Railway Signal Association Convention

Proceedings of the Sixteenth Annual Meeting, Colorado Springs, October 10, 11, 12

The 16th annual convention of the Railway Signal Association was held in the Antlers Hotel, Colorado Springs, Colo., October 10, 11 and 12. Business sessions were held on Tuesday morning and afternoon, Wednesday morning and Thursday morning. There were 316 members and guests registered.

OPENING BUSINESS.

The opening session on Tuesday was called to order at 10 a. m. by C. E. Denney (Lake Shore & Michigan Southern), president of the association. Mayor Avery, of Colorado Springs, delivered an address of welcome extending the courtesies of the city and vicinity to the visiting delegates.

In his opening address President Denney called attention to the fact that the advance notice of the annual convention contained 365 pages of committee reports and that the quality of these reports is very commendable, especially those of Committees X and XII. He also mentioned the importance and desirability of the association's preparing a manual of standards; and touched on the fact that the Railway Signal Association has been closely affiliated with the American Electric Railway Association, and that this co-operation will undoubtedly be still closer in future in connection with the work of Committee X.

The report of the secretary showed a membership on September 30, 1910, of 1,378, and on September 30, 1911, of 1,237. The treasurer's report showed the assets of the association over all liabilities to be $4,847.64.

At the meeting of the Board of Direction on Monday night it was decided to appoint a special committee of four members of the association to co-operate with the Special Committee on Relations of Railway Operation to Legislation of the American Railway Association, of which F. O. Melcher (Rock Island Lines) is chairman, in regard to the technical features of signaling. It is probable that this committee will not report directly to the Railway Signal Association. The committee appointed was as follows: C. E. Denney, A. G. Shaver, J. A. Peabody and W. J. Eck.

The Board of Direction reported that Van Dyke negatives of R. S. A. standards would be furnished at $0.50 each, and at a lower rate in quantities to railway companies.

The Board also reported that it has conferred with Arthur W. Brady representing the American Electric Railway Association, regarding signaling for electric railways but that no definite report could be made to the association yet. It was decided to fix the dues of representative members at $2.00.

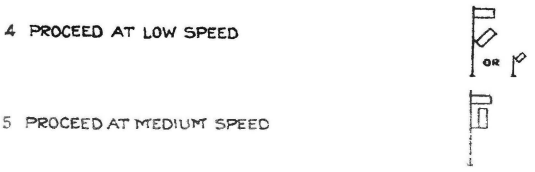
J. F. Shaffroth, Governor of Colorado, addressed the Tuesday afternoon session of the convention. He talked of the early history of the state, describing the discovery of gold and the accidental finding of the natural advantages which the state offers for the cattle industry, mining, agriculture and manufacturing.

COMMITTEE I—SIGNALING PRACTICE.

Committee 1 recommended a revised scheme of signal aspects, or rather two schemes, one for roads desiring to get along as cheaply as possible and the other a complete scheme for indications. The conclusions presented by the committee this year are based on its consideration of reports on this subject made at previous meetings during the past five years and on the recommendations of the committee of the American Railway Association which were considered at the meeting of the A. R. A. last April (though not adopted by that association). It will be recalled that the A. R. A. committee, acting on the requests of the American Railway Engineering and the Railway Signal Associations held that the fundamental and essential signal indications were (1) stop; (2) proceed with caution; (3) proceed; and that "proceed with caution" might be used with the same aspect to govern any cautionary movement. For example as an ordinary distant signal or as a permissive indication at the home signal. Two additional indications were approved, namely: (4) proceed at low speed and (5) proceed at medium speed.

To provide a system corresponding to these declarations of the A. R. A. committee, the R. S. A. committee makes the following recommendations:

"Having in view, and not desiring to depart from, the established practice of indicating diverging routes and incidentally low and medium speeds, your committee recommends that the medium and low-speed indications be given by an additional arm or arms. The simplest method (although incapable of expansion to provide additional aspects or even combinations of the fundamentals and supplementaries) is to use a second arm for both of these indications. The Committee on Transportation rules that the fundamental, "Proceed with caution," may be used to govern any cautionary movement. Therefore, for those roads which desire to operate under this plan and deem the five indications entirely sufficient, two additional aspects are necessary.



At interlocking plants which are also block stations it may be desirable, even on such roads, to give passenger trains caution signals for diverging movements but not for entering occupied block sections; this would, with the system outlined above, require a separate signal beyond the interlocked switches. It may frequently also be desirable to display the fundamental, "Proceed with caution," on the medium-speed route, and to logically and consistently apply the fundamental aspects for "Proceed with caution" and "Proceed" to those signals indicating medium speed and low speed, the 45 deg. position should be used for caution and the vertical for proceed.

