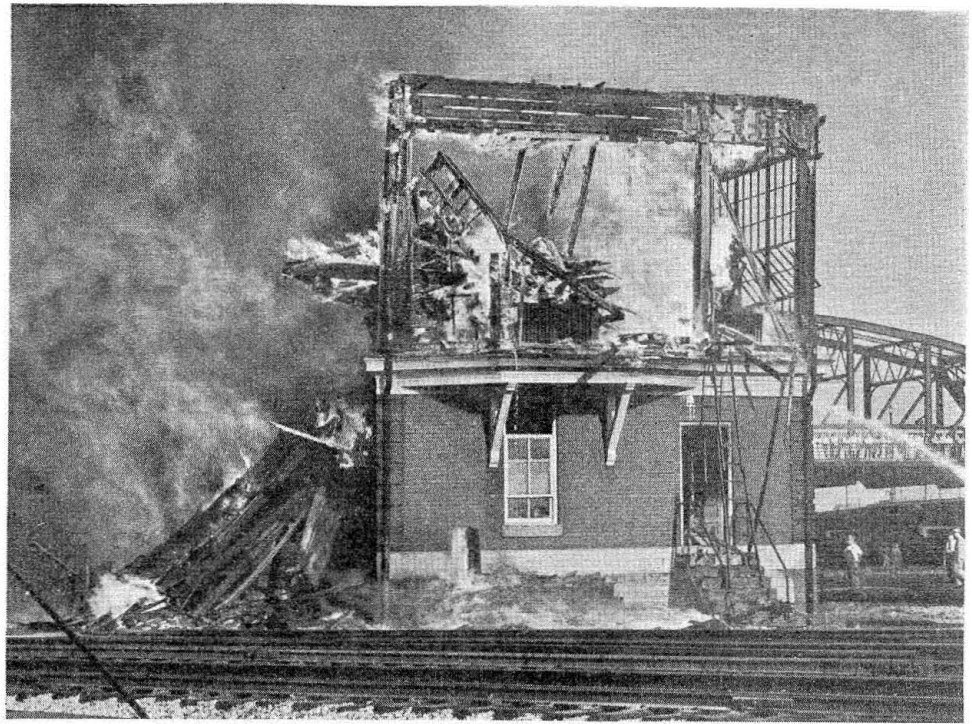


This picture showing the tower in flames was made about 18 minutes after the fire started

Fire Destroys Tower Of Large Interlocking at St. Louis



Picture made by St. Louis Globe-Democrat

Emergency operation organized quickly and plans are being rushed to restore plant to service in record time

ABOUT 4:45 p.m., July 22, fire broke out in the tower of the interlocking at the Union Station in St. Louis, Mo., and destroyed the entire building including the interlocking machine, as well as the relays, wiring and other accessory apparatus, thus placing the plant out of service. The tower, which was 25 ft. by 73 ft. in plan, consisted of two stories and a basement; the foundations were of concrete; the first story was of brick and the second story was constructed with a wood frame. The fire apparently started near the northeast corner of the basement, but neither the cause nor the exact point of origin have been determined. The flames spread so quickly that only two of the ten men on the second floor were able to escape by the way of the stairway,

and the others departed through the windows.

As the fire started just prior to one of the peak traffic periods, eight trains, scheduled to leave shortly, were standing in the station. On account of fire hose lines over the tracks some of these trains were delayed an hour or more. Incoming trains were stopped to discharge passengers at outlying stations, including Tower Grove, Delmar Avenue, and Washington Street, while some trains were stopped at a point in the yard near 12th Street.

As the temporary organization that must function until a new interlocking can be installed was perfected, conditions improved progressively so that, after 24 hours, trains were being handled in and out of the terminal with only moderate delays, and, after 48 hours, delays that were due to emergency routing had been practically eliminated.

Layout of Largest Terminal

The Union Station at St. Louis, the largest passenger terminal in the country, is of the stub-end type, with

42 station tracks which lie in a north-and-south direction. At the south of the train shed, the station tracks connect through wyes to the six east-and-west main tracks that provide approaches to the station. As originally constructed in 1903, the train shed covered 32 station tracks, but in 1930, 10 additional tracks were built. The wyes that serve the original 32 tracks are so arranged that trains from any one of the train shed tracks can head out to either the east or west. On the other hand, only westbound trains can head out of the 10 additional tracks.

