

that the public, because better informed, has come to appreciate more clearly the necessities of the railroads, as well as the intimate relationship which exists between the prosperity of the railroads and the prosperity of all others, that we may be able to so work out the problems of the future as to perpetuate the friendly understanding which now seems to be established.

THE FARMING CODE

A harassed railroad officer has sent us the following, showing that he at least might be willing to share his blessings with other classes of citizens. It is rumored that Congressman Whackem may not introduce this bill in the near future.

ARTICLE ONE

Charges and Prices

Sec. 1. Only one price for a given commodity shall be lawful. A farmer desiring to change a price shall file a schedule thereof with the commission hereby created, which shall go into effect thirty days thereafter unless suspended by the commission at the instance of any consumer.

Sec. 2. No prices shall be increased, however, except upon due proof, the burden whereof shall be upon the farmer, that existing prices are confiscatory of his goods and gear. In its discretion, the commission may refuse to permit any such increase until a valuation by its engineers and accountants shall have been taken. In such valuation, the farmer shall have no credit for past profits invested in new fields or improved structures, but shall be allowed only original cost plus borrowed money invested.

Sec. 3. "Commodity," as used herein, includes all grains, vegetables, livestock, dairy articles, excepting sand, gravel and manure.

ARTICLE TWO

Conduct of Operations

Sec. 4. Every hired man shall work eight hours only per day, not including the Sabbath, and shall not recommence work unless he has completed a period of not less than eighteen hours of absolute rest and quiet. He shall not work on the Lord's Day, nor on legal holidays, nor on Jack Love's birthday.

Sec. 5. Every farmer shall hire one more hired man than his work requires.

Sec. 6. The only permissible exceptions to the two foregoing sections shall be periods of stress resulting from earthquake, Halley's Comet or European invasion.

Sec. 7. All wagons, and all poles and double-trees, shall be provided with couplers, coupling by impact, so that the hired man need not go between the wheels of the wagon and the heels of the horses.

Sec. 8. All wagons shall be supplied with suitable brakes, grab-

irons, stirrups and platforms of standard dimensions to be fixed by the commission.

Sec. 9. All bulls, when moving on the highway or in unfenced areas, shall be equipped with a bell of not less than fifty pounds weight, a steam whistle and an electric headlight of at least 1,100 candle power.

Sec. 10. Sheds shall be built over all fields where hired men have to work in summer.

Sec. 11. All field engines and machinery shall be fenced in; all belting shall be encased in metal housings; and all grindstones, churns, hay-cutters, bulls' horns and other moving parts shall be strongly encased in sheaths for the protection of the hired men.

Sec. 12. All barns, sheds and other outbuildings shall, in cold weather, be adequately heated, and at all times shall be well lighted and policed.

Sec. 13. If a calf is delayed in arriving or is born dead, the farmer shall instantly provide another cow whose calf shall be born that day.

Sec. 14. The commission's inspectors shall weekly inspect all gasoline automobiles. If a cylinder is missing, the farmer must find it before he runs on the road again.

Sec. 14a. The right to mortgage real estate is a franchise reserved to the state. No farmer shall make any mortgage nor incur any indebtedness extending for a period of more than one month, without the written approval of the commission, obtained upon petition and hearing, and upon paying the state treasurer 10 cents for each \$100 of such indebtedness. Indebtedness incurred without such consent shall be void.

ARTICLE THREE

The Commission

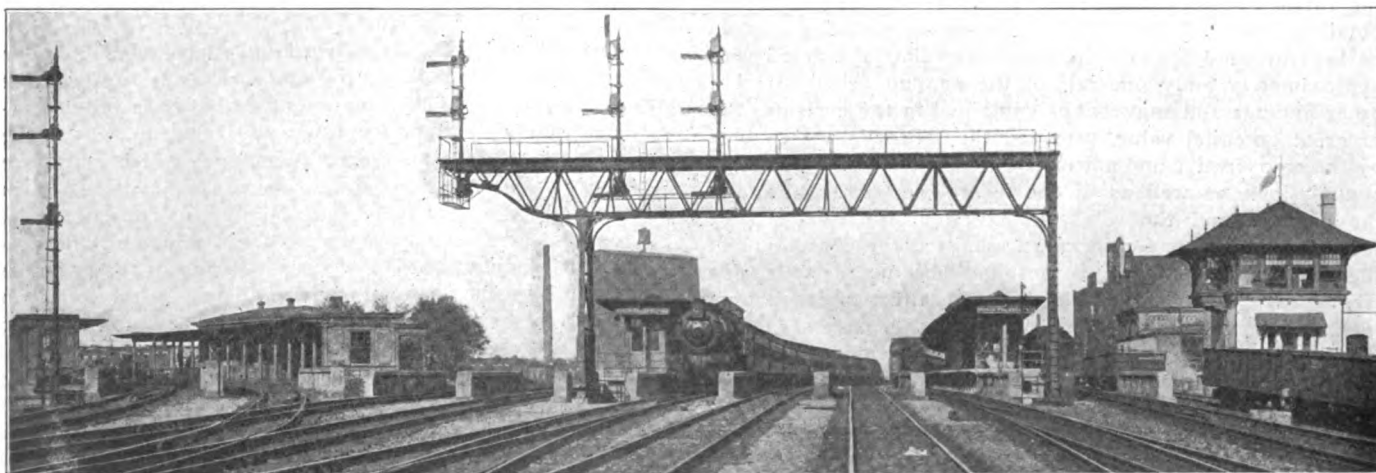
Sec. 15. To enforce this act, a commission of five persons shall be selected by the governor with a view to placating as many shades of political opinion as possible. No commissioner shall, however, be deemed disqualified by lack of previous political or other experience.