Again as the Committee on Transportation merely makes optional the combination of various indications under caution and as several roads have found it desirable to differentiate between such indications, the committee recommends for such roads a low arm as a low-speed arm and a middle arm where the indication of medium speed is desired.

The Committee on Transportation states that "stop signals operated under automatic block system rules should be designated by some distinctive mark to be determined by each road in accordance with local requirements." The instructions to this committee are to design a uniform system, which end is defeated if each road uses a different method of designating the automatic home signal. Therefore, the committee recommends as follows: Conclusion No. 1.

On roads desiring to operate with the three fundamentals and the two additional indications without expansion or combination

of these indications the following aspects may be used:

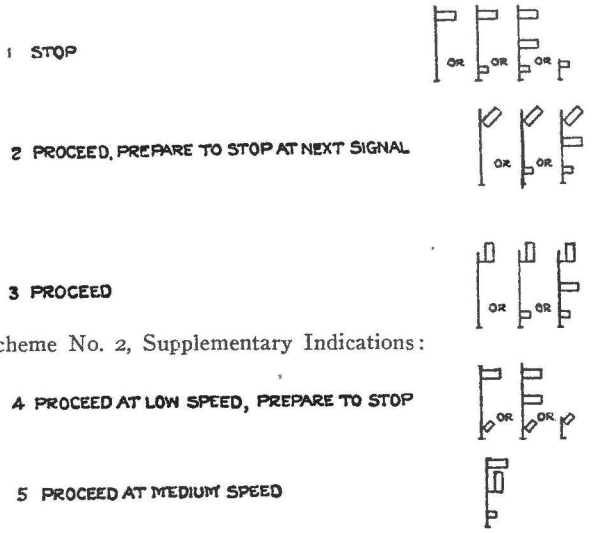
Scheme No. 1, Fundamentals:

Scheme No. 1, Supplementary Indications:

Conclusion No. 2.

On those roads desiring combinations of the fundamentals and supplementary indications and different aspects for the various caution indications permissible under the ruling of the Committee on Transportation, the following aspects should be used:

Scheme No. 2, Fundamentals:

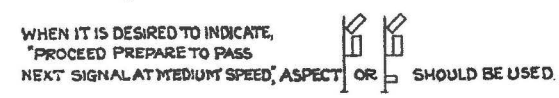


Scheme No. 2, Supplementary Indications:

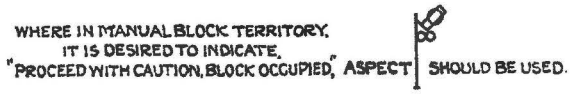
Conclusion No. 3.

Conclusion No. 4.

Conclusion No. 5.



Conclusion No. 6.



Conclusion No. 7.

That the arms of automatic signals be pointed and the arms of other signals giving the stop indication have square ends; that, on roads using Scheme No. 1, a number plate be added on the automatic signal and, on roads using Scheme No. 2, a red marker light below and to the left of the active light be provided.

The sub-committee on standards recommended that the following designs be adopted:

Drawing 1059A, clamp for base of ground signal masts; drawing 1065A, blades for upper quadrant signals; drawing 1066A, details and assembly of vertical crank stands; drawing 1067A, details of multiple vertical crank stands; drawing 1071A, strap pipe carrier; drawing 1072B, assembly of transverse pipe carrier; drawing 1073B, details of transverse pipe carrier; drawing 1082B, semaphore bearing; drawing 1083B, U-bolt and clamp; drawing 1090B, filler block (to limit travel of signal arms); drawing 1091B, filler block (to limit travel of signal arms); drawing 1092B, filler block (to prevent travel of signal arms); drawing 1093A, diagram of spectacle clearance; drawing 1094A, pipe insulation (joint); and drawing 1096A, plunger lock. The following drawings were also submitted for discussion: (1) drawing 1095A, one-way stand for multiple unit bolt lock; (2) drawing 1097A, mechanical dwarf signal. The 12 plates showing standard symbols for signal drawings, with the corrections which were suggested following the March and June meetings, were presented for adoption; and the specifications for one-inch wrought iron signal pipe, which were presented at the last annual meeting, and the design of semaphore lamp which was tentatively approved last year, was again submitted.

