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The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are sharp, the articles short, and the facts authentic, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

SCHEDULE VERSUS SAFETY.

The greatest credit is due to the Interurban Company for the admirable manner in which they have operated the new Subway during the two months of its active service. Systems as large as this have usually grown from small beginnings, and developed gradually to the full magnitude of their traffic; but in this case, the turnstiles were opened and the full flood of a great city's traffic was allowed to flow into the Subway, as though the opening day were but one in a long series of years of successful operation. Not even the Interurban officials, however, will claim that the operation of the system is so perfect that no further improvements can be made; and, indeed, an incident occurred recently in the early hours of the morning which served to show that in one respect at least the security of the passengers can be very materially increased. We refer to a rear-end collision, which took place between two trains on the local tracks at the Worth Street station, and to the fact, which was brought out by this incident, that although the automatic stop is used on the express tracks, this most excellent device has not as yet been installed on the local tracks. The automatic stop, it will be remembered, is a small lever placed on the tracks, which is raised whenever the adjacent signal is at danger, and when in this raised position serves to shut off the current on a passing train, and set the emergency brakes. This stop is considered, and rightly so, to be an absolute preventive of rear-end collisions.

Now, the action of the stop in the case of a breakdown of any train, is to delay the whole service on that particular line back of the obstruction, every train being held with a clear stretch of track between itself and the train ahead. This, of course, means that the blocking of one train involves the instant blocking of a long stretch of trains behind it. In order to avoid such delay, the management decided not to install the stop on the local tracks; but to adopt a modified operation of the block signal system, under which, when the signals are against him, the motorman is permitted to proceed "under a slow bell" until he brings himself as near to the train ahead as to his judgment may appear to be advisable. By thus playing fast and loose, as it were, with the inexorable demands of the block-signal system, the following trains are kept moving much longer than they otherwise would be, before being brought up by the obstruction. This conduces, of course, to a closer observance of the time schedule; but it is done at a very evident sacrifice of those safeguards which the block-signal system is intended to throw around the passenger.

It is this practice of leaving to the judgment of the engineer as to how far and how fast he may proceed beyond a signal that is set against him, that is answerable for a large percentage of the accidents that are occurring on our steam railroads with such alarming frequency; and it cannot be denied that the adoption of the same method on the local tracks of the Subway has materially lessened the security of travel on that system. It is to be hoped that the officials, prompted by the recent collision, will see the wisdom of applying the automatic stop not merely to express tracks, but to every track on the road.

THE AMERICAN EXHIBIT OF FOREIGN AUTOMOBILES.

The fact that in this year's annual automobile show it has been necessary to find a separate hall in which to house the foreign exhibits, is striking evidence of the rapid growth of the domestic industry. In previous exhibitions there has been a hint of the separation that has taken place this year, in the fact that for the last two or three years foreign exhibitors have been grouped in a separate room at Madison Square Garden. The demand this year has been so great, that every foot of available space at Madison Square has

been required for the exhibition of domestic machines, with the result that, for the first time, the foreign makes are to be found in an entirely separate building. As it is, there is a sufficient number of first-class foreign machines and their accessories to entirely fill an exhibition hall which occupies one complete floor of the largest department store in New York city.

Our succeeding issue, which will be a special number, devoted to the annual Automobile Exhibition as illustrative of the development of the American industry, will include detailed illustrations of some of the leading foreign machines; and it will suffice in the present article, which is devoted to a general survey of the foreign exhibit, to mention some of the more important points of novelty that have been developed during the past twelve months. In the first place, testimony should be borne to the characteristic beauty of design and excellence of finish that distinguish every machine. Although, in general contour and proportions the cars conform to the standard of last year, there have been some modifications produced in the form of the bonnet and the curves and proportions of the body that have added not a little to their handsome appearance. There is a general tendency to abolish the rear door and substitute the side door, which is placed either in the body of the tonneau, or else is formed by an ingenious arrangement, either of a swiveling or a lifting front seat, which makes it possible to enter the automobile directly from the sidewalk, and avoid the old inconvenience of having to step into the street. A machine that attracted much favorable comment was a brougham intended for city use, in which the bonnet is dispensed with, and the motor is placed beneath the driver's seat, which is hinged at the forward end, and can be lifted for inspection of the engine. This arrangement permits a considerable shortening of the wheel base, and provides a brougham that is more easily maneuvered in a crowd of vehicles, particularly in moving to the sidewalk in front of a theater or crowded store. This is a step in the right direction, at least in such cases as are intended more particularly for city use. There has been a considerable development of the inclosed or partly inclosed automobile, of the type that has been so popular during the past season, and some very pleasing designs are exhibited.

We note a tendency to abandon the over-light metallic car bodies, and return to the more substantial wood. This, of course, has the disadvantage of increasing the weight of the machine—a fact that has been noted with some alarm by the French tire makers, one of whom has recently offered a prize for a machine having the lightest car body compatible with reasonable strength.

