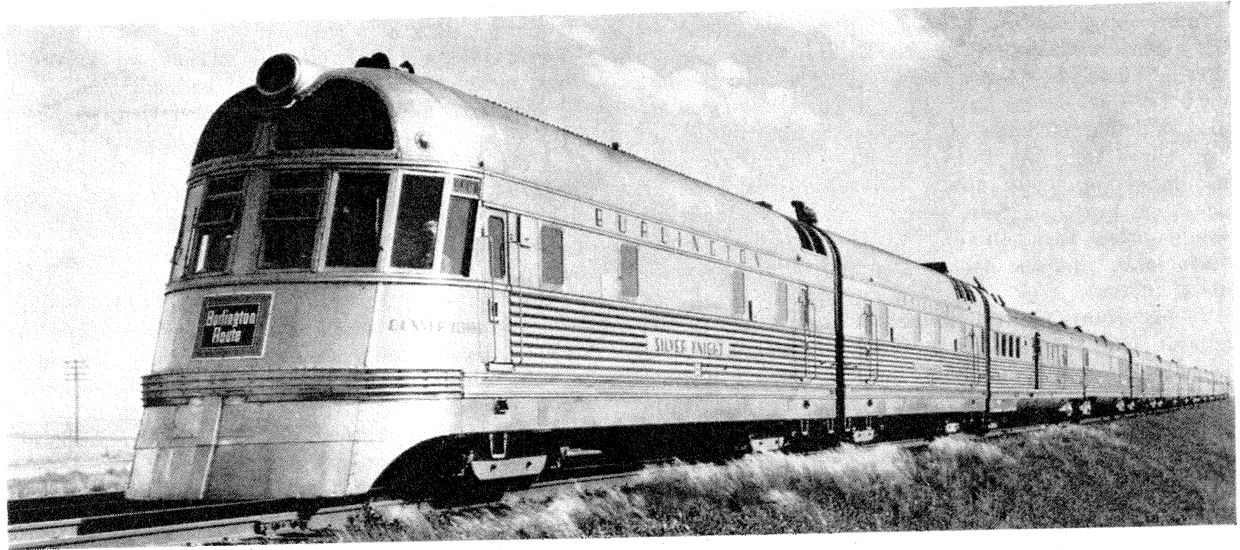


C. B. & Q. RENOVATES "DENVER ZEPHYRS"



After 13 years and 4½ million miles of revenue service the stainless steel shows no deterioration — Insulation is renewed and other changes made in a complete overhaul

The two 12-unit "Denver Zephyr" Budd-built trains of the Chicago, Burlington & Quincy which have been in regular daily service between Chicago and Denver, Colo., since November, 1936, have accumulated 4½ million miles per train. To renew the insulation and make other necessary changes and improvements, it was decided to give the trains a complete general overhaul. This work has just been completed on the second train. Units other than sleepers were overhauled at the Aurora, Ill., shops of the Burlington and sleeping cars at the Calumet, Ill., shops of the Pullman Company.

Floors Raised Slightly

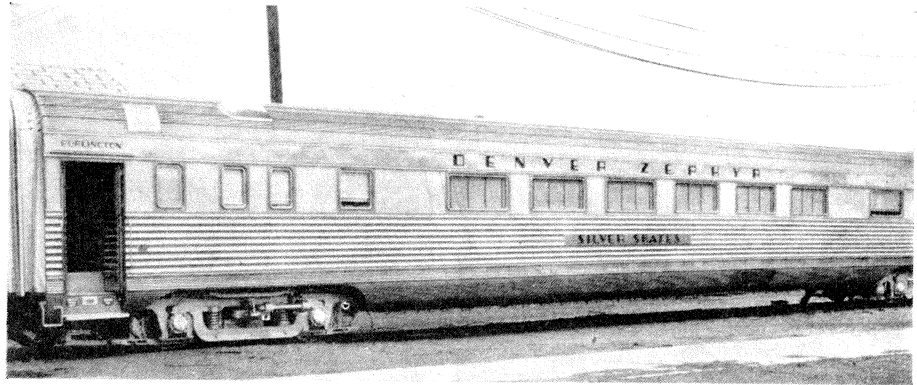
With exterior sheathing, inside finish and insulation removed, the cars were stripped to the frames and an excellent opportunity afforded to inspect all parts of the stainless steel frame construction. This was found to be in an exceptionally good state of preservation after almost 13 years of service, with no evidence of corrosion either in the stainless steel frame members or Shotwelding. By contrast, carbon-steel conduit, junction boxes, occasional non-structural filler strips and low partitions were badly rusted and had to be replaced. Stainless-steel water tanks were removed, cleaned, tested and replaced in practically the same