Discussion: A. H. Rudd (Pennsylvania) moved the adoption of the majority report. In the discussion on this motion which followed, T. S. Stevens (Santa Fe) and L. R. Clausen (C. M. & St. P.) spoke against the adoption of the report, and W. H. Elliott (New York Central), C. E. Denney (Lake Shore & Michigan Southern), J. C. Mock (Detroit River Tunnel), A. G. Shaver (Rock Island) and J. H. Stadleman (Pennsylvania) argued in favor of its adoption. The discussion was very interesting and at times heated. The objections of the minority, as explained in their portion of the committee report, were answered by the exponents of the majority report. The discussion covered a period of three hours on Wednesday morning, at the end of which time a vote showed 40 in favor of adoption and 22 against. The report submitted by the majority will, in accordance with this vote, be submitted to letter ballot for the approval of the members. The aspects included in the report which was adopted are those shown in schemes 1 and 2 in the committee report.

The minority report presented by members who disapproved the more comprehensive scheme of the majority of the committee was not acted upon. This report was presented by W. B. Scott, Harriman Lines; T. S. Stevens, Santa Fe; J. C. Young, Union Pacific, and L. R. Clausen, Chicago, Milwaukee & St. Paul.

Mr. Rudd moved the following resolution, which was adopted by the association:

Whereas, this convention has accepted and sent to letter ballot a scheme for a uniform system; and whereas, obviously such a system must differ in certain features from the present diverse practices, in order to attain uniformity; and whereas, the scheme submitted to letter ballot is the most feasible arrangement for attaining eventual uniformity, resolved that the acceptance of such a system does not and cannot discredit present good signal practices which have proved by twenty years of operation their safety and efficiency; and resolved, that the proposed scheme may safely be installed in conjunction with systems now in use without change of present systems; and resolved, that such systems should be used for new work and renewals so that in due and reasonable time uniformity may be attained.

This resolution will be sent to letter ballot to receive the sanction of the members of the association.

The plans for a clamp for base of ground signal masts, blades for upper quadrant signals, single vertical crank stand, multiple vertical crank stand, strap pipe carrier, and transverse pipe carriers, were adopted. The plans for a semaphore bearing and a U-bolt and clamp were revised to substitute a bolt ¾ in. in diameter for the ⅝-in. bolt specified by the committee. With this change the two plans were adopted. The plans for filler blocks,

spectacle clearance, pipe insulation, plunger lock, semaphore spectacles and multiple unit bolt lock were adopted. The plan of a mechanical dwarf signal was accepted as a progress report. The proposed symbols for signal drawings were adopted complete as presented by the committee, with the single addition of a symbol for track battery consisting of a letter "B" between rails. The committee's conclusion that the specifications for one-inch wrought iron signal pipe, published in the 1910 proceedings, be made standard was adopted.

COMMITTEE II—MECHANICAL INTERLOCKING.

Committee II, on Mechanical Interlocking (C. J. Kelloway, chairman), reported on four subjects, namely: bolt lock for power operated home signals; concrete foundations; specifications for interlocking for drawbridges; and floor plans for mechanical interlocking cabins. The committee could not recommend a satisfactory device to take the place of a bolt lock for power operated signals, but offered some suggestions on the subject. A code of specifications for Portland cement concrete was presented, the same having been approved by the harmonizing committee. Complete specifications for interlocking at drawbridges were deemed by the committee unnecessary, the general specifications for mechanical interlocking being adequate except for the special needs of drawbridges. These special needs vary with the types of bridge, and therefore it is not practicable to prepare satisfactory specifications; but the committee presented a list of requisites for the protection of drawbridges, including a statement of the sequence in which operations should be performed. It was recommended that the association take action with a view to having bridges so designed in the future that rail locks may be easily applied near the ends of the rails and rail attachments so arranged that rails may be readily insulated for track circuit.

Plans of a cabin floor and of a lead-out floor were presented by this committee last June and are now in the hands of Committee I. The committee presented seven pages of proposed changes in detailed specifications for mechanical interlocking, the same having been approved by the harmonizing committee (the chairmen of committees II, III and IV).

Discussion:—Subject (a) referring to the substitution of a device to secure the safety of operation of power-operated home signals that is at present afforded by the bolt lock in mechanical plants with pipe connected units was referred back to the committee for further consideration.

Under subject (b) on specifications for Portland cement concrete a stronger mixture was advocated for foundations which are not made in place; for example, pipe carrier foundations. A paragraph was added to the report to cover this recommendation.

Subject (c) covering recommendations for drawbridges on main tracks was accepted and referred to letter ballot.

