

by active signal inspectors and supervisors of construction. In fact, as one man explained it; "Such work is all a part of our job, and if we cannot get this equipment together and take care of it on our own road, I fail to see how an outside contractor could do the same thing any cheaper."

As to the organization of construction forces, it is explained by some signal engineers that they prefer to build up their own crews as a training course for signalmen to be used later on maintenance work. Furthermore, men who have had construction experience make better maintainers. Shifting men around gives them experience, and helps them in directing the work of others. The men on the road are familiar with the standards and methods of construction, so that less time and expense is required for inspection than is necessary when outside contractors do the work.

In Conclusion

In view of the fact that this problem of whether to construct or contract signal and interlocking installations is so important at this time, we have attempted to point out a few of the factors to be considered. Those having definite opinions on this question are invited to discuss their experience by preparing an answer to the question in the "What's the Answer?" department of this issue. Answers received by the editor before July 24, will be published in the August number.

The Growing Field of Signaling Maintenance

A CAR retarder installation, including telegraph printers, was recently placed in service in a large new classification yard. In selecting the maintenance force for this plant, the man in line for the position of leading maintainer was questioned as to his ability to maintain such apparatus. His reply was to the effect that his experience in the construction and maintenance of automatic signals and power interlocking represents the best available knowledge for one who is to maintain the new yard, and that with this experience he believed he could "grow up" with the retarders, as fast as could be expected of any one. This was indeed a very good answer and, needless to say, that man was given a trial as leading maintainer. Adequate facilities for the instruction of maintenance forces in the care of such new equipment have been made available. The manufacturer of the telegraph printers conducts a special instruction course which was attended by one of the signalmen assigned to the new yard. Likewise, the manufacturer of the retarders assigned a representative familiar with this equipment to be on hand for some time after the installation was placed in service to explain the maintenance, lubrication and adjustments to the maintenance forces. Therefore, it is evident that an opportunity is available for the maintenance forces to grow apace with the rapidly expanding field of signaling. And wherever men show the willingness to tackle new types of equipment and their attendant problems, with the spirit manifested by the leading maintainer mentioned above, they are setting a pace for supervisory officers and signal engineers who must study the application of modern developments in order to inform the executive officers of the savings that can be made in operation, or the improvements that can be made in train service. Therefore, it is evident that not only this leading maintainer, but the entire signal department personnel as well, must "grow up" with modern developments.

Letters to the Editor

Signaling Problems of the Future

Chicago.

TO THE EDITOR:

"We have manufactured and scrapped many a car load of signal apparatus that never reached, or was used on a railroad." An officer of a well-known manufacturing company made this statement years ago when the signal art was in its infancy, and signal engineers were few. Indeed, the cost of such early development was a loss to the manufacturers and the railroads because there was no one to study operating conditions and co-ordinate research with the requirements.

This historic age of wire connected apparatus, flop locking and imported English ideas nevertheless was not only the birth of scientific, efficient, and safe signal practice, but was also the first step in the modernization of operating methods. Although this early apparatus was crude, it functioned so well that operating officers could visualize its future.

Early in the history of signaling the signal engineer appeared; the result of a condition that demanded guidance in its evolution and some one to raise an orphan branch that did not fit into any existing department. He came from several sources, but mainly from the engineering department. He had to educate himself as there were no schools, universities, or literature for him to consult—only experience. Experimentation and reasoning were his tools, and how well he laid the foundation is now apparent by the reverence shown him by the profession and officers of the railroads as they look on his work.

During the process of organizing a department, another class of men were produced, such as assistants, supervisors, office engineers and inspectors, who are now carrying on the work to produce greater refinements in economics, operation and safety through the medium of signaling. These men will do the work well because they have graduated from the school of experience.

This resume is a prelude to the present day efforts of not only the signal engineer but to the entire personnel of the profession, a profession that has made its own way from a humble beginning through a stage where signals were considered a luxury, to the present time when they are beginning to reap their reward, and are considered a valued part of an up-to-date railroad.

It is with much satisfaction that we of the signal profession review the results of our labors and visualize the future. We know that we have developed and applied science possibly more rapid than other professions, and we have done this to accomplish three major results; namely, safety, economy and operating efficiency. The results are self-evident when considering the present centralized dispatcher's control, all-electric interlocking, train control and automatic signals, in comparison with the early mechanical interlocking, wire-connected signals, torpedo machines and other apparatus of that date.

The signal engineer looking forward realizes that the profession is yet in its youth, and will require constant development and that it depends on him to pioneer at the frontier of railroad growth as well as face an ever changing economic condition, and he, as his predecessors have, will make good; but his hopes are that his relations to the operating department will become closer because he can visualize in the not far

distance, an operation of the railroads not only by signal indication alone, but through the medium of centralized controls and other methods, a system permitting constant contact and control of the moving train. He stops here in his prophecy lest he be accused of radicalism but he knows that the future will be co-ordinated even better as to requirements, conditions and economics, and that there will not be as many car loads of apparatus manufactured and scrapped as at the beginning.

W. F. ZANE,

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New Books

Practical Railway Painting and Lacquering. By H. Hengeveld, master painter, Atlantic Coast Line; C. P. Disney, bridge engineer, Canadian National, and William J. Miskella, M. E., director, Finishing Research Laboratories, Inc. 242 pages, illustrated. 6 in by 9 in. Bound in gray leather. Published by the Finishing Research Laboratories, Inc. Chicago and distributed by the Simmons-Boardman Publishing Company, 30 Church street, New York. Price \$3.50.