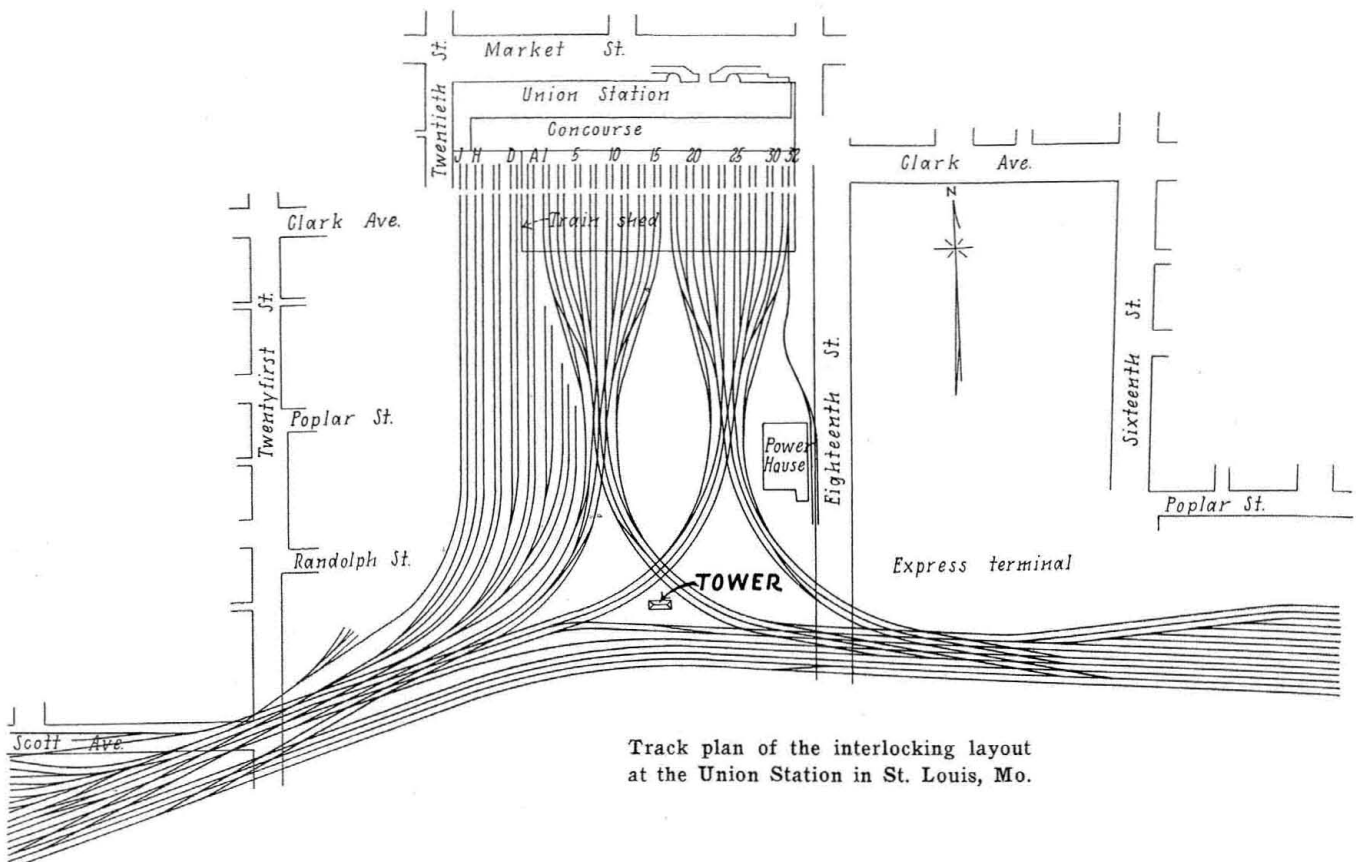
Heavy Traffic Handled

Seventeen roads operate passenger trains into and out of this terminal, 93 inbound and 94 outbound trains being scheduled every 24 hours. Outgoing trains are backed into the train shed, and, to avoid pollution of the air in the train shed with locomotive gases, incoming trains are also backed in. This means that incoming trains both east and west must run beyond the limits of the interlocking and then back around the wye to assigned tracks, requiring two movements

through the interlocking for every inbound train. In addition, numerous empty equipment and other switching movements are involved, since road

movable-point frogs, and 296 signals. Approximately 2,500 routes can be set up in this plant and an average of 1,700 line-ups are made every 24

signals and the electrical controls of the switches were placed out of service at once. Each switch or movable-point frog in this interlocking is



Track plan of the interlocking layout at the Union Station in St. Louis, Mo.

locomotives move into and out of the train shed independent of the trains they handle; and many express and mail cars are cut off and handled separately to the adjacent mail and express terminals.

