Signaling Enters Automation

● CHICAGO, ILL., Oct. 11–13, 1960. Automation, railway mergers, hotbox detector maintenance and the latest techniques, discussed at the Signal Section, AAR, convention, lead one to believe that **signaling is rapidly changing from an art to a technical science.** Over 900 people assembled at the Morrison Hotel last month to discuss and vote on Manual changes, hear reports from 12 standing committees, addresses by eight speakers, and participate in two panel discussions.

Signaling is Becoming a Technical Science

V. O. Smeltzer, Superintendent Signals, System, Atchison, Topeka & Santa Fe, Chairman Signal Section, AAR (Abstract of Address).

Think back to the beginnings of railroad signaling, and you will realize that signaling is fast becoming a technical science. Or rather, I should say that we in the signal field are making more and more use of technologies developed for other purposes.

It is my firm belief that any effort to curtail our Signal Section work and meetings will result in slowing our rate of advance. Likewise, it is my belief that to combine the Signal Section with other branches of the AAR would be detrimental to all concerned. We need to get together frequently in our capacities as signal engineers, signal supervisors, and at all levels of our signal organizations to promote new ideas in signaling and in railroad operation, of which signaling is a most vital part today.

Challenges are Ahead for Signalmen

Ernest S. Marsh, President, Atchison, Topeka & Santa Fe, (Abstract of Address).

Some phases of signaling which deserve your intense study for improvement might include the following:

(1) We must find ways to simplify our traffic control systems so as to reduce the average cost per mile for new installations, which for a typical single-track operation, has mounted steadily to approximately $20,000 per mile.

(2) There is always the need to find new ways to minimize the continuing maintenance cost of signal equipment, which once installed becomes almost inflexible, because it has to be maintained in working order without regard to the volume of business and whether there are a few or many trains over the district.

(3) I would urge, too, that you try to come up with a simple and effective highway grade crossing warning device that could be installed for a few hundred dollars instead of the $15,000 and more involved in one installation of flashing-light signals and short-arm gates.

(4) Another area that deserves attention is the greatly increased cost of making a simple industry track turnout into TCS territory, because of the necessity of installing electrically locked switches, signal and phone circuits, and all of that, an expense, of course, which our competitors do not have to consider in turning out to serve an industry.

(5) Still another item that falls within your area of study is the need for improving our hotbox detection systems with positive and immediate signal indication to warn of impending trouble.

Completely automatic railroad operation seems perfectly logical from experiments that have been made here and abroad, and I am convinced that it will evolve, both because of the need to minimize employe costs through more automation, and to realize the benefits of computer-type planning of operations that will promote maximum utilization of the railroad plant and make for efficient transportation at the lowest possible price to the public.

Revision of ICC RS&Is Might Be in Order

Everett Hutchinson, Commissioner, Interstate Commerce Commission (Abstract of Address).

It has been 10 years since our rules have been revised, and I have wondered if further revisions are not now in order to make them key with new developments in the art and to insure that the Commission is doing all it can in this connection to assist the railroads, not only to promote safety, which is the prime consideration, but to increase operating efficiency.

Regarding Section 136.602 of the RS&I, a southeastern railroad has applied for relief to the extent that it be permitted to install dragging equipment detectors without interconnection with the automatic block signal system, at numerous locations on its lines. [The railroad, the Southern, has received relief from the ICC based upon the road's intent to install and maintain a system of transmitting dragging equipment detector actuations to a central point. An attendant at this point will radio train crews concerning these actuations. See RS&C, October, 1960, page 56.]

It is quite possible that if this method of transmitting information to the train crew—that a dragging equipment detector has been actuated—had been in use at the time the rules were last revised, Section 136.602 would not have been written as it is today. And certainly **when the rules again are revised serious consideration should be given to the fact that there are now other, perhaps better, means of transmitting dragging equipment information to the crew than by the indications of automatic signals.**

By 1955, the Commission had become aware that perhaps rigid enforcement of Section 136.410 was having the undesirable effect of retarding the installation of traffic control, and had concluded that some measure of relief was justified. [Section 136.410 requires that electric locks be installed on hand-throw switches in traffic control territory where train speeds exceed 20 mph.]

Since that time the Commission has granted many applications for relief from the requirements of this section. This relief has been of two kinds: (1) permitting the applicant to install mechanical time locks in lieu of electric locks; and (2) relief from electrically locking hand-operated switches at those industrial sidings where trains are not permitted to clear the main track.

