

axles and are equipped with: automatic gas (propane) water heaters; lavatory and bathing facilities; automatic oil heater; electric refrigerator; 4-burner gas (propane) range; pulverator toilet; drop leaf table; clothes closet; twin beds; 2 living room and 2 bedroom chairs.

Their work is spread over each operating division, in some cases as much as 250 miles. These men were previously either housed in camp cars; or used the camp cars of signal construction gangs, when the larger gangs were conveniently located near their work. These camp cars were costly to maintain and move from one location to another. Due to the many track retirements made, track space for storage of cars at locations where necessary domestic facilities were available became very limited.

Trailers can be readily moved and parked along the line at stations or other locations convenient to their work, where water and electricity are available. To date use of trailers has been very satisfactory, and the men using them are apparently well pleased with the accommodations afforded.

## Snow Melters

*When you have snow melters (electric, gas or air) do you take them out for summer months for inspection, repair and cleaning, and then replace them in the fall? Or do you leave them in place all year, maintaining them when necessary.*

### Heaters Removed

By F. YOUNGWERTH  
Assistant General Superintendent  
Communications & Signals  
Erie  
Cleveland, Ohio

On the Erie with some 130 switches equipped with controlled switch heaters, the heaters are removed each spring and after a thorough inspection, repair and cleaning job, heaters are stored for the summer and then reinstalled in the fall.

Following removal of heaters an immediate inspection is made by division maintenance forces. If mechanical defects are noted such as pipe sections broken, welsh plugs loose or out, welding or renewal of baffle plates, etc., the

heaters are sent to our system signal shop for repairs. If defects noted are minor, they are repaired on the division.

All heaters, whether requiring major or minor repairs, or no repairs, are properly scraped, all rust scales and debris removed and then painted with black graphite paint. Heaters are then stored for the summer months ready for the next heater season.

### Propane Heaters Out

By A. C. KROUT  
Principal Assistant  
Signal Engineer  
Southern Pacific  
San Francisco, Calif.

We do not use any electric or air snow removers at power operated switches. We do, however, have numerous installations of propane gas snow melters. Primarily, these are reserved for power switch locations in centralized traffic control territory.

Our practice is to remove all of the apparatus including piping back to the main control valve at each location. These parts are then taken to division shop headquarters where they are completely cleaned, and if any parts are found defective in the process, new parts are ordered and assembled for use in the field at the beginning of the winter season.

This procedure has considerable advantage in that switches are completely open for track maintenance during the summer months and switch heater parts receive no damage during such months. Furthermore, this method of handling practically eliminates any breakdown of parts, which would cause switch heater failure during the winter season.

### Remote Control Heaters Removed for Summer

By G. K. THOMAS  
Signal Engineer, System  
Atchison, Topeka & Santa Fe  
Topeka, Kan.

The only electric or gas snow melters used on power switches on the Santa Fe are at the CTC siding switches at Mountainair and Culebra in New Mexico. Both of these make use of propane gas. At Mountainair a large storage tank is used for propane gas at the west siding switch and portable cylinders are used at the east switch. These are lighted by hand by track department employees and turned off by them also. They are not taken up during the summer months, but are left in place all

## To Be Answered in a Later Issue

1) *At field stations in CTC territory, do you run a tap from the code line into the instrument housing, or do you loop the code line through the housing for testing and sectionalizing, or do you dead-end the code line on the crossarms for sectionalizing? Please describe your practice, giving reasons.*

2) *To enable trainmen to talk to the dispatcher in CTC territories, some roads make use of the code line for a talking circuit, while others use a separate message and/or dispatcher's circuit. Please describe your practice giving reasons.*

3) *Do you keep your management periodically informed concerning communications, or do you wait until "budget time?" In general, what factors have you found to be most helpful in selling management on improved railroad communications?*

4) *Do you keep your management periodically informed concerning signaling, or do you wait until "budget time?" In general, what factors have you found to be most helpful in selling management on improved railroad signaling?*

5) *What use are you making of aluminum wire or cable for signal and/or communications circuits? Please describe any installations including the type of wire and how much you installed.*

6) *What has been your experience with cathodic protection for lead-covered underground cable? How is the voltage to be applied to the lead sheath determined? Is a rectifier or a sacrificial anode the best solution? Please explain your methods?*

**SPECIAL NOTICE**—Send your answers to these questions to the "What's the Answer?" department, Railway Signaling & Communications, 30 Church Street, New York 7, N. Y. Payment is made for all answers which are published. Send us questions which you would like to have answered or discussed in these columns.

year, maintaining them when necessary.

