THE Zephyr

THE NEW BURLINGTON STREAMLINED TRAIN

GENERAL ELECTRIC
MORE THAN
100 MILES AN HOUR

AMERICA'S largest user of electrically driven rail
motor cars—the Burlington system—has added a
new unit to its fleet—a light-weight, streamlined train cap-
able of speeds up to 110 miles an hour. This train marks
the culmination of more than two years of intensive study
on the part of the Burlington's mechanical staff. General
Electric equipment was specified.

Power is generated by an eight-in-line, two-cycle,
airless-injection, 600-hp. Diesel engine, built by the
Winton Engine Corporation. This is the first instance of
the use of an engine of this type in this country in rail-car
operation.

Direct-connected to the Diesel engine is a General
Electric generator, which supplies power to the traction
motors and to the two G-E compressors for air brakes.
A 25-kw. G-E auxiliary constant-voltage generator,
driven from an extension of the main-generator shaft,
supplies current for battery charging, lighting, and air
conditioning.

The front truck of the leading car carries two G-E
direct-current traction motors, geared for service at
maintained speeds of 110 miles an hour. The electric-
control provides series, parallel, and shunted-field motor
operating positions.

The new three-car train is 196 feet long, and its weight,
including the power plant, is about 95 tons, or just a
little more than that of one standard steel Pullman sleeping
car. The forward unit is occupied by the engine room,
a large mail compartment, and a baggage compartment.
The second unit contains the express, buffet, and smoking
compartments. The front half of the rear unit is occupied
by coach seats, and the other half is a lounge room, with
luxurious seating accommodations equal to those in parlor
cars of the highest class. A total of 72 passengers can be
seated.

Passengers are provided with every possible comfort.
The paired chairs are adjustable from a normal upright
position to a semi-reclining angle, and are fitted with
stuffed backs and seats, richly upholstered. The chairs in
the circular glass-enclosed solarium at the rear are de-
tached. Hand-baggage is stored under the seats or in a
special compartment, instead of in overhead racks. This
permits the use of indirect lighting from a tubular duct
overhead. All passenger compartments of the train are
equipped for radio reception. Air-conditioning equip-
ment, supplied by General Electric, automatically
controls the temperature of the passenger compartments by
providing each compartment with an adequate supply of
cleaned air, cooled or heated, as weather conditions may
require.

Meals, prepared in the buffet, are served to the
passengers on small removable tables that can be set
up at each seat. Liquid refreshments are served at the
buffet counter.

The train was built by the E. G. Budd Manufacturing
Company. Practically all of the structural material is cold-
rolled stainless steel, and the wheels are of solid steel
alloy. The cars are articulated, with one truck between
each two cars; hence, there are four trucks to the train
instead of six, as on an ordinary three-car train. This
reduces weight and eliminates the "slack" between cars,
which is sometimes responsible for the unpleasant jerk of
an ordinary train. The train has roller bearings through-
out, and rubber-cushioning is used at many points on
each truck.

The cars have no underframes; each body is built of a
framework, or skeleton, of horizontal and vertical U-
shaped struts which carry the weight of the car. All parts
are joined by electric welding. The noncorrosive qualities
of the stainless steel make painting unnecessary. The insu-
lation between the exterior and the interior sheathing is
aluminum foil, slightly crumpled, and so thin that only 100
pounds of the material is required to insulate the entire
train.

Streamlining is accomplished through the contour of
the front and rear ends, the design of wheel guards, the
complete sheathing of the under surfaces, and the flush
window frames which carry the sealed, shatter-proof
windows.

Because of the high efficiency of the Diesel engine, the
light weight of the train, and the streamlined construc-
tion, this train will cost less than half as much to operate
as does a conventional steam unit of equal capacity.
Because of its greater comfort and speed, its safety, and
its reliability, the train should renew public interest in
travel by rail. General Electric is glad that the perform-
ance of its equipment on this Burlington trains has
justified the selection of G-E equipment for this new and
revolutionary type of rail motor car.

GENERAL & ELECTRIC
Operator's position, showing controls, instruments and view from front windows.

The Burlington "Zephyr," shortly after it had made 104 miles an hour on a trial run.

The main section of the rear car, with a removable table set for a meal.

The solarium, at the rear of the train.

The power plant, with the 600-hp. Diesel engine and the G-E generator.

The power truck of the new train, showing the two G-E traction motors.

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