Since this type of relief has been granted in so many cases, after hearing, where the applicant made an adequate showing that safety of operation would not be impaired by the absence of electric locks, the Commission has issued a Notice of Proposed Rule Making stating that **it has under consideration revision of Section 136.410 so as not to require the installation of an electric lock on any hand-operated switch in traffic-control territory where trains are not permitted to clear the main track at such switch and to permit the use of a mechanical time lock**

on a hand-operated switch in traffic-control territory. [Oral hearings were held on this matter last month, and a decision may be expected in another 30 days.]

Concerning Section 136.587, which prescribes requirements for departure tests of automatic train-stop, train control and cab-signal locomotive equipment, it has occurred to me that perhaps some revision of this rule might well be considered. The operation of the automatic train-stop, train-control, and cab-signal equipment on locomotives has become much more reliable and perhaps there is less need for frequent testing. This apparently is **the basis for proposing that Section 136.587 be revised, at least to the extent of requiring only one departure test in any 24-hr period on those locomotives in suburban service which make frequent trips during that period of time between two terminals.** At the present time a departure test is required before the departure of the locomotive on each trip from each terminal.

Section 136.51 prescribes requirements for track circuits. There are indications that literal compliance with all of this requirement is practically impossible, and the rule appears to have been honored more in the breach than in its observance. The rule fails to take into consideration that there is a tie-plate under each rail on every tie, and if the rail breaks over a tie-plate a bypath for the track current is provided by the tie-plate, and if this path is of low enough resistance the track relay will remain energized in violation of the rule.

I think it is obvious that the Commission would be warranted in giving consideration to revision of the rule to provide that it shall not be a violation if a break should occur at any of the numerous places where the track current may be bypassed by some appliance or device that is just as essential for the safe, efficient operation of the railroad as the track circuit itself.

Railroads Need More Equitable Treatment

C. D. Buford, Vice-President, Operations and Maintenance Department, Association of American Railroads (Abstract of Address).

New devices being highlighted here will be limited in their applications due to the regulatory, tax and subsidy (to competitors) climate. About 50% of the present capitalization expenditures of the railroads is coming out of depreciation accruals. The railroads must seek federal action to allow them to obtain more income so they can modernize their facilities. For example: in 1930 a box car cost about $2,000; now a box car costs about $10,000. The railroads are justified in asking Congress to reduce the present tax write-off time on equipment.

A committee of the AAR is working out plans for combining the activities of the Signal Section and the Communications Section.

Microwave Can Be Important to Signaling

J. A. Parkinson, General Superintendent Communications and Signals, Atchison, Topeka & Santa Fe (Abstract of Address).

Due to initial investment, the cost would normally prohibit microwave for signaling only; however, **when microwave is to be installed for other reasons, it can provide signal phone channels and code channels at very reasonable cost. As to reliability, a microwave system designed and installed to provide railroad communications will have, inherently, a degree of availability exceeding that for an equivalent mileage of wire lines.**

We are now operating [on the Santa Fe] a traffic control system between Barstow and Mojave, Calif., which is controlled by the dispatcher at Fresno, 250 miles from the battery end of the dc code line at Barstow. Standard WE "C" carrier is used on wire lines from Fresno to Bakersfield, 110 miles, and microwave from Bakersfield to Barstow, 140 miles. Results to date have been excellent.

The Santa Fe is also about ready to place in service a TCS system of double track, traffic reversal between Maine and Seligman, Ariz., 60 miles. This system will be microwave controlled from the dispatcher at Winslow, Ariz., 140 miles away.

Signal Standardization Should Reduce Costs

E. J. Brown, Chief Engineer, Burlington Lines; President, American Railway Engineering Association (Abstract of Address).

Through standardization some cost reduction should be reflected. These [signal] costs could be brought down so that many more [signal] installations in territories where we do not now have signaling could be justified. **Standardization should be kept uppermost in our minds at all times, so long as it does not impair progress or create material obsolescence before it has served its economical usefulness.**

If joint inspection of switches by both track and signal forces in signal territory were made monthly, the two departments would recognize their responsibilities more readily, with the result that the majority of our signal interruptions would be decreased.

More Signaling May Result from Mergers

I. W. King, Transportation Engineer, Union Switch & Signal—Division of Westinghouse Air Brake Co. (Abstract of Address).

Centralized traffic control will undoubtedly play the key role in increasing the capacity and efficiency of routes selected to be the primary arteries of merged properties.

The elimination of duplicating schedules will naturally increase the train departures and traffic volume on primary main lines. This higher traffic volume brings with it increased problems of operation, including the greater possibilities of train delays from mechanical failures, and the difficulties imposed by high speed trains using the same tracks as low speed trains, adversely affecting the capacity of the line. These and numerous other similar operating problems can be expeditiously and efficiently solved by modern systems of traffic control.

