Electric Carriers Answer the Call

San Francisco Company Loads Ship Workers with Amazing Speed—Charleston Line Is Expending $300,000 to Aid the Government—Houston Railway Is Carrying Aviators and Others

The ways in which electric railways are serving the nation are many, in spite of the handicaps imposed by limited resources and a decreasing earning power. This journal has in preceding issues [June 1 and June 22] described the war work being carried on in Atlantic Coast and Southern cities, and this week it is adding the following series of articles to show the railway activities in government service at various other points.

Charleston Is Spending $300,000
Sixteen Center-Entrance Multiple-Unit Type Cars Ordered for Navy Yard Service—Double Track Installed, and Automatic Substations Completed

Charleston, S. C., is a city whose population has increased considerably since the opening of the war. The Navy Yard personnel has grown from 1500 to 4500. A cantonment for training sailors from 3500 to 6000 at a time has been erected. Congress has authorized a base hospital and another drydock, while the lumber mills, fertilizer works and other industries are now employing more than 5000 people.

In sum, it is estimated that from 25,000 to 30,000 people have been added to Charleston’s population.

When the first accessions began a year ago, the company met them by purchasing six second-hand cars. During the last winter it also leased one motor and five trail cars from the Charleston-Isle of Palms Company, but as these had to be returned in May their place was taken by the company’s own ten-bench open cars. It was recognized, however, that the use of old cars singly or in pairs, particularly for the heavy service to the Navy Yard, could only be considered as temporary.

During the last two years the company had made an important improvement in track capacity by adding a 60-lb. T-rail second track 11 miles long between State Road-Clement’s Ferry and the Navy Yard terminal. This made it possible to consider the operation of high-speed trains, the main item covered by the company’s appropriation for betterments.

This appropriation, amounting to $300,000, includes the following:

Sixteen double-truck center-entrance cars with multiple-unit control to be run to the Navy Yard in trains of as many as four cars.

Ten one-man safety cars for city service.

Seven-track twenty-one-car storage shed (180 ft. x 70 ft.) of slow-burning wood to be constructed adjacent to the present carhouse. This will also contain the carpentry shop, the paint shop, the storeroom, the dressing room for shopmen and the master mechanic’s office.

An automatic substation located 1½ miles from the Navy Yard. It has a General Electric 500-kw. 60-cycle, 900-r.p.m. rotary converter, outdoor transformers, Condit time-limit relay, Bristol graphic recorder and Weston ammeter. This substation was opened on May 11.

At present cars are run past the two gateways of the Navy Yard, and passengers pay their fares after boarding. About 4000 to 5000 people are handled in one hour, the biggest single load being the release of 700 white women at 6.35 p.m. and 700 men at 6.45 p.m. The employees begin to leave work at 4.15 p.m., and stop at 7.10 p.m. Separate cars are furnished for all white women except stragglers; also for white and
for colored men as far as practicable. The cars are loaded heavily, and the passengers take all kinds of chances in their hurry to get away. The women on their cars are not much better than the men, although they do not climb to the roofs or stand on the bumpers.

If the company can secure permission to use some government ground at the main or upper gate for a prepayment area, loading conditions and fare collection will be greatly improved. Then the addition of the train service with air-operated car doors will produce absolutely safe boarding, riding and alighting conditions.

Train operation with one prepayment area for all Navy Yard passengers will also relieve the company's acute shortage of platform personnel. At this time twenty-five to thirty office and shop employees are used to help out in the morning, and half that number in the evening. This is especially hard on the car maintenance department, because the men do not return until 8.30 or 9 a.m. This loss of time is of genuine concern in these days.

That there is more patriotism than profit in this service may be judged from the fact that for 5 cents one may ride the 7 miles from the Navy Yard to the Battery (the downtown tip of Charleston) during the peak hours, 6 a.m. to 8.30 a.m. and 4 p.m. to 6.30 p.m. The normal 5 cent ride is between North Charleston and the Navy Yard, 2 miles. The inadequate 5-cent fare to the Navy Yard is a relic of the days when special inducements had to be offered to the government to induce it to continue such a yard in Charleston!

How Charleston Will Get Modern Train Service

In addition to equipping six of its present steel vestibuled cars with Westinghouse HLD control for train operation, the company expects to receive after Aug. 1 six center-entrance motor cars and ten trailers, now being built by the Cincinnati Car Company. These are to be operated for Navy Yard and other heavy services in groups of as many as four cars. Progress in the art of car building and equipment manufacture is indicated by the fact that these fifty-three passenger cars will weigh but 35,000 lb., although they will carry four motors, multiple-unit control and draft rigging. The best car in use in Charleston to-day, seating only forty-one passengers, weighs 36,000 lb., although it has only two motors and type K control. The new cars will weigh 660 lb. per passenger; the preceding cars purchased weigh 878 lb. per passenger.

Center-entrance operation with pneumatic door engines and interlocking control was favored to secure maximum seating capacity and to prevent reckless jumping from cars—even by women. The steps are also completely inclosed. The distance from the pavement to the first step is 15 in., and above this step are two 9-in. risers. No ramps are used, and the elimination of these is expected to make floor maintenance easier.

All of these new cars will be 41 ft. over all, 37 ft. over the body corner posts, 8 ft. 3 in. wide over the sheathing, 10 ft. 10 in. high from rail to top of roof. The seats will be 35 in. wide; aisle, 23 in. wide; the distance between truck centers, 23 ft. 10 in.; the truck wheelbase, 5 ft.; the wheel diameter, 24 in. The radius on the inner rail of the shortest curve on which these cars will run is 35 ft.