condition as when new. Two small cracks, each about 1 in. long were found in the combination baggage and auxiliary-power-car door sill, which required reinforcement for loading in excess of the original design.

Advantage was taken of complete stripping of the "Denver-Zephyr" cars to raise the floor slightly. When the cars were originally built, it was thought that the relatively high operating speed might be disquieting to some passengers, consequently the window sills were raised so that windows gave more visibility out over the landscape rather than near and down, thus minimizing the impression of speed. In actual experience, it was found that train speeds did not produce the effects anticipated and the high windows proved inconvenient. By raising the floor heater pipes and grills and other necessary changes, therefore, new floors were installed 2½ in. higher than the original, with slight ramps at each end to get from car passageways to the new level.

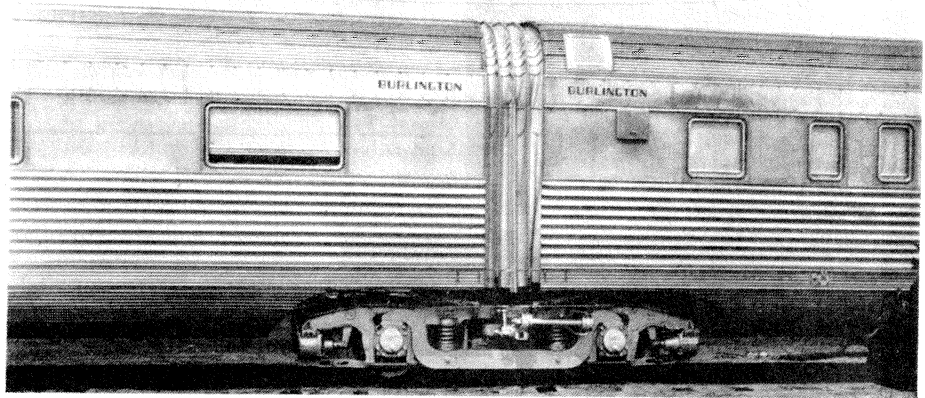
Another major job was the replacement of all conduit and electric wiring with new materials superior to those available when the cars were built. All interior metal surfaces were sprayed with a preparation both for sound deadening and to prevent the formation of moisture by condensation. New insulation of the glass type was applied throughout and carefully fitted to fill all spaces between the outside sheathing and