At Culebra a large storage tank is used for propane gas at each end of the siding, and the burners are automatically lighted by CTC control from the dispatcher's office at Clovis, N.M. Burners are taken up in the spring and stored in shelter houses until the late fall when they are again installed at the switches.

## Photography

*What use are you making of photography in signaling or communications work? Do you take photographs of new work, under construction and when finished, to provide a "pictorial" record? Do you make use of motion pictures or slide films for training purposes? Please explain fully.*

### Pictorial Record

By A. E. DEMATTEI  
Superintendent of Communications  
Southern Pacific  
San Francisco, Calif.

On Southern Pacific we do make some use of photography such as to record progress of major projects the most extensive use now being in connection with our microwave installation Dunsuir to Black Butte.

We have used photography to provide a pictorial record of almost every type and kind of radio installation. Also, considerable photographic work is used pictorially and for instruction purposes in connection with radar fault finder installations where these instruments are calibrated for measuring trouble on various types of wire line circuits at numerous locations over our system.

Slides are used frequently when talks are given before various groups and organizations. These slides not only portray progress made in radio and allied electronics, but are descriptive of intercity dialing networks, etc.

Photographic records are kept illustrating the progressive modernization of our communication plant. They are also used to illustrate standard installations for various types of telegraph and telephone installations.

### Visual Record

By G. K. THOMAS  
Signal Engineer, System  
Atchison, Topeka & Santa Fe  
Topeka, Kan.

On the Santa Fe, we use photography in signal work to make a visual record of signal construction

work in the field as may be necessary or helpful in designing layouts and plans in the office, such as preparation of standard plans for different kinds of signal installations, interlocking switch layouts, cable work, signal housings, etc.

Photography is also used as necessary to illustrate reports on different phases of signal work and to maintain a pictorial record for general use in signal engineering. So far we have not been able to develop any use of motion pictures or slide films.

### Photographs of Jobs

By S. W. MILLER  
Superintendent of Communications  
Nickel Plate Road  
Cleveland, Ohio

Although we do not use photography for training purposes in communications, photographic records of jobs in progress and jobs completed are valuable. Photographs of jobs are particularly helpful during discussions in the general office with supervisory personnel, in considering methods of doing work, use of special equipment, spare capacity of outside and inside plant installations, arrangement and

## Message Duplication

*Have you found a fast and satisfactory method of duplicating Teletype messages other than by hectograph ribbon and gelatine roll duplicating process?*

### Look for Other Methods

By N. W. MENZIES  
Superintendent of Communications  
Western Pacific  
San Francisco, Calif.

We are one of the many railroads that have in the past and are at the present time using the hectograph ribbon and gelatin roll duplicating process, due to the fact that we have as yet not been able to discover any other satisfactory means that would fit our particular requirements.

I have been advised that within the next couple of years the large flatbed Ditto machines will be discontinued, also that the gelatin rolls are becoming a thing of the past. For the past few months I have been investigating through the Ditto Company and the Columbia, a suitable process to replace our present method and so far have not run across anything that will compare with our present system. The

mounting of material, etc. A picture is worth a thousand words and many times, pictures we have taken of various jobs have been very helpful in discussions.

### Give Office Men Views of Field Work

By T. W. HAYS  
General Signal Engineer  
Union Pacific  
Omaha, Neb.

We have in the past used photographs of highway crossings taken from all directions, both on highway and the railroad, to give the men in this office a better idea of the location they were working on. This scheme is also applied at railroad crossings in connection with proposed installations of automatic interlockers. We have also taken many pictures of completed traffic control jobs, all of which were with the idea of giving the men in the office who had not had the advantage of field experience some idea of what was being done in the field.

As yet we have not made use of motion pictures or slide films for training purposes, but anticipate working out some such scheme for the future.

closest process we have given considerable attention to is the offset duplicator produced by the Ditto Company. This method, while it may be satisfactory, no doubt will be too costly for a railroad communication center, due to the fact that all Teletype equipment would have to be equipped with a special paper known as the master mat, copy of which is only produced in sheet form and could not be secured either by roll or fanfold at an economical cost.

### Use Duplicator Machine

By H. O. ROOKER  
Communications Supervisor  
Illinois Central  
Chicago, Ill.

Yes, we have an automatic Ditto duplicator machine which has a metal cylinder for holding the hectograph sheet. This cylinder also handles the Teletype page copies or similar paper forms on which messages are typewritten. When the duplicator operates, this metal cylinder revolves as part of the duplicating process.

We purchase the special paper in rolls that are sized to fit a standard Teletype machine. The paper is a two-ply continuous roll, the lower ply being a purple hecto carbon