The underframe is of angle side-sills, channel centersills, channel diagonals, buffer bands reinforced with Rico anti-climbers, body bolsters of trussed girders type with 1-in. x 9-in. top and bottom plates and gray iron fillers. The body framing has all side posts formed of T-bars extending from side sill to side sill. The door framing for the center-entrance is formed of steel angles in one continuous piece from sill and over the door opening. The sides below the window sills are of No 12 gage sheet steel in one width from side sill to window sill, being pressed on the top to form the belt rail and window sill. The letterboard is also of No. 12 gage sheet steel. The vestibules are sheathed on the outside below the windows with No. 16 sheet steel in three sections, so made that they can be removed without disturbing vestibules or posts. The posts are ash. No doors are used, the motorman being able to do any necessary switching by leaning out of the vestibule.

The arch roof is covered with poplar board and painted canvas. The interior finish is mahogany. The wainscoating from window sill to seat angle is ¾-in. Agasote with a ½-in. air space between the Agasote and the steel side sheathing. The finish below the seat angles is formed of pressed sheet iron to avoid a dirt pocket at the floor.

The equipment schedule for the new cars covers the following:

- Curtains—Fantazote with Curtain Supply Company's ring fixtures and Rex all-metal roilers.
- Destination signs—Keystone.
- Seats—Hale & Kilburn, No. 300 A.
- Motorman's portable folding seat—Keystone.
- Door engines—National Pneumatic Control two-leaf folding doors arranged to swing outward. Doors on motorman's right-hand side may also be operated by him.
- Horns—Defend, Keystone.
- Sanders—O-B sand traps and National Type C sand valves.
- Headlights—Crouse-Hinds SDP 12.
- Drum brakes—Automatic type ARDM, eight on each side of roof.
- Couplers—Tomlinson Type A.
- Air Brakes—Westinghouse AMM, complete on motor cars; in part on trailers.
- Governors synchronizer system—Westinghouse.
- Signal system—Westinghouse.
- Motors—Westinghouse No. 514.
- Trolley bases—Ohio Brass Form 1.
- Lighting—One circuit of 94-watt Mazda for body, and one circuit of 22-watt Mazdas for other purposes. Light wiring run in Duraduct with fireproofing at all outlets for future additions. Conduits are red, and wire is black.

First Safety Cars Also Due in August

The company has also ordered from the same carbuilder ten Birney-type double-end one-man cars equipped with the combination of the Safety Car Devices Company. The first five, expected in August, are to go on the Broad Street crosstown line, and the second five on the King Street line, which serves the heart of the city. These cars, therefore, are relied upon to do real work. As they weigh but 13,000 lb. compared with 27,000 lb. for present cars of the same capacity (thirty-two passengers), Fuel Administrator Garfield may well be thankful.

Perhaps the chief variation of this car from the Stone & Webster Birney type is that for the same over-all length of 27 ft. 9½ in. the platforms are 3 in. shorter because wider corner posts are used to get increased stiffness. The wheel housing has been elimi-
nated by raising the body 1½ in. The vestibule doors are hinged to the body corner post instead of the vestibule post, thereby preventing the exit of passengers until the door is fully open and the step down.

The car underframe is of steel angles, the body framing being like that of the center-entrance cars above described. The roof is of wood, and the ceiling of 7/8-in. Nevasplit headlining. The principal equipment of the new safety cars may be summarized as follows:

- Curtains—Pantasote.
- Ventilators—Utility (eight).
- Trucks—Cincinnati.
- Hand brakes—Pittsburgh drop handle.
- Heaters—Six Consolidated cross-seat type, with thermostatic control and Duraduct fittings.
- Push-buttons—Paraday, Keystone.
- Signa—Keystone.
- Gongs—Dedenda.
- Trolley catcher—Ideal.
- Air brakes—Westinghouse.
- Operating devices—Safety Car Devices Company, including National Pneumatic door engines.
- Motors—Two Westinghouse 506 A-2, with sleeve bearings.
- Control—K 10.
- Headlights—Golden Glow.

It may be added that there will be only two five-light circuits, the body-lighting circuit consisting of 56-watt units and the other of 23-watt units.

Moving 8300 Shipbuilders in Fifteen Minutes

United Railroads of San Francisco, Through Ample Car Storage and Front-End Collection, Make Quick Work of Heavy Rush Traffic

The famous Union Iron Works of San Francisco represents the greatest war industry of that city. The works has been accessible for years by means of the old lines of the United Railroads, but with the recent increase of shipbuilders to 8300 or more it was deemed desirable to get the men to and from their homes by shorter, non-transfer routes.

Therefore the railway of its own volition arranged to pay for the construction of a 1-mile line on Army Street to connect with the existing lines over Twentieth Street about ½ mile from the main gates of the Union Iron Works. At this writing only one track has been completed, but the cars are fed to the loading district in such a way that this track can be devoted exclusively to handling all rush traffic bound in one direction. The empties are sent back by routes which are more round-about.

The works are located on the bay in South San Francisco, and most of the men live in Daly City, the Mission District and other southwestern sections. Through the Army Street line the great mass of riders enjoy direct service and a saving in time of twenty minutes each way.

Shortly before the main closing time, 4.40 p.m., about seventy-five cars are in line on both tracks at Twentieth Street and moving toward Third Street, which, curiously enough, is at right angles to Twentieth Street. At this intersection from twelve to fifteen front-end fare collectors are spread along to assist in speeding up the loading. As these men are experienced conductors (who have already completed their daily platform stint), they