This book, which has been prepared as a handbook for railroad men, is the fourth volume of the practical finishing series being prepared by the Finishing Research Laboratories, Inc. A review of this book would not be complete without telling something about the co-authors. H. Hengeveld is master painter of the Atlantic Coast Line at Waycross, Ga., and has served in railroad equipment painting work as a foreman and supervisory officer for over 39 years. He is a past president of the Equipment Painting Section, American Railway Association. C. P. Disney, bridge engineer, Canadian National, is well-known among railway maintenance engineers. The bridges included on over 9,000 miles of the Canadian National are under Mr. Disney's jurisdiction. William J. Miskella is director of the Finishing Research Laboratories, Inc., and is the sole author of the first three volumes of the practical finishing series.

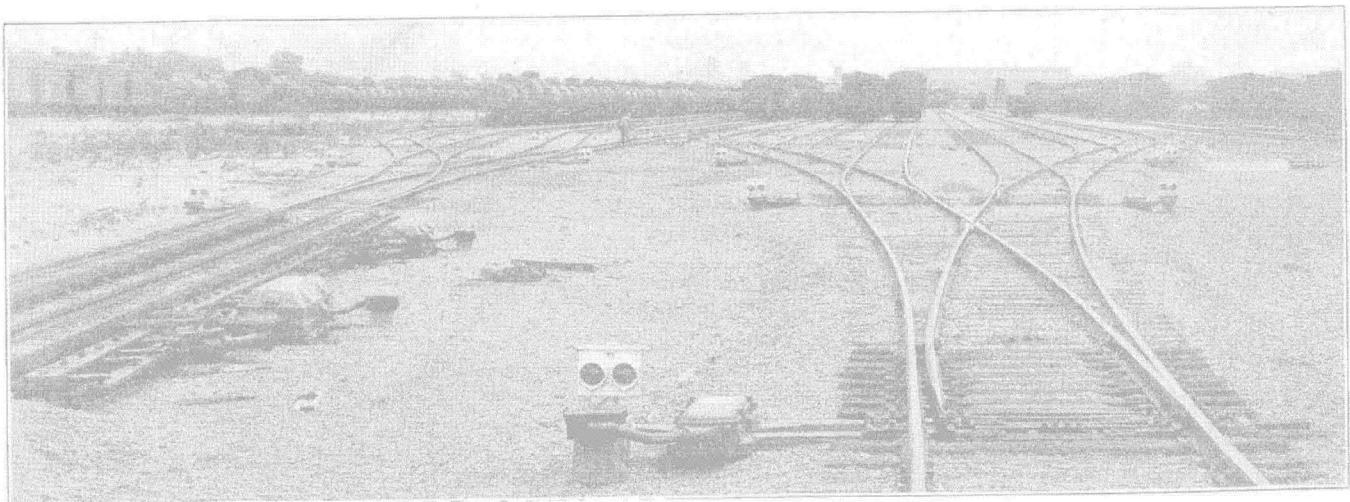
The book is divided into five parts; namely: General Information; The Painting and Lacquering of Locomotives, Freight and Passenger Cars; The Painting of Signal Equipment, The Painting of Bridges, Buildings and Water Service, and the Lacquering of Electric Railway Cars. Six of the thirteen chapters included in Part I are devoted to such items as spraying equipment, accessory equipment, portable

cleaning equipment and scaffolding. The other chapters included in this section are on such subjects as lacquers, other paint materials, housekeeping and hazards, and ornamentation. Part II consists of six chapters devoted to the discussion of such subjects as shop cleaning methods and equipment, freight car painting, passenger car lacquering, locomotive finishing, buses, and cleaning railway equipment. One chapter in Part III covers the painting of signal equipment. Six chapters are incorporated in Part IV which cover the following subjects: Steel bridges, concealed corrosion, the Quebec bridge, other structures, building painting, and water service.

The book is well illustrated and contains a wealth of information on equipment painting, which is not only of value to master painters, but also to signal, engineering and mechanical department supervisory officers.

Standards and Standardization, by Norman F. Harriman. 225 pages, illustrated. 6 in. by 9½ in. bound in cloth. Published by McGraw-Hill Book Company, Inc., 370 Seventh avenue, New York. Price \$3.

Mr. Harriman's book is one of a series on industrial management, being prepared under the editorship of D. N. Kimball, dean of the College of Engineering, Cornell University. Its purpose is to present a concise account of the more important elements of standardization in connection with industry. It is the first book in English specifically on the subject of standards and standardization. The author is a senior engineer-physicist in the United States Bureau of Standards, vice-chairman of the Federal Specifications Board, and a member of the Federal Purchasing Board of the Bureau of Budget of the United States Government, and was formerly engineer of tests of the Union Pacific. He has approached the subject of standards and standardization scientifically, and presents a valuable historical and theoretical discussion on both standards and specifications. Its value to the technical man lies chiefly in the specific descriptions given of national standards of measurement, and in his forms on specification writing. Descriptions are also given of the various standardizing bodies in existence at the present time. Samuel M. Vauclain, president of the Baldwin Locomotive Works, in an introductory paragraph to the book, has termed it a practical treatise on an increasingly important subject in modern industry.



Car retarders and high-speed power switch machines in Lancaster yard of Texas & Pacific