In many mergers, routes that parallel the selected primary routes may be abandoned completely, with resultant savings in maintenance, taxes and operating expenses. In other cases, sufficient traffic and on-line industries will require the continuation of parallel routes, but it will be possible to tailor these lines downward to meet the requirements of lighter traffic. This will often permit the abandonment of second main tracks and justify the installation of centralized traffic control on the remaining single track.

In the case of the Norfolk & Western and Virginian [merger], by utilizing certain segments of VGN main tracks, the N&W found it can handle over 70% more coal tonnage with the same number of locomotives than over its own tracks alone.

By operating eastward tonnage trains over the VGN single main track between Kellysville and Roanoke, with its 0.6% ruling grade, a 7-mile helper district of 1%

gradient on the N&W line between Walton and Christiansburg was avoided, and helper service eliminated. Accordingly, connections have been built between these lines at Kellysville and Roanoke to permit the routing of tonnage trains over the most efficient line. Centralized traffic control is being installed on the single track VGN line between these points, and second main track between Kellysville and Walton on the N&W will be eliminated by centralized traffic control.

Concerning the Erie-Lackawanna merger, all through freight and passenger trains will now be routed over the low grade Erie line between Hornell and Buffalo, where existing light-traffic CTC is being expanded and improved to efficiently handle the concentrated traffic volume. The parallel Lackawanna double track line between Buffalo and Corning, approximately 125 miles, will be reduced to single track for freight service only.

A new modern electronic classification yard, which neither road could justify independently, will be built at East Buffalo to handle the combined traffic of the merged roads. Also, the increased tonnage moving through Hornell will require adding 11 tracks to the existing fast freight yard at that point.

No Automatic Interlockings in Russia

L. B. Yarbrough, Superintendent Signals and Communications, Wabash.

Commenting on a showing of 144 slides of pictures that he took on his six-weeks trip through the Soviet Union, Mr. Yarbrough discussed Russian signal practices (See RS&C, August, 1960, page 50).

Automatic Train Operation is Here

Franklin George, Assistant to Vice-President, General Railway Signal Co. (Abstract of Address).

In addition to discussing automatic train operation, Mr. George showed three color, sound motion pictures of tests made on the Quebec, North Shore & Labrador, New York City Transit Authority and Canadian National. (For a description of these tests, see page 20 this issue.)

Referring to a CNR Research Department report of early 1959 on how train operation might be automated, Mr. George said the report presented these major conclusions:

(1) Continuous, not intermittent, control would be required.

(2) Radio or lineside induction control would not provide the degree of protection against control errors and wayside abnormalities; nor properly interlock and direct controls to trains at specific places, as would continuous communication via the rails themselves.

(3) Track circuits would provide continuous train control and cab signals, and could be integrated with the supervisory control of CTC.

(4) The system should be able to provide situation "reports."

(5) Directing of trains from a central brain would be preferable. Supervisory controls would originate there, and be monitored and checked enroute to trains.

(6) Locomotive intelligence—only that required to properly interpret controls received, and self-check train and locomotive conditions, is all that would be required on the train.

(7) The central brain would eliminate duplication of intelligence equipment on many locomotives.

It stands, therefore, that the necessary facilities can be provided by conventional CTC, with minor additions at the central office, and with rearrangement and additions in local field equipment, plus the locomotive equipment. Also, with proper signaling, conventional trains can be operated over the line, interspersed with ATO (automatic train operation) trains, if desired.

Panel Discussion: Hotbox Detector Maintenance

Moderator: **A. C. Jacobsen,** Assistant Signal Engineer, Southern Pacific.

Panel Members: **Wayne Cartee,** Signal Inspector, Chesapeake & Ohio; **W. E. Prince, Jr.,** Engineer Signals and Communications, Clinchfield; **W. J. Jamison,** Mechanical Inspector, Norfolk & Western; **J. A. Moore,** Supervisor Communications and Signals, Pennsylvania; **R. B. Blaylock,** Assistant Communications and Signal Supervisor, St. Louis-San Francisco.

Q. Where you have several hotbox detectors, does one man maintain them all, or are they maintained by the maintainer in whose territory they are located?

A. They are maintained by the maintainer in whose territory they are located.

Q. Is responsibility ever divided?

A. It's possible if the scanner is in one man's territory and the recorder is in a second man's territory.

Q. Do the signal maintainers actually maintain the equipment?

A. Yes.

Q. Have you had any difficulty with lightning?

A. Yes. Lightning on the line wires has burnt out the galvanometer coil. This has been eliminated by the use of proper lightning arresters. Also, a relay can be used which shorts the galvanometer coil, except during recording.

