

drill and the penal regulations are to the soldier. Resistance to restraint and reproof, a mutinous tendency, a disposition to oppose the interests of the employer in matters indifferent to the employe have been, I fear, encouraged by labor organizations whose ostensible objects are the pecuniary, moral and social welfare of their members. If this spirit is to prevail it will imperil the maintenance of that discipline which is as essential for their own safety as for the protection of the lives of our passengers and the property of our stockholders. The rapid increase of railroad mileage and tonnage has led to the enlistment of a mob of recruits in our industrial army as unused to discipline and to obedience to authority as they are averse to them. In the emergency, railroad managers have been compelled to take this material as it came to their hands and to make of it the best use possible. But as the percentage of new railroad to that which has become more or less settled in its methods of operation, becomes smaller, this necessity will decrease, and we shall then have time at our disposal to drill the disorderly and disaffected members into a proper state of discipline and to dismiss incapables from the ranks. For this work to be successful we must arouse among employes a feeling of pride in the organization to which they belong, of respect to their officers and of interest in the work which they have in hand. This we call *esprit de corps*; a spirit which has carried armies through privation, suffering and defeat to victory, and without which no body of men can be controlled under adverse circumstances. How to do this with the opposition of labor unions better organized than we are is indeed a subject well worth our consideration. It would be out of place for me to do more than to indicate the direction which the discussion of this subject should take; but it surely is one which we have got to face sooner or later, whether we like it or not. I will suggest, however, that as soon as the rapid absorption of outsiders into the railroad ranks shall have ceased, and all questions of wages shall have been approximately adjusted either by arbitration or by the law of supply and demand, the time will have arrived to determine the relations between railroad corporations and their employes. These relations should be such as will insure the best results of the labor to the employes, to the company and to the public. Here will come in questions as to permanency of employment, insurance against injuries, sickness and old age, priority of promotion, recognition of meritorious services and protection against abuse, on the one hand; and on the other questions of training for special duties, obedience to orders, respect to superiors, etc.

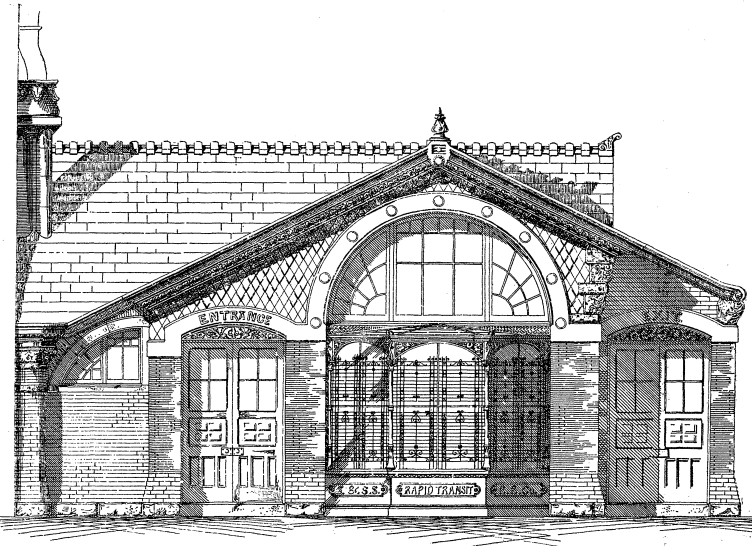
These questions have occupied the attention of military men for thousands of years and have led to the application of certain recognized principles to an army of fighting men that are in many respects as applicable to an army of railroad men.

