at the tower building, which occupies a space between the S. P. and Santa Fe tracks at the T. & P. crossing.

At present, the traffic on the Southern Pacific consists of one freight train in each direction daily and a local passenger train, a light motor. The Santa Fe traffic is the same as the S. P., as is also the T. & P., which, however, includes a steam passenger train rather than a motor. The Frisco and the Santa Fe, on the other hand, operate one through passenger train between St. Louis and Dallas, via Fort Smith, Ark., and Paris, and in addition, the Frisco handles considerable yard work in the vicinity of the interlocking. Automatic operation of the signals is highly advantageous for these switching operations as the necessity for flagging over the crossings is obviated. Furthermore, the extent of these operations does not warrant a manually-controlled interlocking. The derails and power switch machines were, therefore, eliminated.

Construction of New Plant

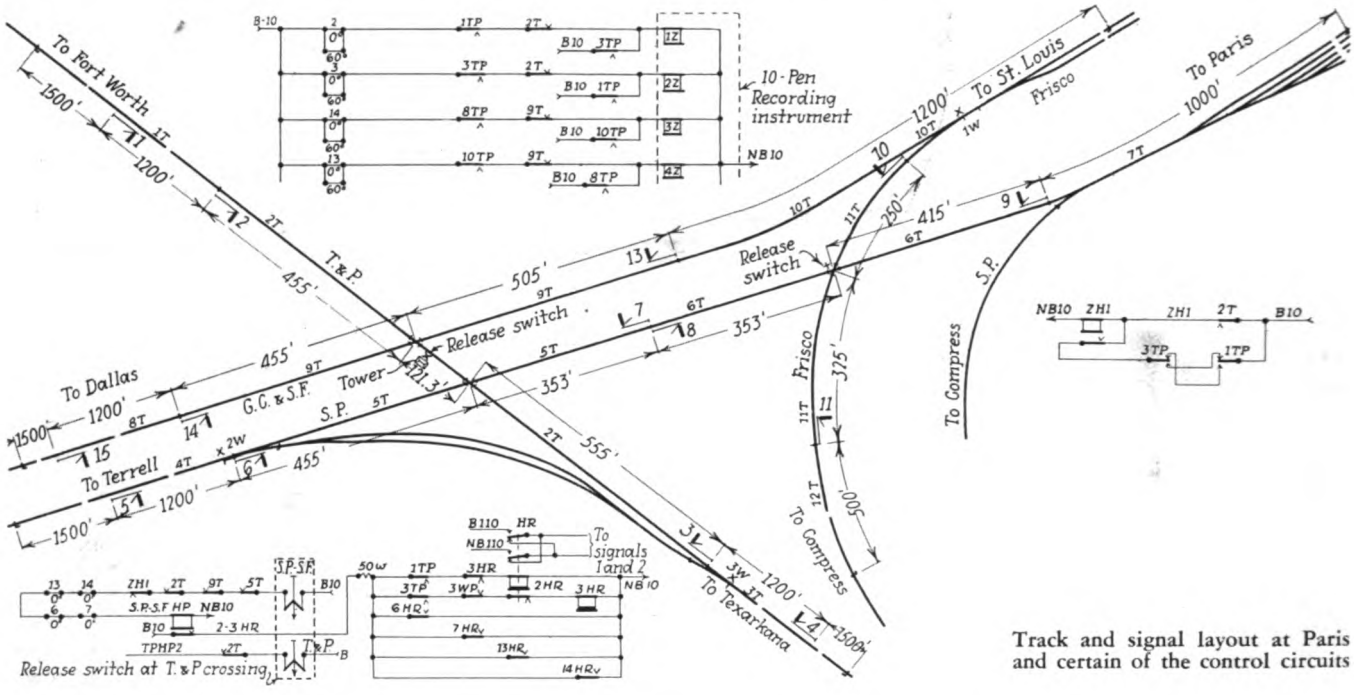
Inasmuch as the signals were previously operated at 110 volts directly from the central housing, the tower, there is no necessity for housing HR or other line relays at each mechanism, as these are located at the tower. In this respect, the HR signal-control relays function in the same capacity as a signal lever, under manual operation, disregarding the mechanical locking of the lever. Thus, the only outlying relays are track relays.

All of the track wiring was renewed, using No. 8 or No. 9 Okosheath underground conductors. The track leads are pot-headed in the first tie space beyond each insulated joint. From each pot-head a No. 8, 119-strand copper wire is plugged into the rail. Raco terminals and Kearney connectors are used in connection with the track pot-heads.

Each of the 11 track circuits of the plant is fed by one cell of 500-a.h. Edison primary battery in connection with a Type-BBY General Railway Signal Company automatic rectifier housed together in a concrete box or, in some cases, in a two-way relay case mounted on a cable post.

All of the 10-volt control circuits originate at the tower, including the track-repeater, home signal-repeater and switch-repeater circuits. These and the signal motor circuits are carried in open line to each location. Two switch repeaters are used to check the position of the S.P.-T. & P. transfer track switches, which are located at the respective home signals, No. 6 and No. 3. Another switch-repeater circuit checks the position of the Frisco industry or "compress" track, near signal 10. Of course, the WP relays enter into the control circuit combination to prevent the clearing of a signal in case a switch is not properly alined.

The signals are all of the lower-quadrant, two-position type. Home signals are located from 350 ft. to 500 ft. from the crossing over which they govern, depending on the physical circumstances. For example, the Frisco industry track crosses the S. P. at a point 706 ft. from the T. & P. crossing. Home signals No. 7 and No. 8 for each crossing on the S. P., therefore, were located midway between the T. & P. and the Frisco "compress" crossings, 353 ft. from each, so as to be as far from each as possible and still retain the advantage of having a double signal location. This also avoids the use of an additional track circuit, which would be required were the signals placed in separate locations farther from the crossings.



Track and signal layout at Paris and certain of the control circuits

The distant signals are located 1,200 ft. from their respective home signals and the approach clearing sections extend from 1,000 ft. to 1,500 ft. beyond the distant signals.

Control Equipment in the Tower

The first floor of the tower is equipped with four long relay shelves which form an open cabinet. Each shelf provides space for 9 relays which are arranged in rows of 4 each, making 36 in all. Some of the relays are Union Model 12 or 13, and the remainder are G.R.S. Style K. The HR relays are of the slow-release type, in order to prevent a train from losing the route should a slight interruption of the approach circuit occur due to improper shunting, vibration, etc.

The terminal board occupies a space below the lower shelf. All of the incoming conductors are ter-