Q. Is it necessary to make winter and summer adjustments?

A. Yes. Raise the gain in summer, lower it in winter.

Q. What is the advisability of mounting the scanner on ends of ties as opposed to pedestal mounting?

A. First we had our scanners on pedestals, then went to mounting on ties for ease of keeping the unit aligned. We have had them there for some time, but we now have a program to place the scanners back on pedestals. Mounting on ties submits equipment to abuse due to vibration.

Q. If we have a power failure we miss a hotbox. If we have a failure of an equipment component, we miss a hotbox. Can the equipment be made fail-safe, like signal equipment, so we won't miss a hotbox?

A. No development of this type is known as yet.

Q. How do you know when equipment fails? You might miss several hotboxes because no one knew equipment wasn't working.

A. An analysis of the tape will show failures by checking pedestal, pip, straight line, wheel count, etc. You get a pretty positive indication of trouble.

Q. Suppose you have an automatic alarm setup, how do you know when the equipment has failed?

A. The failure remains until it is discovered by the maintainer.

Q. Can an automatic feature be devised that will indicate to the trainmen that the equipment is not working for that train? If a train received no hotbox signal, the

crew might believe the train was OK when actually danger was imminent.

A. [By a detector manufacturer] We have developments progressing in that direction. That's all we will say. This correlates with the problem of where to put the detectors in the first place; to what degree do you want to concentrate the detectors.

A. [By a detector manufacturer] Means can and will be provided to indicate failure to a maintainer. Such a system could operate on the closed circuit principle, but the cost would be extremely high because of the large number of components. Failure indication will soon be realized at moderate cost.

Q. Complete failure is easily recognized. The problem is, if you stop a train at 10 mm deflection, and the equipment deteriorates so the same journal temperature yields only 8 mm deflection, you have no knowledge of this. How do you know you are working at a suitable level, not an absolute failure?

A. You could insert a standard signal to check operation, to check the degree of failure.

A. Readings tend to increase, rather than decrease with age. We have had complaints from the operators of the pips being hard to read. We adjust for 1½ to 2 mm minimum for normal bearings, and not above 3 mm. Above 3 mm, pip is too high, and too hard to read.

A. We have had complaints that readings are too high and too low. Generally, the preamplifier output dropped. A calibrated heat source could be used, focusing on the known surface and checking deflection on the chart.

Q. Would the calibrated heat source be gated?

A. We use an aluminum block with a 47-watt heater element (from a soldering iron). A thermocouple on the block checks the temperature. We interrupt the view of the block with a rotating disc with a slot in it.

Q. When will we have the automatic failure indication system? [No direct answer was given.]

A. [By a detector manufacturer] An automatic system to indicate failure will be available in time. The problem is to make additional equipment cheap, and at least as dependable as the original equipment, or you merely add to your problem. It will then be possible to give the train crew a signal that the equipment is or is not working.

A. [By a detector manufacturer] We are working on an automatic failure indication system. It can be done. Some railroads want no interconnection with the signal system. Equipment can be checked, but not completely, as for example, with highway crossing signals where a broken light wire will give false clear. Checking the chart is best.

Q. We have to shim the rail up to 4–5 in. because of cold weather. Ties are frozen in the ballast so we put shims between the tie and the tieplate. Has anyone mounted the scanner directly to the rail, rather than to the tie or a pedestal?

A. Only on ties. Only on pedestals.

A. [By a detector manufacturer] The scanner can be mounted anywhere. The question is, how long will the period be between maintenance checks, and what is the desired life? Acceleration on the rail due to a flat wheel is 100G or more, 35G on the tie, much lower on a separate pedestal. It will work on a rail mounting, but for how long? It would require much more frequent maintenance and result in shorter life.

A. [By a detector manufacturer] Economics militate against mounting on the rail. If scanner alignment is proper, a little rail raise will not materially affect the indication. We think it would still catch a hotbox with the rail raise.

A. [By a detector manufacturer] Equipment can jar loose, but we have no electronic gear in the scanner that vibration would damage. The track department could put shims under the scanner when they put them under the rail.

A. [By a detector manufacturer] Do you want economy or alignment? With a stabilized track bed you will have little trouble. One railroad had trouble due to lateral displacement of track. Ties should be strapped and rail braces used. Vertical displacement is not too important, but lateral displacement of track is important.

A. Vertical alignment is not important, but lateral is. I doubt if you will have a complete loss with a 5-in. raise, but it will affect the indication.