The report of the harmonizing committee, composed of the chairman of Committees II, III and IV, which was presented in connection with the report of Committee II was referred to letter ballot.

COMMITTEE III—POWER INTERLOCKING.

Committee III, on Power Interlocking (B. H. Mann, chairman), submitted typical plans for electric interlocking; a report on a bolt lock, or its equivalent, and specifications and typical plans for electro-pneumatic interlocking. Much of the matter in this committee's report consists of things presented at the June meeting, but in more complete shape. Figs. 10 and 11, of plans presented last June, have been withdrawn. The plans presented now are Figs. 8, 9, 12, 13 and 14; approach and route locking with and without slotted signals; simple route locking; track indicating circuit; and simple approach locking. The committee proposes definitions of "detector locking," route locking" and "approach locking." Taking up the question of specifications for motors to be used for the operation of switches and signals, the committee consulted F. W. Ells of Milwaukee and presented a code of specifications prepared by him.

The foregoing matter was prepared by a sub-committee (W. H. Arkenburgh, chairman). Another sub-committee (F. B. Weigand, chairman), prepared diagrams of typical plans for electric interlocking, including circuits for one-arm signals and circuits for selecting signals. These diagrams number 39; seven based on the practice of the American Railway Signal Co., nine, the Federal Signal Co.; 12, the General Railway Signal Co.; nine, the Union Switch & Signal Co.; and two, the electro-pneumatic system of the Union Switch & Signal Co. This list includes the single switch circuits presented last year, but with new numbers.

Committee III, like committee II, was directed to report on a bolt lock for electric signals. The sub-committee presented a brief report describing such an apparatus which is in experimental use on the Pennsylvania, west of Pittsburgh, and at S. Q. tower, Pittsburgh. This lock is a solenoid, which may be de-energized and allows a plunger to drop into a hole drilled through the slide plate and base by the switch movement. The committee describes the operation of the lock, but after consulting 24 signal engineers by letter and after careful study, concludes that such an additional safeguard is not needed on the standard types of electric interlocking. The safeguards now in use afford as much security as is afforded by the bolt lock in mechanical apparatus; and where additional protection is desired for high speed routes, the sub-committee recommends the installation of route locking. The proposed bolt lock would, of course, be useful and by its introduction expense could be saved, by the elimination of other safeguards against crosses in the circuits which are now used.

Sub-committee "C" (I. S. Raymer, chairman) submitted a code of specifications for petroleum asphaltum suitable for insulating electric conductors in trunking. This committee also submitted plans for terminal boxes, junction boxes and trunking; and also circuit for single switches, cross-overs and signals, interlocked by the electro-pneumatic system.

Sub-committee "E" (W. F. Follett, chairman) submitted a code of specifications for electro-pneumatic interlocking, covering gas engines, electric generators, switch-boards, bonding pins, zincs, coppers, copper sulphate; and supplementary specifications for drawbridges.

Committee No. III reported the conclusions of the harmonizing committee on eight pages of additions and changes to the specifications for power interlocking.

Discussion:—The five diagrams covering approach and route locking and track indicating circuits submitted by sub-committee "A" (W. H. Arkenburgh, chairman) were accepted and submitted to letter ballot. The suggested specifications for testing switch and signal motors by F. W. Ells (see *The Signal Engineer* for August, 1911, page 315) were accepted as information. The typical circuit for one-arm dwarf signals with induced (jump spark) indications submitted by Sub-Committee "B" (F. B. Wiegand, chairman) was accepted under subject (a) and referred to letter ballot. The report of this sub-committee on subject (b) concerning a substitute for the mechanical bolt lock to be used on electric interlocking apparatus was accepted as a progress report.

Six circuits covering electro-pneumatic detector circuits and electro-pneumatic signal circuits, which were prepared by Sub-Committee "C," were presented by E. J. Clark (Pennsylvania), and approved and referred to letter ballot. The drawings of terminal box, boot leg, junction box, trunking, and boot leg terminal, which were also submitted by this sub-committee, were accepted and referred to letter ballot.

E. B. Cobb, representing the Standard Oil Co., explained the specifications for petroleum asphaltum, which were submitted as part of the report of Sub-Committee "C." These specifications were approved by the association.

The report of Sub-Committee "E" (W. F. Follett, chairman), including specifications for electro-pneumatic interlocking; gasoline engine with fuel and water tanks; switchboards; electric generator; bonding pins or tubes; battery zincs; copper sulphate; and gravity battery coppers, was approved with the exception of one correction in the specification for detector bars, it being