Facing page—The "Denver Zephyr" has been in service almost 13 years

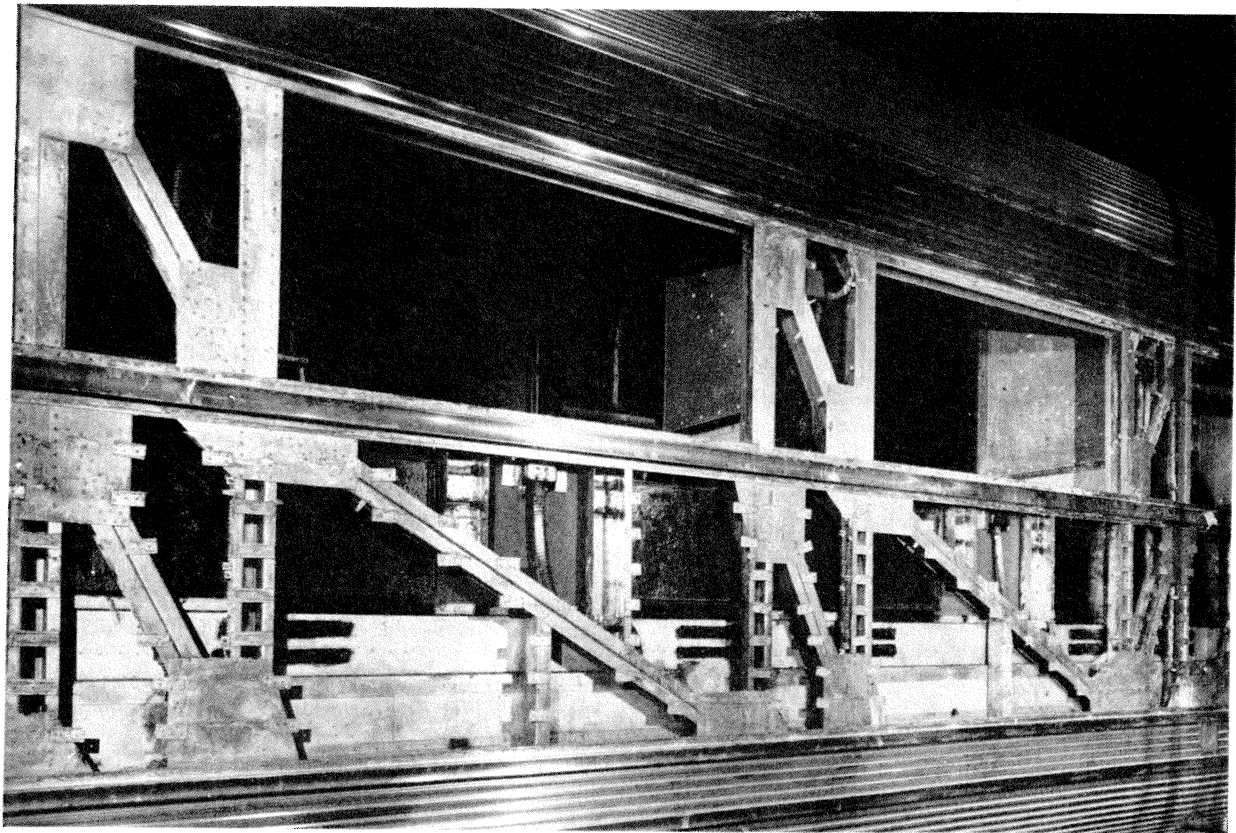


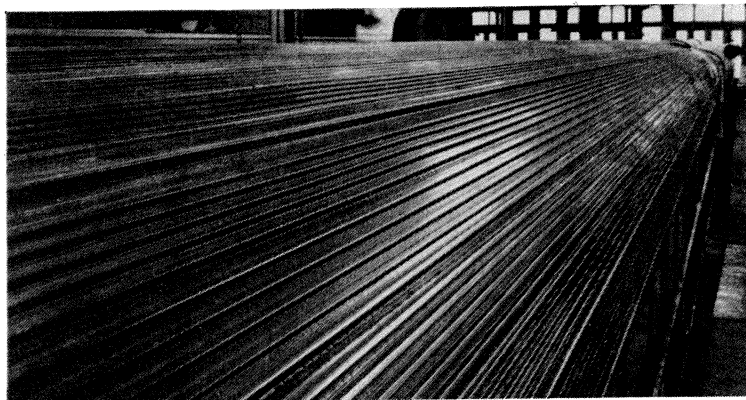
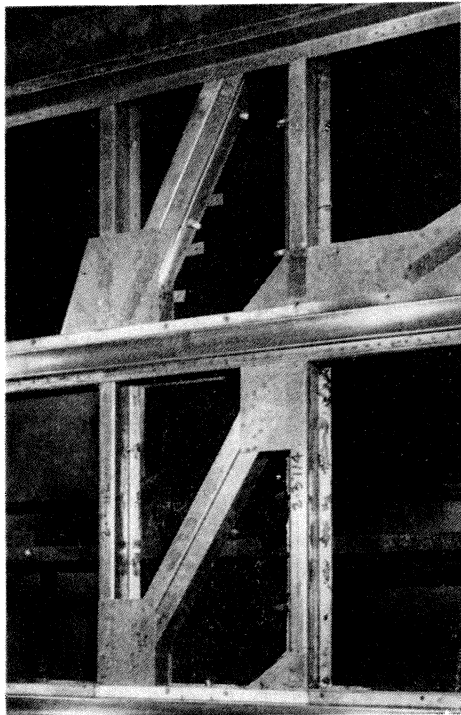
A renovated car just out of the Aurora shops