Q. Has a definite preventive maintenance program been set up? What is it?

A. We use the detector as an inbound inspection tool. Detector maintenance is done by the maintainer. Tubes are pulled every 1–1½ months and checked for low emission. Any tubes with low emission are replaced. We have the most trouble with tubes in the pulse processor and dc amplifier.

A. We have a definite maintenance schedule. Regular section maintainer checks battery only. Test force travels over our system checking all voltages and adjustments once each month. Every three months a thorough check of entire equipment is made.

Q. Who changes the tape? Does any damage occur to the stylus when the tape is changed?

A. Dispatcher reads and changes tapes. Maintainer and supervisor have been given definite instructions not to touch the paper. We've had no stylus trouble. We have had the paper jam and the maintainer had to fix it.

A. Operator or car foreman changes paper. We have had the sylus damaged.

A. Operator changes tape. No problem with the stylus.

A. Regarding alignment, we licked the problem with a sectional foundation and long bolts. Nuts are used above and below the boiler plate on which the scanner is mounted. Adjustment is no problem.

Q. Have you used automatic wheel counters reliably —not necessarily with the automatic alarm?

A. We have had some problems with wheel counters but these are being overcome.

A. We consider counters imperative and they have worked well. As to guardian maintenance, we have been so busy with [manufacturer's recommended] changes and alterations to changes that we had no time for guardian maintenance. We have lost a train on the chart, because the tape was not marked 10 ft from the end. WE NEED COMPLETE CIRCUIT DIAGRAMS, NOT TYPICALS OR SCHEMATICS.

Q. Is there any detectable difference in detector performance with cars with waste and cars with lubricator pads? We have noted a temperature difference between waste and pad journals.

A. Pads last longer, so we get more miles per hotbox. The temperature doesn't change enough to notice.

Q. What is journal temperature when the brasses melt? How long does it take a car journal to get that hot?

A. Normal temperature is 140–160 deg F in spring. There is a seasonal variation. Temperature at sustained high speed is about 180 deg F. Outside box temperature is about 110–115 deg F with the journal at 140–160 deg F, measured when the train entered the yard. Babbitt melts at 500 deg F, but you are in trouble at 300 deg F. I would guess outside temperature at this time to be 160 deg F.

(Continued on page 30)

Q. What is normal temperature at 50 mph?

A. The journal is about 180 deg F, and the box about 130–140 deg F.

Q. We want automatic detection, but divorced from the signal system. Is there any advantage in tying detectors into the signal system?

A. The detector should not be connected to the signal system because the device is not fail safe. You need human judgment to decide to stop a train.

A. We have an automatic detector not tied into signals. We use an "H" indicator to convey the information. The engineman then stops his train at a given point to read the indicator.

Q. What do you tell management if you stop a train and there is no hotbox found?

A. Growing pains! I haven't been fired yet.

Q. How many unnecessary stops are made?

A. Depends on the judgment of the crew. Some won't stop at the indicator, but wait until they see a fire. My guess is that efficiency is about 60%.

Q. What are the efficiency figures on other roads?

A. We average 68.1%, Feb. 1, 1958, to date. It varies from 88 to 60%. Sometimes the trainmen inspect and sometimes the carmen inspect the train. Efficiency goes up when carmen inspect. We have found that the pads don't lubricate at start, as a result the temperature climbs very rapidly to a high value, then cools down to normal as the pad feeds oil.

A. Our inspection is done entirely by train crews. The farther the crew walks, as to the middle of a long train, the cooler the box. We found that within 15 minutes after a train enters a yard, the boxes are cold to the touch. I guess our efficiency is about 50%.

A. We have only a few along line of road, mostly inbound to yards. Our efficiency is about 90%, but all inspection is done by car department employees. The same man who reads tape checks the train.

A. Inbound-to-yard detector tape is read by the car foreman. He checks the car and tape carefully. I don't know what our percent efficiency figure is.

A. Efficiency improves when car inspector checks cars, as compared to train crews. We have no efficiency figures.

Panel Discussion: Signal Standardization

Moderator: **E. A. Burgin,** Signal Engineer, Chesapeake & Ohio.

Panel Members: **W. W. Beard,** Assistant Signal Engineer, Baltimore & Ohio; **P. H. Foley,** Assistant to Chief Signal Engineer, Chicago, Burlington & Quincy; **C. J. R. Taylor,** Office Engineer, Communications and Signals, Erie; **George Pipas,** Signal Engineer, Illinois Central.