INTERLOCKING AT NORTH PHILADELPHIA

By W. M. Post,

Supervisor of Signals, Pennsylvania Railroad, Jersey City, N. J.

The Pennsylvania recently added four tracks to its four-track line at North Philadelphia, making eight tracks through the station, and also increased its station facilities, which made it necessary to replace the old electro-pneumatic interlocking plant at that point. A 47-lever type F electric interlocking machine, furnished by the Union Switch & Signal Company, was installed, 43 working levers controlling 41 switches and 58 signals east and west of the station. At the same time the automatic block signal sections in the immediate vicinity were shortened from an average



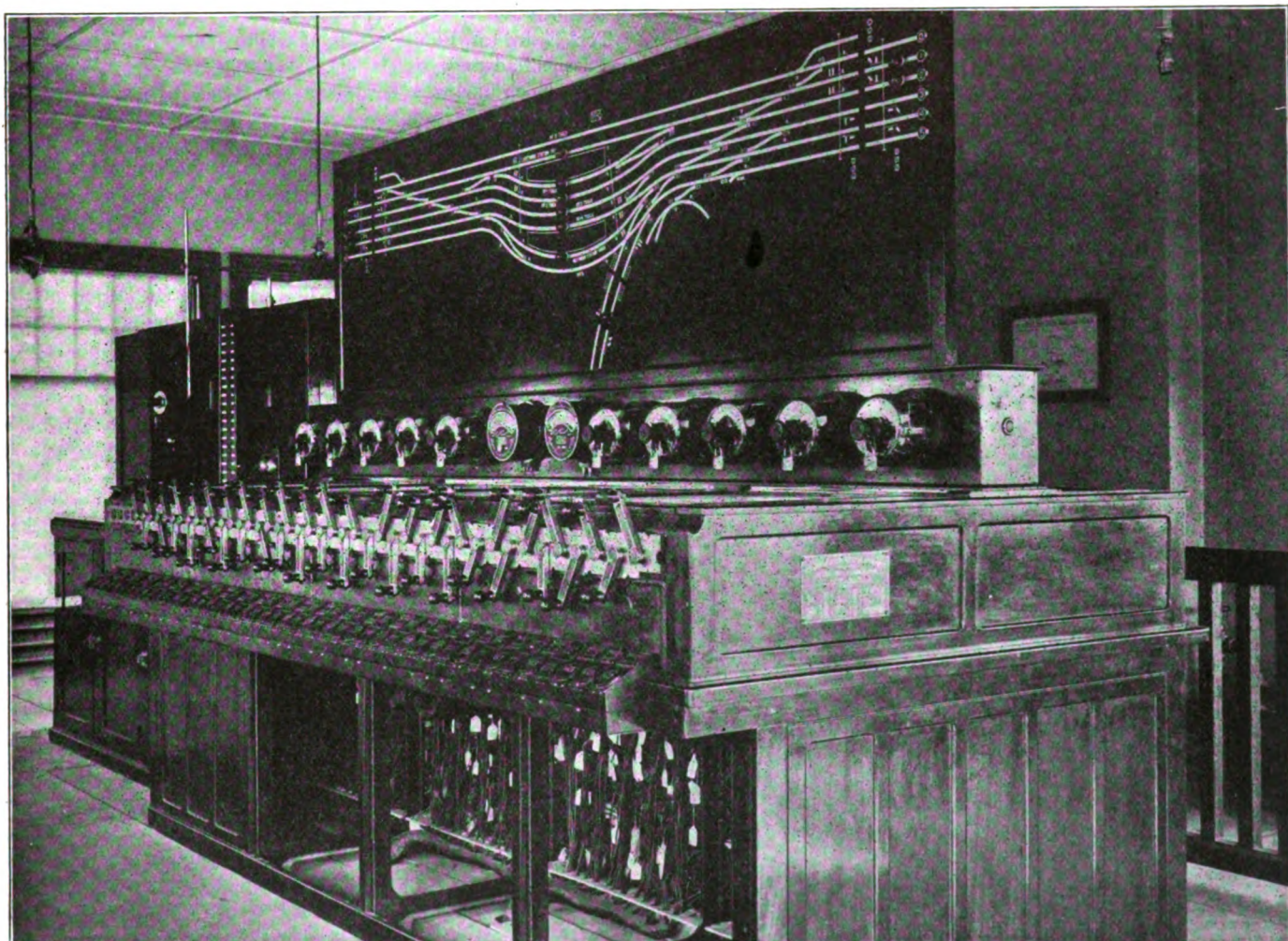
North Philadelphia Passenger Station and Interlocking Plant—Looking East