Trucks were rebuilt with coil instead of elliptic springs



Below—Center side frame section, showing absence of corrosion after 13 years service

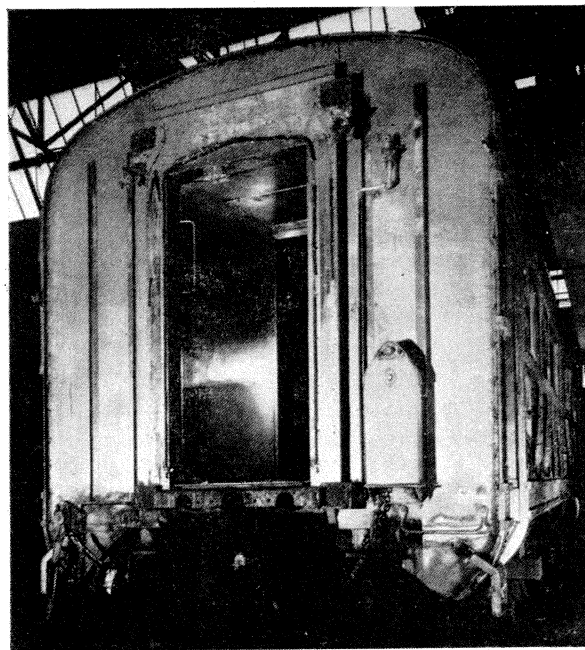




Above—The roof of one of the units after being cleaned

Left—Diagonal strength member at car center showing condition of stainless steel and Shotwelds

Below—End view of a coach with diaphragm and coupler removed



inside lining. This pliable material, which tends to spring back to its original form after compression, is expected to stay in place under the long-continued and often severe vibration encountered in railway service.

Other Major Work

The numerous coats of paint on the "Denver Zephyr" car interiors accumulated over the years all were re-

moved, and attractive new color schemes were applied. All sponge rubber in seat cushions was replaced and all furniture was reupholstered. New carpets were installed, also new drapes, and the cars were equipped with venetian blinds.

Air-conditioning equipment, including evaporators, condensers and compressors, was thoroughly overhauled. Since head-end power is used, these cars do not have battery boxes, but all other underneath parts were carefully checked, piping was renewed, and newly insulated water tanks were put in place.

In the dining cars, the kitchens were rebuilt to permit the installation of dishwashing machines and electric coffee urns. In general, all parts of the kitchen equipment were thoroughly cleaned, repaired as necessary and reinstalled.

Coupler and Truck Repairs

Some of the units in the "Denver Zephyr" trains are articulated, while others have tight-lock coupler connections. In the latter, the rear of the coupler shank has a ball, providing a universal joint. There is a front and back casting surrounding this ball, the rear casting also acting as a follower plate, and no draft gear is used. The ball wears in service, as do the front and rear socket castings, and these worn parts were built up and remachined to their original dimensions, thus taking up all slack.

All trucks were completely dismantled, truck frames sand blasted, checked for any defects and also trammed, then built up and equipped with General Steel Castings roll stabilizers and coil springs in place of elliptic springs.

General repair work and remodeling of the two trains resulted in equipment which, from the standpoint of appearance and potential service, will prove pleasing to passengers for another term of years.