

THE PARIS AUTOMOBILE SHOW.

The fifth annual Exhibition of Automobiles, Cycles, and Sports, under the auspices of the Automobile Club of France, was held in Paris from December 10 to 24, and was, as heretofore, a decided success. Machines of Belgian, German, Italian, English, and American make were exhibited, besides a large assortment of standard French cars.

A machine that has met with great success the past year, and that has therefore been very widely copied, is the Mercedes, made by the Daimler Company of Cannstadt, Germany. The "beehive" radiator on this machine, at the front end of its long, coffin-shaped motor bonnet, the mechanically operated inlet valves, and the contact sparking device fed by current from a magneto, as well as the forced air circulation through the radiator by means of a fan in the flywheel of the motor, are the main features that have been adopted on many of the leading 1903 French machines. The magneto is more certain than batteries, but is not well adapted for use with a jump spark coil. Consequently make-and-break igniters are fitted, with their many moving parts outside and inside the cylinders to add to the complications. Mechanically operated inlet valves require an extra set of cams, and, where placed on the opposite side of the cylinders from the exhaust valves, an extra half-speed shaft for carrying the cams must be added. The only advantages claimed for such positively opened valves are that the engine can be run a little slower and is easier to start, there never being any trouble from sticking of the valves. In addition to throttling the mixture with an ordinary butterfly valve, on some machines the inlet valves are made to close early, thus limiting the quantity of charge drawn into their respective cylinders. One of the novelties of the show was the Krebs carbureter fitted on the new Panhard and Levassor three-cylinder motor. This device is so arranged that when the motor is running fast and the suction

is strong, it takes its auxiliary air for the mixture through a special air valve between the carbureter and the motor. As the speed of the motor decreases, this valve closes proportionately, thus keeping the vacuum in the atomizing pipe of the carbureter always the same, and the jet of fuel raised by it constant. The atomizing pipe has a water jacket in which the warm water from the engine circulates, and the carbureter is also fitted with the usual throttle valve.

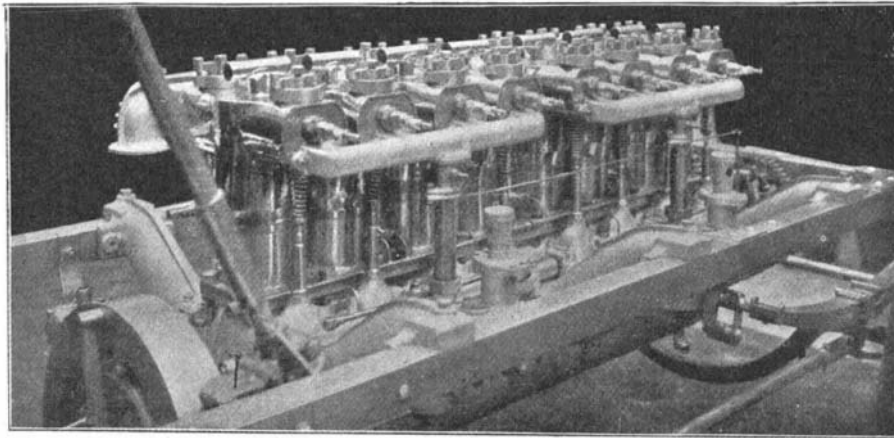
Most of the motors have their cylinders and water-jacketed heads cast in one piece. In some cases, where the cylinder jacket does not form part of the casting, aluminum or corrugated sheet-metal jackets are afterward slipped on the cylinder over the lower end.

A machine that attracted a great deal of attention was the new 40 horse power Serpollet steam racer. The body of this machine looks like a boat out of its element. The sharp prow and stern should cut through the air with the same ease, however,