of 4,088 ft. to 3,052 ft. to enable trains more quickly to get away from this congested district; and the automatic signals were changed from two-arm, lower-quadrant, two-position, to one-arm, upper-quadrant, three-position. The distant indication was carried back two blocks, the first distant signal indicating "proceed, prepared to stop at next signal," and the second distant signal indicating "proceed, prepared to pass next signal at medium speed." The interlocking station is a two-story brick building 38 ft. by 20 ft. outside dimensions, with red tile roof, and brick walls covered with concrete, the design harmonizing with the appearance of the bridges and the station surroundings. The relay and indicator rack is directly under the interlocking machine, on the ground floor.

The machine is of the electro-pneumatic design modified for

The switch mechanisms are Union B 3 electric type. The switch is operated through a worm gear direct connected to the operating motors by reduction gears of 25 to 1 for single switches, and 45 to 1 for slips and movable-point frogs. The indication circuit is alternating current and was developed by the Pennsylvania signal department to eliminate the possibility of false indication. All signals are electrically lighted with two $2\frac{1}{2}$ -watt 12-volt Mazda bulbs, connected in multiple.

Power is supplied by the Philadelphia Electric Company at 220-volts, 60-cycle, single-phase a. c. Two sets of Edison storage batteries, 100 cells each, of 300 ampere-hours capacity, supply the direct current for the signals, switch motors and indicators. These sets are charged alternately by two mercury arc rectifiers of 30 amperes d. c. capacity, connected in multiple.



Electric Interlocking Machine at North Philadelphia

use with electric power apparatus. Each signal lever controls several signals by means of selection over contacts on switch levers, and through other devices. Both ends of a crossover are controlled by one lever and if one is a slip, the slip and movable point frogs are included in the control of the lever.

Indication lights located directly under the levers in the machine show whether the track circuits which control the electric switch locking and the automatic feature of the signals, are occupied. Electric lights on the track model, on which is painted a diagram of the track layout, indicate the approach of trains and also which one of the station tracks is occupied. Clockwork slow releases, ground detectors and ammeters are mounted in a cabinet over the machine. Mercury slow releases are connected to levers controlling all dwarf signals which are less than 100 ft. from facing-point switches. At one end of the machine there is a telephone test board.

The alternating current for track circuits, switch indication circuits and electric lights is transformed from 220 to 110 volts at the interlocking station and is conducted through the plant on No. 6 feeders. Transformers located at convenient points step down the current again.

All wires were put underground in cypress wood conduit and the wires surrounded with R. S. A. Parolyte (petroleum asphaltum) to protect the insulation and guard against damage by rats and mice. The boards were covered with $\frac{3}{8}$ in. of this material before the conduit was built; the cables and wires were then pulled through, and Parolyte heated to about 200 deg. F. was poured in until the wires were covered.

The interlocking is completely equipped with approach, route and electric switch locking. It is nearly a mile from the farthest east to the farthest west interlocked switch and a large share of the operations in the cabin have to be carried on without hav-

ing a good view of the trains that are being dealt with; that is to say, wholly by observing the indication lights in the interlocking machine. The plant was designed by the signal department of the Pennsylvania, A. H. Rudd, signal engineer, and the installation was made by the New York division forces.

STATE COMMISSION REPORTS

The New York, New Jersey and New Hampshire public service commissions have this week completed their annual reports. As yet only that from New Hampshire has been published in complete form, however, and our reports of the others are made up from advance notices which have been issued. There have been added notices of two special reports from Massachusetts.

NEW YORK

The New York State Public Service Commission, First district, has presented its eighth annual report to the legislature. The principal activities of the board have to do with the construction of new subway and elevated railroads in New York City, and during the 12 months of 1914, the commission awarded 24 construction contracts, which aggregated in value about \$52,000,000. This is more than double the amount of the contracts given out in 1913. Payments by the city and by the operating companies for new lines aggregated in 1914 about \$26,000,000. The contracts on which work is now in progress total about \$142,000,000. The commission has 2,100 employees and its running expenses for the year were about \$3,000,000. Of this amount \$2,500,000 was chargeable to rapid transit, the preparation of plans, supervision of construction, etc. For the fiscal year ended June 30, 1914, the total number of passengers carried by all street railroads in the First district, that is, elevated, subway and surface lines, was 1,813,204,692, an increase of 43,328,184 over the previous year. The total receipts of such companies for the year were \$94,153,673, an increase of \$2,012,068. Estimating the population of the greater city at 5,400,000, this is \$17.43 per capita for street car fares.