The interlocking machine had 262 working levers to control 97 single switches, 60 double-slip switches, 5

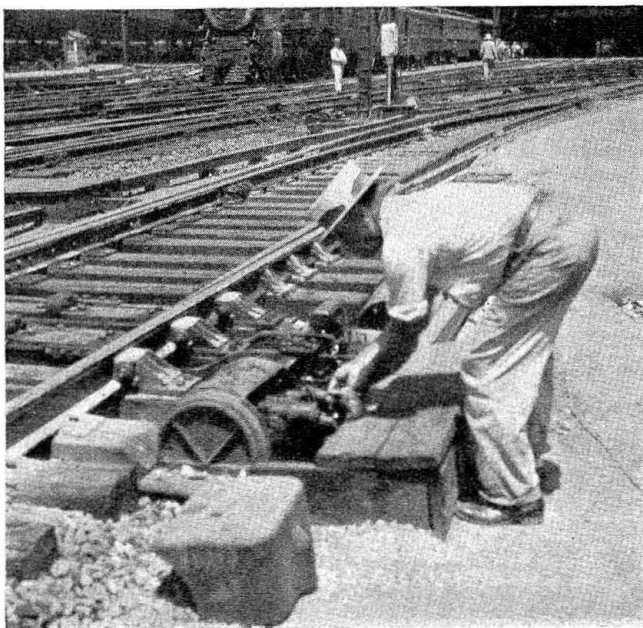
hours. During both the first and second tricks, 4 levermen and 1 train director were on duty, while 3 levermen were able to handle the third trick.

Before the fire was extinguished, calls were sent out to assemble extra switchmen, signal maintainers and other employees. The interlocking

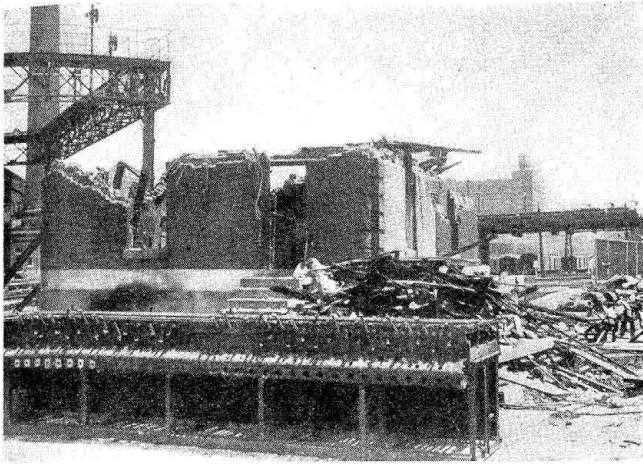
operated by air pressure controlled by electro-pneumatic valves at the switch machine. As the pipe lines and compressed air supply system were not damaged by the fire, each switch could be operated in emergency service by a signal maintainer "fingering" the valves. After releasing the lock valve, the normal or the reverse valve can be punched to cause the switch to be operated to the corresponding position.

The train directors and dispatchers set up temporary headquarters at a point near the tower. When a route was to be set up, the director issued orders to the men at each switch, indicating how it was to be lined to complete the route.

Switchmen were assigned to ride or walk ahead of each incoming and outgoing train to examine the switches, and thus insure that they were lined correctly for the routing. By night-fall, a supply of electric lanterns had been secured to aid in giving hand signals, and megaphones were obtained for amplifying the shouted instructions. In this way, the train shed was cleared of outgoing trains shortly after 8 p.m., and, by 9 p.m., trains scheduled for later departure had been placed on the station tracks



The switch machines are being controlled by "fingering" the valves, until knife switches and circuits are installed to control the valves



The interlocking machine as well as relays and other apparatus were a total loss

and were receiving passengers. During Monday night, to insure against the throwing of switches in error, as soon as a switch was thrown for any route it was blocked in its new position by means of a wooden wedge. This practice had been discontinued, however, as the men have become acquainted with their duties.