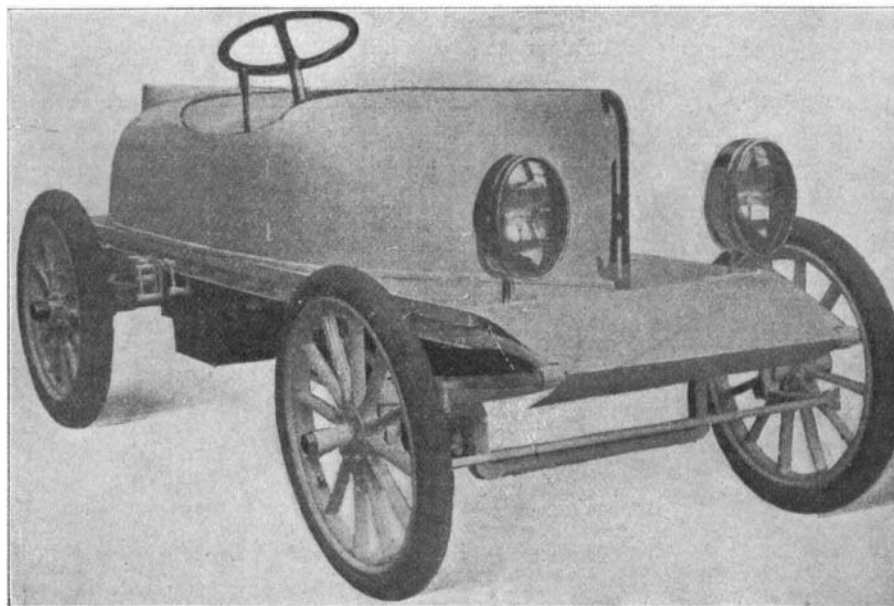
as does a similarly shaped hull through water. In the flash boiler of this car, the tubes, although fewer than usual, are longer, in order that the steam, while passing through them, may be thoroughly superheated. The water and fuel pumps are driven by variable cams,

and a reverse. Very great flexibility by throttling is claimed for it, but whether this outweighs the complication of so many cylinders is a question. The sixteen valves are all mechanically actuated; but jump spark ignition is used, the designer evidently thinking there was enough to look after without complicated make-and-break apparatus.

A notable change in the construction of the frames for holding the machinery is seen in the abandonment of wood for light steel stampings or tubing of rectangular cross-section, with a wood core. The brakes are generally of the expanding and band type, working directly on the rear wheels, and the arrangement of the various levers is made as simple as possible; the small ones for controlling spark and mixture being placed on the steering wheel. Thus along general lines, the cars have been improved, although the additional parts on the engines tend to complicate rather than simplify this already sufficiently intricate piece of mechanism.



The Charron Giradot, and Voigt 40 H. P., 8-Cylinder Gasoline Automobile Motor.



The New Serpollet Steam Racer.

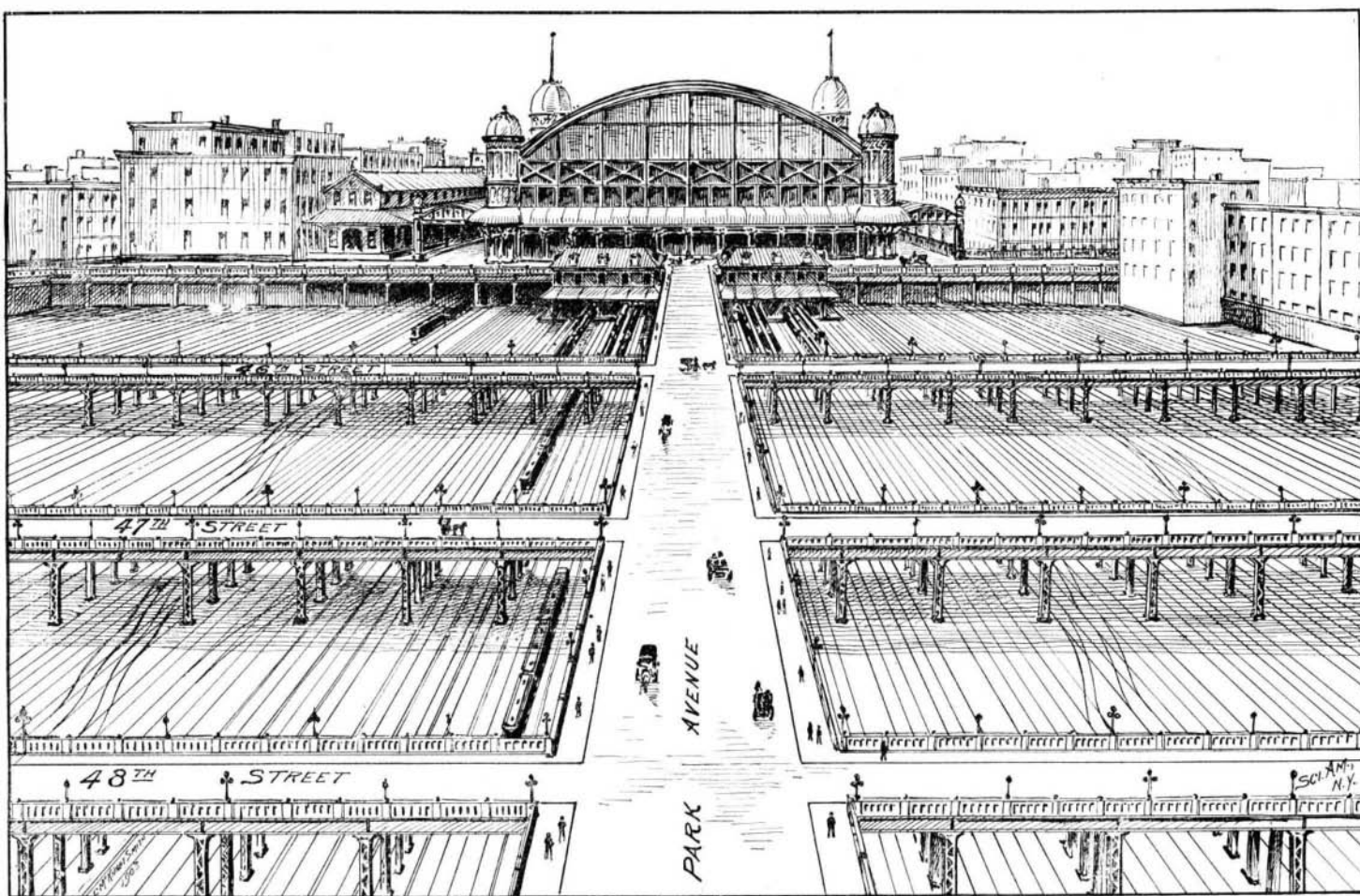
THE PARIS AUTOMOBILE SHOW.