P. H. Foley (CB&Q): As chairman of the highway crossing committee, I believe we must satisfy our own requirements and those of public service commissions. For example, we have found that there are five different crossbucks now in use, with different angles and different board lengths. We are working with the AREA committee on highways. We hope to have one standard crossbuck soon.

W. W. Beard (B&O): We have avoided preparing wire and cable specifications that did not meet industry standards as well. We must avoid trying to make signal standards that do not conform to industry.

George Pipas (IC): Standardization has accelerated since 1957–58 due to poor earnings. Whereas old specifications had 350 transformers, now there are about 50. Complete standardization cannot be achieved, because conditions vary on different railroads, as does climate, and size of the railroad. Complete standardization and progress are not compatible. I propose that a special committee on standardization be established. All reports from other committees would be submitted to this special committee to see if the reports conform to standards before publication in the Manual.

C. J. R. Taylor (Erie): The AREA track committee and F. R. Woolford, chief engineer, WP, and AREA president, pushed standardization very hard last year, and they are really working. Switches and turnouts have been standardized: No. 20, 39-ft curved points for high speed, good for 50 mph and 70 mph through equilateral turnouts; No. 15, 26-ft curved points for medium speed, good for 38 mph and 53 mph through equilateral turnouts; and No. 10, 16-ft 6-in. straight points for slow speed, good for 15 mph and 28 mph through equilateral turnouts. AREA has standardized certain rail sections, and most recently lag screws. One manufacturer says he won't cut lag screws to signal specifications. I recommended the change earlier this year, and was sorry to see it was not presented at this meeting. We should definitely have it by next year. Four of six new standardized lamps for signals, 10v 25w, are still burning after three years of operation.

Q. Will standardization have a favorable response from creators of signal devices?

A. Any successful standard is a middle-of-the-road proposition. With caution, standardization can be applied without inhibiting progress.

A. Track manufacturers were for standard turnouts and can reduce prices.

A. [Supplier] We support standardization. We would like to see a standard signal voltage. Air should be free for new developments.

A. Standardization would bring great benefits in day to day purchasing. Biggest hindrance to standardization is the signal engineer.

A. [Supplier] This is a timely subject. A companion to standardization is obsolescence, keeping old stuff too long. Standardization will hit hard at reducing prices and delivery time. We have over 300,000 part numbers, of which 80,000 are active. An example: an otherwise standard instrument case becomes special when you ask for a different color inside. Standardization work means little if railroads won't accept it.

Q. How about Canada's use of slanted letters on crossbucks?

A. The shape of the highway sign is more important than its legend. Any sign intended for night reading should be reflectorized.

Q. Any action toward U. S. and Canada conforming to the same standards?

A. Not just U. S. and Canada, but we are using United Nations symbols when possible. Europe uses symbols or figures.

R. H. C. Balliet to Retire

After 30 years of service as secretary of the Signal Section, AAR, **R. H. C. Balliet** will retire at the end of this year. Chairman **V. O. Smeltzer, AT&SF,** appointed a special committee consisting of **A. L. Essman, CB&Q,** chairman; **B. W. Molis, D&RGW,** and **V. P. Shepardson, RF&P,** members; to prepare a resolution and present a

certificate to Mr. Balliet for his work. Mr. Essman read a resolution, that was unanimously adopted, which thanked Mr. Balliet for his fine efforts in behalf of the Section over his 30 years of service. Mr. Essman then presented Mr. Balliet with a framed certificate attesting to this commendation and a signet ring with the Signal Section insignia.

Realignment of Committees

R. C. Steele, CPR, First Vice-Chairman, Signal Section, reported on the reorganization of standing committees in line with recent AAR announcements to streamline its operations. The number of Signal Section committees is reduced from 12 to 9, and membership on each committee will be 24 with no more than one man from each railroad represented. No change was made in the Special Committee on Education. Here is the lineup of the new committees:

Committee 1: Economics of Railway Signaling (no change).

Committee 2: Signaling Practice, **J. R. DePriest, SAL,** chairman (this was committee 10).

Committee 3: Circuit Design and Electronics, **J. M. Hesser, N&W,** chairman, and **D. H. Steiner, MONON,** vice-chairman (this was committees 11 and 12).

Committee 4: Interlocking, Traffic Control and Block Signaling, **H. A. Maynard, B&O,** chairman, and **V. S. Mitchell, C&NW,** vice-chairman (this was committees 2 and 4).

Committee 5: Instructions and Signal Shop Practice, **J. G. Karlet, N&W,** chairman, and **J. P. Stevely, NYC,** vice-chairman (this was committees 3 and 5).

Committee 6: Designs (no change).