Our relations to the public are worthy of consideration by the General Time Convention. We are but too unpleasantly aware of the attitude assumed towards railroad companies by the general public. Whatever the causes may have been, whether watered stocks or political demagoguery or discrimination between shippers and communities in the matter of rates, we all know of its existence. We feel that it is entirely in Federal and state legislation and in municipal ordinances; in litigation, in political speeches, in newspaper abuse. Must this condition of affairs continue? Is it the relation which must of necessity be maintained between the nation, the cities, the people who have been made prosperous by means of railroads to an extent never dreamed of before, and the companies through whose efforts these great results have been obtained? If the triumphs of war have earned for the soldier the applause of his fellow-citizens, the triumphs of peace have at least earned for the railroad man the right to decent treatment at their hands. And I hope and believe that there will be an improvement in this respect with the disappearance of the soldier from the matters of traffic and revenue. The great contention as to discrimination in rates is nearing an end, for the margin between the rate and the cost per ton-mile has now narrowed down to a survival of the fittest. The determination on the part of politicians to insure competition has but proved the truth of Stephenson's assertion that where competition is possible combination is probable; the prohibition of pooling has hastened the absorption of the weaker by the stronger corporations, and the time is approaching when one of two solutions of the railroad transportation problem must be attempted—either a government management or a territorial division among private corporations. In no other way can the difficulties be met, and as the cost per ton-mile is reduced to a minimum, that minimum being the lowest acceptable return upon the capital invested. When that time arrives, the era of the railroad projector, of the manipulator of stocks and of the soliciting agent will have passed away. When that millennium has been attained the railroad manager will still have problems to solve relating to the safety of life and property, to the commodious and speedy transportation of passengers and to the prompt dispatch of freight. In the solution of these, both as related to the public and as relating to our employes and to our stockholders, there is a field for the General Time Convention, and it is to this field that I undertake to direct your attention in expressing my appreciation of the honor conferred on me by electing me three times as president of your association.

Stations of the Chicago & South Side Rapid Transit

Last week we described the standard superstructure of the "Alley" elevated railroad of Chicago. Herewith we show the standard station. The platforms are 200 ft. long and 3 ft. 3 in. above the rail, as shown in figs. 1 and 2. Fig. 1 shows the general appearance of the station from the side. It shows the stairways leading up to the platforms, and the use of a shallow girder at A to give head room. The height of the platform above the street is 23 ft. 11 in. The ascent is made by 39 steps about 7 in. each. Under the station, in fig. 1 at B, will be seen a basement where is placed the steam heating apparatus.

Fig. 2 is a cross section of the platforms, which are 8 ft. wide. The clearance between the outside of the car and the edge of the platform is 3 in. The clearance between the platforms and the houses adjoining is 11 in. The dimensions of the station girders are as follows: Long girders, 4 ft. deep; short girders, 3 ft. 1½ in.; longitudinal girders, 4 ft.; short longitudinals, 11 in., to give head room; transverse girders, 5 ft.



Front Elevation.

GENERAL STATION DESIGN—CHICAGO & SOUTH SIDE RAPID TRANSIT R. R.

Fig. 3 shows a plan of the station and its location with reference to the street. The movement of passengers has been a matter of much study, and several plans have been made and discarded. This last is thought to embody the good points of them all. Passing the entrance, passengers go around the ticket offices indicated at C, thence into the waiting-room, where there are a news stand and toilet rooms for women and men. By the central stairway passengers go to the platform, as indicated by the arrows. They pass the ticket collector who is placed at D, and thence turn in both directions and up by flights of stairs to the platforms, according to the direction in which they

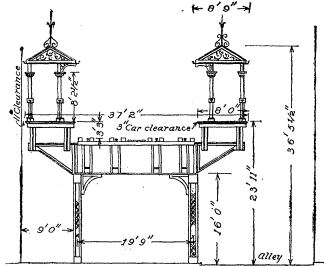


Fig. 2.—Cross Section.

are intending to go. There is only one station for trains moving in both directions. Passengers going south go up on one side, and passengers going north go on the other side after passing the ticket collector and, arriving, pass downward, as shown by the arrows, and out at one exit. Those coming from one platform have a more circuitous route to follow than those from the other; but the design of the station is changed to suit different points of the road, so that, so far as practicable, the platforms having the greatest arriving traffic communicate directly with the straight-a-way exit.

