# EDITORIAL COMMENT

## Switch Lamps in Automatic Territory

WHEN automatic block signals are installed on a division, the question arises whether the oil switch lamps are to be eliminated. In the first place, the automatic signal system includes switch circuit controllers so connected and adjusted as to cause the signal protecting each block to display the most restrictive aspect, if the switch is not within about ¼ in. of its normally closed position. This arrangement, of course, affords a much more accurate check than a target and lamp actuated by a hand-throw stand.

The question then arises as to why a road should continue the expense of maintaining the oil switch lamps when the automatic signal gives a more accurate check and a much better indication of the position of the switches. A further consideration is the fact that, where a switch is located in the vicinity of a signal, the signal lamp might burn out, leaving the green switch lamp to be mistaken by the engineman of an approaching train as a clear automatic signal aspect, when the block may be occupied.

If switch lamps are in service, another point for consideration is that a signal may be displaying its most restrictive aspect on account of a switch in the block being open considerably more than ¼ in. With these conditions, a train having stopped at the signal would proceed into the block under control.

The question arises as to whether the engineman, having seen a green light at the mislocated switch, might accept this as assurance that the particular switch was correct, and, therefore, encounter the switch without actually observing the position of the points, whereas if no lamp were in service, he would be obliged to check the position of the points before proceeding over the switch.

In consideration of these conditions, numerous roads have removed the lamps from all trailing-point switches and also from facing-point switches when a signal is located not more than 300 ft. in the approach to the switch, or switches. One road uses a distance of 500 ft. in applying this practice. In the majority of passing-track layouts, especially on single track, the signals are so located that the practice mentioned above applies. Therefore, on single track, the switch lamps are eliminated on practically all of the switches except those at outlying industry spurs, and some roads do not equip the outlying spurs.

On double-track lines equipped with automatic signals, some roads use no lamps on any of the switches, but on sections where trains are frequently run in the direction reverse from normal, so that no automatic signaling is effective, the switches, which are facing for reverse running, are equipped with lamps.

An objection to the removal of switch lamps on single track, raised by one road, is that the conductor of a train leaving a passing track cannot, at night, see the lamp to check whether the trainman has placed the switch normal after the train is on the main line. However, on single-track signaling, if no train is occupying the block controlled by the signal for the other direction, the aspect of that signal should change to proceed as soon as the switch is placed normal, and with either semaphores or light signals the aspect can be seen by the conductor; even the use of approach-lighting will not prevent this, because the train will be occupying the approach-light control section.

## Defeat a Major Source of Trouble —Lightning

CONSIDERING the comparatively few years in which electrically-controlled and operated signal and interlocking equipment has been developed, its efficiency and reliability of performance are remarkable. However, one dragon, in the form of lightning, still continues to defeat the best efforts of designing engineers and maintenance forces. On a road which has excellent maintenance and otherwise reliable signal performance, an electrical storm recently destroyed six line transformers on the a-c. floating power distribution line in a 50-mile territory. On another road, where maintenance is above criticism, lightning, accompanying a mild thunder shower, caused damage which placed two automatic signals out of service, thus delaying an important passenger train about 30 minutes. Some roads have more signal outages due to lightning than from all other causes combined.

Lightning has, of course, been a source of trouble throughout the history of signaling, and many effective protective devices and methods of construction have been developed. Intensive study is being devoted to the subject by engineers, manufacturers, and the railroads. Reports indicate that the extensive application of proven equipment and the best construction practice do minimize the failures attributable to lightning.

Insofar as power distribution lines for straight a-c. signaling, as well as a-c. floating or a-c. primary systems, are concerned, a wealth of information concerning a-c. power and lighting distribution lines is available. Recent field tests and laboratory experiments have developed information especially applicable to power distribution lines for railway signal service. With the use of adequate ground connections, effective arresters, and adequate insulation on the coils of transformers, hope is now given