In the design and construction of the chassis, engines, and running gear, there is no striking novelty to record. The pressed-steel frame has become the standard type, although a few makers exhibit a frame built up of standard shapes. There is a general adoption of the protecting pan, curving across the frame beneath the engine and transmission gear—a device so obviously useful that it is surprising it should not have been incorporated long ago. It is a common practice to equip each engine with two separate methods of ignition, the high-tension magneto and the battery and coil. The former is preferred, and the batteries are held in reserve in case of a breakdown of the magneto. In this connection mention should be made of a magnetic clutch, exhibited on a Belgian car, in which magnets, incased in the flywheel, are energized by current from the magneto or from the batteries. The device has apparently given excellent results, and if so, we may look for its very general adoption. Another promising form of clutch carries a series of springs behind the leather casing, by means of which the power is transmitted so gradually, that the car can be started when the transmission is on the high speed. The performance of these two clutches will be watched with keen interest during the coming season.

Many minor improvements were noted in the direction of providing a more convenient access to the various levers for control of the engine, the transmission gear, and the brakes; the foot-brake levers, in particular, being made longer, and so placed as to be operated with more of a forward and less of a downward thrust than in the earlier machines. In tires, the most notable improvement is the introduction of a non-slipping variety, in which a leather sheath is vulcanized over the tire proper, this sheath carrying a leather strip the full width of the tread, on which are riveted a mass of flat steel plates or studs, which serve the double purpose of giving improved adhesion and at the same time protecting the rubber tires from wear and puncture. The exhibit, as a whole, is a demonstration of that excellent workmanship and general beauty of design which have enabled the foreign makers, in spite of the remarkable development of our own industry in this country, to import into the United States, as they did last year, over three million dollars' worth of machines.

A MONUMENTAL BUILDING.

In planning the truly magnificent station which is to take the place of the present Grand Central Station of the New York Central Railroad, the company have shown a full appreciation of the magnitude of the problem and of the inexorable necessity that is laid upon them of building not merely for to-day, but for the vast increase of travel of the far future. When the present structure was built, back in the seventies, it was the wonder of the day; and because of its magnitude, its great arch of glass and iron, its many parallel tracks, its long stretch of office buildings, and other features of greatness, the Grand Central Station was, for many years, an object of much civic pride in New York city. It was built with a strict eye to the future; nevertheless, but two decades had passed when the company began to realize that so rapid was the increase in traffic, that their great station was great no longer, and that before long they must begin to pull down and build on a far more generous scale. The question of enlargement was receiving serious consideration, when the enormous inconvenience, not to say danger, attending the running of steam-operated trains through the tunnel approach to the station became so acute, that legislative powers were sought to enable the company to dispense with steam locomotives altogether, and operate the terminal yard and the suburban traffic by electrical traction. The opportunity presented by this change of motive power enabled the company at the same time to greatly enlarge and entirely reconstruct the station yard and the terminal buildings.

The magnificent structure, of which we present illustrations on another page, is the outcome of a continuous study of the problem by the architects, Messrs. Warren & Wetmore, associated with Messrs. Reed & Stem, and by the engineering staff of the New York Central Company. Every possible arrangement of tracks and type of building was considered, and no less than two hundred different sets of plans are now on file in the architects' office, as evidence of the care with which the problem was studied. The present designs were adopted because they conform to certain important principles which were laid down as indispensable to the successful operation of a great terminal station such as this, chief among which were the following:

The station must be considered as a great gateway to the city and, therefore, must be simple and dignified in its architecture, and must provide the broadest possible facilities for the inflow and outflow of traffic. It was this consideration that condemned those plans which contemplated the erection above the station of a vast office building; for such a structure would have congregated several thousand people at the very point where it was desired to provide a broad unobstructed thoroughfare for incoming and outgoing passengers.

The progress of the passengers from the street to the cars and from the cars to the street, must take place as far as possible in two direct and entirely separated channels; the incoming and outgoing crowds never meeting or intermingling with those moving in the opposite direction.

In passing from the street to the cars, the passenger should take the steps incidental to departure in their natural consecutive order, with as little running to and fro as possible; the waiting room, the ticket office, the baggage room, the concourse, and the departing platform presenting themselves successively to him as he moves to his particular train. Similarly, the incoming passenger should find the incoming baggage room, the cab stand, and the means of exit to subway station or to street, presented to him in quick and logical succession.

The express and long-distance passengers, whose progress through the station either in departing or arriving is necessarily retarded by ticket purchasing and the checking of baggage, should be entirely separated from the suburban passengers, who almost invariably pass direct from the street to the car without any delay in the station.

Lastly, in view of the vast increase which must necessarily and rapidly take place in the future, the station must be built on a scale much larger than is absolutely needed by the present volume of travel; and this provision must extend not merely to the area devoted to passengers in waiting rooms, ticket lobbies, and concourse, but to the station yard itself, which must be extended in area to accommodate the larger number of trains that will be required.

Now, it must be admitted, after an impartial study of the plans of this great undertaking, that the above requirements appear to have been fully met and all the provision for the future made that can reasonably be asked.

Architecturally, the station building will present a massive and dignified appearance, worthy of what is probably the most important railroad terminal in America. The architecture of the building is throughout and without exception an expression of the plan; none of the decoration being used merely for architectural effect, but everything serving some useful, struc-