Committee 7: Materials Research (no change).

Committee 8: Highway Grade Crossing Protection (no change).

Committee 9: Wire and Cable (no change).

Committee 1: Economics of Railway Signaling

J. A. Moore, NYC, Chairman—Presiding in his absence was **G. B. Blatt, RDG, Vice-Chairman.**

H. A. Hudson, SOU, Chairman, Subcommittee A—Reports on electric lighting of switch lamps, economic value of hotbox detectors and use of off-track equipment by signal forces were accepted as information.

G. Pipas, IC, Chairman, Subcommittee B—Reports on train hour value and a revised sheet 4 of the tabulation of car retarder systems applied to classification yards were accepted as information.

B. W. Molis, D&RGW, Chairman, Subcommittee C—Report on economics of relocating and consolidating traffic control machines was accepted as information.

Committee 2: Controlled Signaling and Interlockings

H. A. Maynard, B&O, Chairman.

V. S. Mitchell, C&NW, Vice-Chairman—Report on reference sheets referring to Specification 258-51, concerning certain types of interlockings and ctc, was approved for submission to letter ballot for removal from the Manual. Report on specification 258-60 on interlockings was approved for submission to letter ballot superseding subject matter in the Manual.

C. T. Marak, MP, Subcommittee Chairman—Reports with corrections were accepted as information on detector track circuits in automatic classification yards, track fullness systems in such yards, and the use of hand skates in classification yards.

Committee 3: Signal Shop Practice

J. P. Stevely, NYC, Chairman—Reports on shop practices for repair of bridge circuit controller contact blades and testing devices for mechanical time switch locks were accepted as information.

U. H. Auckerman, C&O, Subcommittee Chairman—Presented an informational report on ultrasonic cleaning.

L. G. Hogan, CPR, Vice-Chairman—Presented informational reports on shop practices for repair of electric switch locks and repair of power bonding drills (with corrections).

Committee 4: Automatic Block Signaling

F. L. Chatten, PRR, Chairman.

H. G. Stiebeling, NKP, Vice-Chairman—Presented an informational report on means and methods for the improvement of track circuit rail bonding used in signaling.

M. R. Roberts, CB&Q, Subcommittee Chairman—Presented a report on specification 107-45 for switchboard and equipment that was accepted for submission to letter ballot superseding subject matter in the Manual.

Committee 5: Contracts and Instructions

F. Youngwerth, ERIE, Chairman—Reported for **G. D. Booth, NKP, Chairman, Subcommittee C,** on revised instructions for storage batteries. This report was accepted for submission to letter ballot superseding subject matter in the Manual.

V. F. Rathje, MILW, Chairman Subcommittee B—Presented a report on specification 269-60 on instrument for testing and locating crosses and grounds, which was accepted for submission to letter ballot.

Committee 6: Designs

R. L. Bush, C&NW, Chairman.

W. T. Lewis, CNR, Subcommittee Chairman—Presented reports on a revised drawing of 1-in. signal pipe and couplings; and revised specification on 1-in. welded steel pipe, couplings, plugs and rivets, which were accepted for submission to letter ballot superseding subject matter in the Manual. A report on an assembly drawing of a mechanical dwarf signal was accepted for submission to letter ballot for removal from the Manual.

Committee 7: Materials Research

J. A. Balla, PRR, Chairman.

W. K. Waltz, EJ&E, Vice-Chairman—Presented informational reports on (1) practical use of fiber glass as a structural material for signaling use; (2) plastic lenses, roundels and cover glasses for railroad use; (3) insulating materials, for use in insulated rail joints, which will afford greater service life and dependability; and (4) practical use of reflective and luminous paint on highway crossing gates and signs in general.

O. G. Carey, ERIE, Subcommittee Chairman—Presented a report on specification 268-60 air depolarized primary battery (non-renewable type), which, with corrections, was accepted for submission to letter ballot. Two informational reports were presented: (1) surface treatment of aluminum for signal use; and (2) practical methods and materials for use in protecting track wire outlets and connections against erosion caused by salt water, electrolysis, etc.

Committee 8: Highway Grade Crossing Protection

P. H. Foley, CB&Q, Chairman—Presented informational reports on the use of rail contactors for grade crossing protection; use of the Strobeacon light; and interconnection of highway grade crossing protection devices with street traffic signals. The Bureau of Public Roads "Manual of Uniform Traffic Control Devices" will be available soon. It stresses the uniformity of devices throughout the country. For example, a 12-in. red roundel is standard for "positive stop" where a green clearout traffic signal is used.