Communication Systems Installed

Simultaneously with these activities, floodlights were installed at various points. Telephone men worked all night to put in telephones leading from the station master's office to the dispatcher's temporary open-air headquarters. Later, telephones were also placed near groups of switches, so that the dispatcher could communicate with each strategic point without shouting. A public address system was set up so that directions can be transmitted to all points readily and effectively.

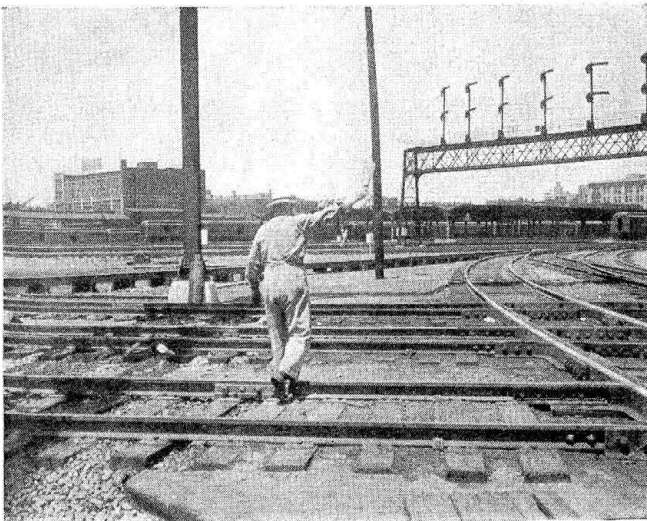
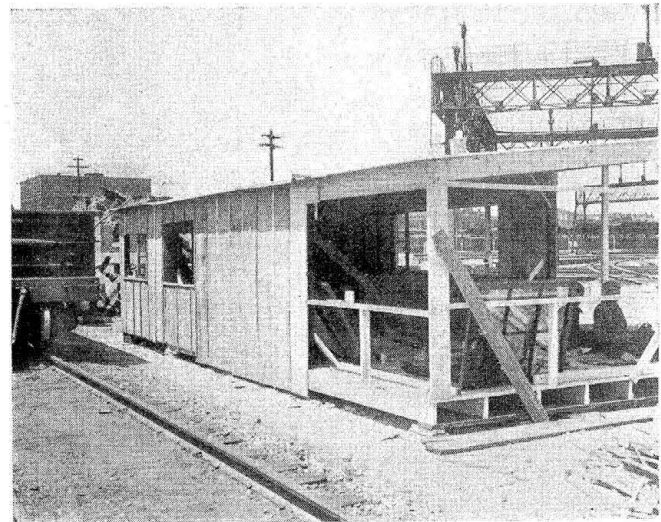
How the Forces Are Organized

In the emergency, on Monday night about 200 men were employed to line up switches, pilot trains, transmit

orders, etc. As the men learned what was expected of them, the forces were organized on a semi-permanent basis. At present, a total of 39 men (30 signalmen and 9 switchmen) are handling switches and directing trains on the ground. In addition, the 20 tower-men and four train directors have been given various assignments in the handling of trains.

To simplify the emergency opera-

Temporary headquarters for the train directors were erected the next morning



Train movements are now being directed by hand signals

tion still further, small hand-operated knife switches with battery power supply have been ordered, and are to be installed at the track switches to control the electro-pneumatic valves, and this will reduce still further the number of men required for the operation of the switches. In addition, electric switch lamps are being installed at the switch controls to assist both switchmen and signalmen in determining the position of the points. The interlocking signals will remain inoperative and trains must be moved by hand signals until the interlocking can be restored to service.

Plans for Replacement

At the height of the fire, P. M. Gault, signal engineer, Missouri Pacific, and chairman of the Terminal Railroad Association's signal committee, at the request of Phillip J. Watson, Jr., president of the Terminal, sent telegrams to the other members of the committee calling a meeting for Tuesday morning to discuss plans for replacing the interlocking control system. This committee, which is

composed of the signal engineers of several of the Terminal's proprietary lines, including A. P. Hix, signal engineer of the T. R. A. of St. L., is now engaged in the preparation of plans.

Fortunately, one of these railroads had on hand a new interlocking machine that is suited for the needs of the Union Station. While certain alterations and additions will be required, the fact that it will not be necessary to build all the parts for a new machine, will shorten the period of hand operation. Other materials have been ordered and preliminary work started in an effort to restore the plant to service within 90 days, and if this date is met, an outstanding accomplishment will have been attained.