The New York State Public Service Commission, Second district, sent its annual report to the legislature January 15. A detailed account is given of the volume of work which has been done by the commission during the past year, and it is estimated that 25 per cent more work has been done than during any similar period in the past. The number of hearings held during the year was 630, occupying 298 whole days, and 2,195 formal and informal cases have been settled since March 16, the day when the present personnel of the commission was organized.

The commission recommends legislation to give it further authority to suspend proposed rates; a law to amend the long and short haul clause of the railroad law and one to require carriers to furnish shippers with a written statement of rates when called for. The commission has granted 142 certificates of public convenience and necessity for auto-bus lines on the highways. The commission believes that the highway department could attend to this matter, which takes the time of the members from more important things.

The commission also recommends a more businesslike and economical management of the contributions made by the state to the abolition of highway grade crossings. No appropriation for this purpose has been made by the state legislature for three years past, and cases are now pending where the state (which usually pays 25 per cent of such improvements) ought to contribute \$1,000,000. Of the 8,679 grade crossings in New York State, a large share are on state and county highways, and some of the money for abolishing crossings can be taken from the highway funds. The commission strongly recommends the adoption of a definite program of appropriations in order that this great problem may be systematically dealt with.

MASSACHUSETTS

The Public Service Commission of Massachusetts, in a special report to the legislature, estimates that the amount invested in

the electric railroads of the state is \$226,253,407, including the sum of \$25,982,695 for subways built by the city of Boston. The order of the legislature in this matter was the result of a discussion of proposals to have the electric lines taken over by the state, the cost of which, it will be seen, would be about two hundred millions, plus an annual return of 10 per cent on the investment, which is stipulated in the laws under which most or all of the companies were organized. To get an accurate estimate of the value of the roads, says the commission, it would be necessary to have first a physical valuation of the property, which would cost \$230,000 or more. The commission gives a negative answer to the proposal broached in the legislature, to assess the property adjacent to existing street railway lines for the purpose of raising money with which to purchase them.

NEW JERSEY

The Board of Public Utility Commissioners of New Jersey has issued advance sheets of that part of the board's annual report which includes its recommendations. During the past year the board has approved issues of stocks, bonds and other securities in 59 cases, the par value of these issues amounting to \$88,106,750. The report gives an outline of the rules under which the commission acts in cases of this kind so as to avoid giving any approval which may be taken as a guarantee of either stocks or bonds to the investor. The number of complaints submitted to the board during the year was 606, and hearings have been held in 456 proceedings. The action of the commission has resulted in numerous reductions in freight rates, but most of these proceedings have been of an informal nature.

Plans have been made for the elimination of 30 grade crossings, and hearings have been held in 21 of these cases. The Pennsylvania during the past year has eliminated 13 grade crossings at Rahway, in connection with its extensive elevation of tracks through that place. The West Jersey & Seashore has begun work which will abolish 11 crossings in Camden. The Lackawanna has eliminated seven crossings in Chatham and is doing similar work in South Orange and other places which will cost nearly \$500,000. Ten crossings are to be abolished in Madison.

The board has ordered automatic bells at some crossings where the cost of maintaining an attendant was deemed unwarranted; and action has been taken looking to the erection of uniform signs at all crossings which are not attended by flagmen throughout the 24 hours. The Central of New Jersey has put in the hands of its crossing watchmen warning disks bearing the word "Stop" and reports satisfaction from their use. They have been obeyed without question by travelers on the highway. In a conference between the commission and different roads, with a view to making this plan universal throughout the state, opposition developed; though the board believes that the experience of the Central of New Jersey has answered all of the criticisms which were made by the other roads.

The board recommends the amendment of the law empowering it to fix rates, so as to clearly define the policy of the state as forbidding the commission to value the franchise of a utility in excess of the sum which has been legitimately spent in procuring it, and repeats a number of recommendations which were made to the last session of the legislature, but which were not adopted by that body.

NEW HAMPSHIRE

The New Hampshire Public Service Commission has sent to the governor and the legislature its report for the two years ending August 31, 1914. The scope of the activities of the commission has greatly broadened during these two years, and the commissioners feel that this has been one of the most useful departments of the state government. They believe that if there should never again be a single reduction in the price of public service, the cost of the commission would be justified by the single item of the reduction in the price of gas in four principal cities; and in three of the four cases the reduction was accomplished by adjustment without any public hearing.