One of the advantages of this station is that only one ticket collector is required. The position of the ticket collector is such that he can see all points of the stairways. The doors of the exits are so arranged that they will open outwardly, but cannot be opened inwardly. If, however, a person should find entrance through the exit, he would be stopped by the iron grille located at E, which is moved by the ticket collector on the arrival of trains.

The general appearance of the station is shown by fig. 4. It is of brick and stone, placed underneath the roadway, as shown in fig. 1. This structure has a tile or dark slate roof. It is built of two colors of brick in the side walls, with terra cotta facings in the gable, of light yellow. The foundation is of stone, as indicated, as well as the corners and quoins stones. The trimmings are of No. 20 galvanized iron. The chimneys and ridge tiles are of terra cotta. A iron grille is placed over the cashier's window. These stations are made right and left hand, to suit the different localities.

The Pittsburgh, Fort Wayne & Chicago Shops.

The headquarters of the mechanical department of the Pittsburgh, Fort Wayne & Chicago are at Fort Wayne, Ind., about five hours' ride from Chicago. The office of

Mr. F. D. Casanave, Superintendent of Motive Power, is on the second floor of the three-story brick building, in which are the drawing room and all the offices of the mechanical department at this point. The building is well lighted and has a particularly pleasant interior. The drawing room, which has just been refitted, is generally well arranged. In one end is an office for the chief draughtsman. This department is supplied with a good reference library and well-fitted blue-printing room. Four draughtsman are employed, in addition to the chief draughtsman, upon new work which is constantly arising, as might be expected on a progressive road, which acts as one of the most important feeders to the Pennsylvania.

The machine and erecting shop are in one building, lighted from overhead as well as from the sides. Recently the roof lights have been changed from the centre of the roof to the side, in order to give a better distribution of light.

The machine shop tools are nearly all modern. The planers are quick return and of heavy pattern. These tools are arranged on one side of the shop, while on the other are laid parallel tracks, each with a capacity for one engine for erection and repairs. The capacity of this shop, with the ordinary working force, is three "class S" engines per month in addition to repairs.

The boiler shop, while sufficiently large, is not yet fitted with modern tools. The riveting is still done by hand, although the smaller tools are of modern kind, such, for instance, as the tapping machine for screw stays, driven with flexible shaft. One notices a substantial pair of rolls among the tools, and also most excellent flanging done by hand. The work is, in fact, such as would be creditable to a hydraulic flanger.

The blacksmith shop, which is very well arranged, contains a large number of fires, having peculiar but efficient hoods, and several novel tools, as well as a good supply of common tools and steam hammers. This shop is almost entirely free from smoke. There is a scrapping furnace and hammer which also answers for forging and welding on frame legs. Here will be found what is known in blacksmith shop vernacular as a "bulldozer," which is made useful for a variety of purposes to which it is not ordinarily put. Besides performing the ordinary bending operation for all manner of truck frames, brake levers, body bolsters, transoms, etc., it is used for forming many small parts of various shapes of material, from parts weighing less than one pound to pieces of considerable weight. Where practicable the designs of small parts have been changed so that they can be formed upon this machine, which, with its large number of dies of ingenious form, plays an important part in this shop, as it should in all forging shops where there is a reasonable amount of duplicate work. Just outside of the blacksmith shop is located a crane of new design built of iron channels, which sweeps around a circle in which are placed the dies for the shop, which are, by means of this crane, readily handled and placed upon trucks to be transported where needed.

The truck shop has a capacity of 20 completed trucks per day of the standard Pennsylvania iron bolster, rigid centre type. Among the tools, all of which are modern, are three good wheel borers and a centre-driven double header axle lathe.

The wood-working shop has been recently rearranged so that all work passes through the shop without interfering with tools in operation, or with other work in progress of construction. This shop has a capacity of 10 cars