

ends only shall be used with insulated joints.

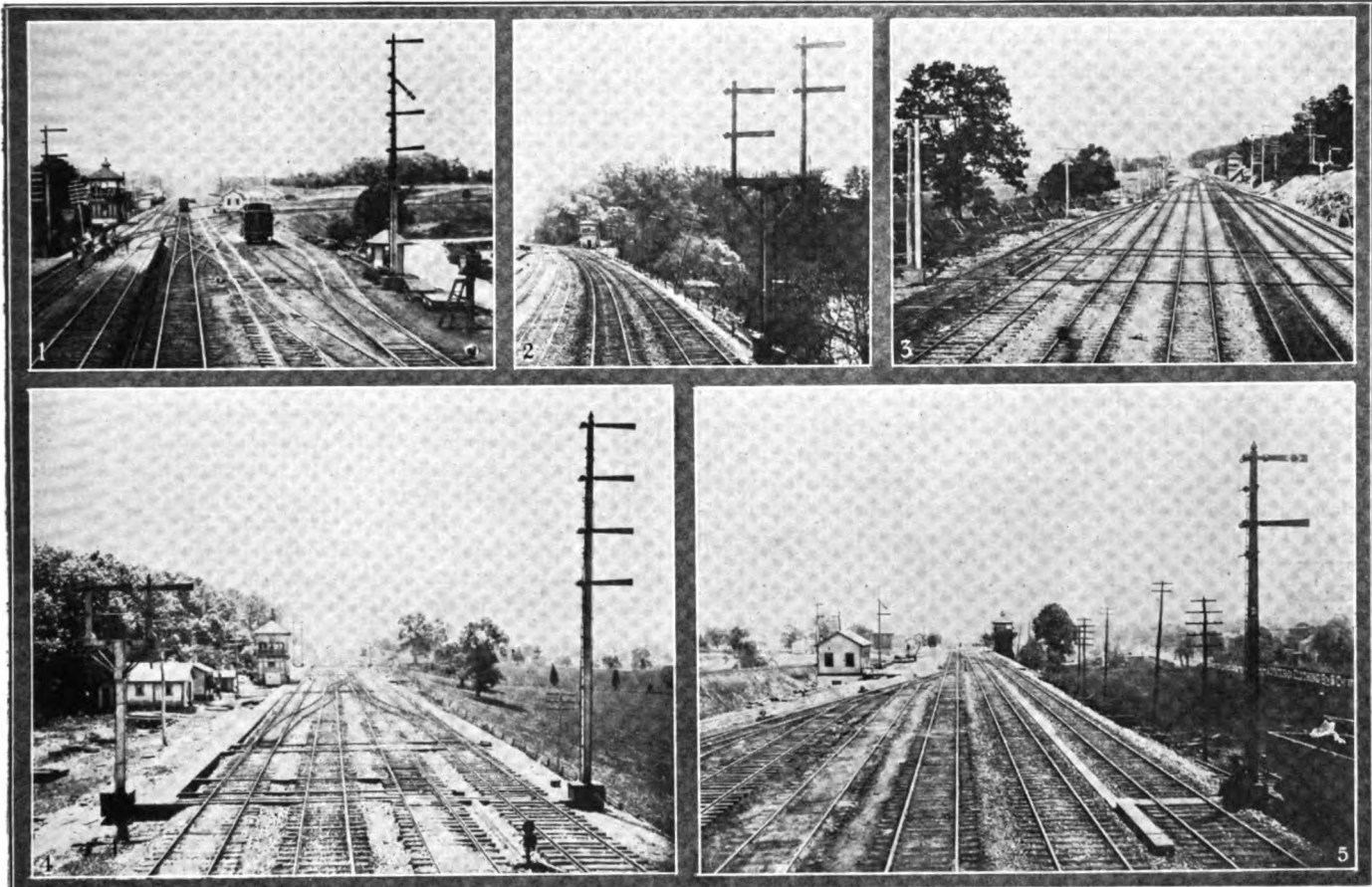
"Sharp projections shall be carefully chipped off at all places where they come in contact with fibre parts. Anti-creepers shall be used on each side of insulated rail joints, and in all cases insulated joints shall be supported on two good ties, which must be kept well tamped."

SOME EXAMPLES OF EARLY SIGNALING

In these days of three-position upper-quadrant signaling and indications which tell the engineman how fast rather than where he shall go, the accompanying illustrations, taken about 1890, are of particular interest. They show a number of details typical of signaling on the Pennsylvania at that time. The only copies of these photographs in existence, so far as is known, are

the practice was changed so that the top arm governed the main route.

"Print No. 4, showing the plant at Frazer, looking west, is more or less of a curiosity, and I have not been able to 'dope' out the principle on which it was signaled. I believe at that time the two tracks on the right were the westbound and the two on the left eastbound. The four-arm mast in the foreground of the picture governed the track on the right, but apparently there was no high signal for the next track, which was equipped with a pot signal and derail, governing, I believe, in the normal direction of traffic. I presume the idea was to require freight trains to approach slowly, in order not to strike a train crossing over from the right-hand track to the West Chester branch on the extreme left, and possibly a high mast



1. Fifty-second Street, Looking West.

5. Fifty-second Street Plant, Looking East.

2. Fifty-ninth Street, Philadelphia.

3. The Frazer Plant, Looking East.

4. The Frazer Plant, Looking West.

blue prints made from the original negatives, which were recently discovered in the signal engineer's office.

In forwarding these pictures, A. H. Rudd, signal engineer of the Pennsylvania, comments on them as follows: "In print No. 1, showing the plant at Fifty-second street, Philadelphia, looking west, there can be seen what was called an 'emphasized' arm on the four-arm home signal. At that time the practice was to 'signal to the right,' that is, the top arm led to the first track to the right, the second arm to the next track, and so on. The top arm in this case led around onto the Schuylkill division, the second arm indicated the straight high-speed track, the third arm led over the crossover with traffic, and the fourth arm against traffic still further to the left. The second arm was therefore emphasized by two horizontal lights one on each side of the mast for the night indication and by the diamond-shaped attachment for the day indication. Print No. 5, looking east in the same plant, also shows one of the 'emphasized' arms at the top of the mast, the second arm leading over against traffic. These did not prove a success and shortly afterward

was not put in for fear that the signals would be mistaken. On the other hand, it will be noted that a two-arm bracket was installed on the south of the tracks, which apparently governed the two left-hand tracks against the normal direction of traffic. It can be seen from this print and No. 3, showing the same plant looking east, that this same arrangement was provided for reverse movements on the eastbound track, but that for normal eastbound movements two three-arm signals, placed side by side with a cross-piece between them, were used. The view looking east also shows a home signal protecting the branch located only 200 or 300 ft. from the two signals referred to. This arrangement was necessary because the 'specials' used with the flop locking were limited in their combinations. The westward view also shows the single light casting. This and the long arms look queer to signalmen at present.

"The view No. 2, showing the plant at Fifty-ninth street, shows real spectacles on the signal. I cannot now remember why they were installed, but perhaps some of the older members of the signal fraternity can supply this information."