Committee 9: Wire and Cable

V. O. Smeltzer, AT&SF, Chairman.

W. W. Beard, B&O, Chairman, Subcommittee A—Presented reports on specification 161-60 neoprene sheathed cable with outer covering, and specification 239-60 neoprene compound sheath for insulated wire and cable, which were accepted for submission to letter ballot superseding subject matter in the Manual. Report on specification 270-60 bronze tape armored underground cable was accepted for submission to letter ballot.

R. M. Spillman, MP, Chairman, Subcommittee C—Report on specification for bronze guy and messenger strand was accepted for submission to letter ballot for removal from the Manual. Progress report on friction tape for railroad use was accepted as information.

R. W. Margsh, C&O, Vice-President—Reported that subcommittee B was working on a report concerning splices in plastic cable.

Committee 10: Signaling Practice

J. R. DePriest, SAL, Chairman—Presented an informational report on the development and adoption of a universal format for the interchange of freight car waybill information in train-consist form, as related to use of automatic route selection circuits in classification yards.

A. J. Hendry, NP, Chairman, Subcommittee A—Presented informational reports on noteworthy changes in signal methods—coded control system (GRS), 529 indication system (US&S), yard traffic control system (US&S), transistorized frequency-shift telemetering carrier (US&S); new and improved signal devices—buffer spring head rod (US&S), transistor carrier (GRS), style ET Hi-shunt track circuit (US&S), approach overlay track circuit (GRS), shelf mounting brackets (US&S), centralized traffic control line power supply; and hotbox detector installations.

A. L. Essman, CB&Q, Chairman, Subcommittee B—In reporting on a requisite for rate of operation and energized time for fixed signal flashing aspect, exclusive of highway grade crossing signals, Mr. Essman expressed thanks to GRS for test equipment used in committee tests. In reporting on the requisite for a system for power-operated switches in a yard and without signals, he emphasized section 8(b): **"Movement must not be authorized until switch has been properly aligned."** These reports were accepted for submission to letter ballot.

H. B. Garrett, SP, Chairman, Subcommittee C—Presented an informational report on the use and advantages of underground centralized traffic control code lines in lieu of open wires on poles lines.

Committee 11: Electronics

J. M. Hesser, N&W, Chairman.

B. Freeman, PRR, Chairman, Subcommittee A—Report on revised recommendations on carrier control systems covering directions, frequencies, energy levels and methods of handling, with a glossary of terms, was accepted for submission to letter ballot superseding subject matter in the Manual. Presented an informational report on a preliminary introduction to transients and their correlation to use of electronic switches in lieu of electromagnetic relays.

J. E. Hillig, RDG, Chairman, Subcommittee B—Presented reports on instructions on electron tubes and semiconductors, and requisites on electronic devices and components. These reports were accepted for submission to letter ballot superseding subject matter in the Manual.

Committee 12: Circuit Design

D. H. Steiner, MONON, Chairman—Presented informational reports on drawings 8048A, sheet 2, on circuits for manual control of electric switch locks; and 8087A on block indication using overlay line circuits.

H. L. Kruke, MILW, Subcommittee Chairman—Presented an information report on drawing 8088A, sheets 1 and 2, on switch heaters and snow blowers—direct wire remote control—electric type switch heaters.

R. C. Foster, AT&SF, Subcommittee Chairman—Presented an informational report on drawing 8089A on power operated switch machine—dual control.

Edwards is Chairman of Appliance Group

W. A. Edwards, The Kerite Co., was elected chairman of the Signal Appliance Association. **J. W. Porter,** General Railway Signal Co., was elected vice-chairman, and **Walter H. Allen,** Frog, Switch & Mfg. Co., was re-elected secretary-treasurer. Members of the executive committee, in addition to the chairman and vice-chairman, are: **W. J. Acker,** Rail Joint Co.; **E. T. Anderson,** National Carbon Co.; **W. R. Collins** (honorary), Walton R. Collins Co.; **H. J. Groenendale,** Union Switch & Signal-Division of Westinghouse Air Brake Co.; **D. L. Killigrew** (honorary), Corning Glass Works; **B. A. Lundy, Jr.,** Railroad Accessories Corp.; **G. A. Nelson** (honorary), Allenhurst, N. J.; **M. I. Rayner,** Thomas A. Edison Industries; **W. G. Roth,** Western Railroad Supply Co.; **P. J. Salerno** (honorary), T. George Stiles Co.; **C. H. Sass, Jr.,** The Okonite Co.; **W. J. Savage** (honorary), Thomas A. Edison Industries; and **J. S. Vreeland,** Simmons-Boardman Publishing Corp.