which may be changed at will by the driver, thus increasing or decreasing the quantity of water and fuel sent to the boiler and burner. Long side levers within easy reach of the driver serve to vary the eccentrics when necessary. Another decided novelty was the 40 horse power, eight cylinder, gasoline motor exhibited at the Charron, Giradot, and Voigt stand. This motor is to be used on a car fitted with but two forward speeds

startling announcement that the charter by which it secured the use of Park Avenue, contained a clause restricting the Railroad Company to the use of steam traction therein. The necessary authority to enable the company to use electrical traction is now being sought at Albany.

The plan of improvement suggested by the Railroad Company, and modified by the city government,

is on a most extensive scale, and will add enormously to the storage and general yard facilities of the terminal, besides greatly increasing the convenience of the terminal trainshed itself. At Fifty-sixth Street the Park Avenue cut, through which the present tracks run, will be widened so as to admit of three extra tracks on each side of the present four tracks, the ten tracks extending to Forty-ninth Street, where they will branch out into the present terminal yard. The switches for these tracks will be laid at Fifty-seventh Street, and here also the



View Looking South Along the Proposed Park Avenue Viaduct, Showing the New Cross-Street Viaducts, the Station Yard Below, and the North Face of the Grand Central Station.

RECONSTRUCTION OF THE GRAND CENTRAL STATION AND YARD.

present grade will be lowered sufficiently to allow the cross streets to be carried on viaducts clear above the yard. Park Avenue itself will be extended as an elevated structure right through to the trainshed, and thus the whole system of streets will be restored in its entirety, and the property value and general convenience of the districts around the terminal yard will be, of course, greatly enhanced.

In the trainshed all the tracks will be lowered to $7\frac{1}{2}$ feet below their present level, and $10\frac{1}{2}$ feet below the floor of the concourse in front of the waiting room, which will be reached from each platform by easy gradients. At Forty-fifth Street, the carriage and wagon traffic will ascend by an easy gradient to a great plaza or driveway, located within the trainshed, and extending entirely around it, at a level which will clear the moving trains. Passengers will be driven with their baggage on to this plaza to the baggage room, where the baggage will be checked, and then to the concourse or waiting room, which will be at a slightly lower level. Similarly, incoming passengers will enter cabs or buses within the building. This great quadrangular plaza will provide ample room for all the cabs and other vehicles that come to the station, and the present crowding will be entirely avoided, the surrounding streets being relieved of much existing congestion. The present trainshed over the annex to the east of the station is to be replaced by an arched roof, similar to the one over the present trainshed, and the brick partition wall between the two sheds will be removed, thus throwing the two structures into one, and vastly improving the architectural and general appearance of the station. The main waiting room will be extended to Vanderbilt Avenue throughout the full width of the station front. The station yard is to be enlarged by extending it eastwardly to Lexington Avenue, with a view to affording additional storage tracks for trains.

In summing up, it may be said that the parallel tracks below Fifty-seventh Street will be increased 150 per cent, that the storage tracks in the yard will be doubled, as will also the capacity of the main waiting room in the station. The considerable increase in storage tracks will have the effect of rendering unnecessary the transfer of empty trains through the tunnel between Forty-second Street and Mott Haven, and from this cause alone the congestion in the tunnel will be greatly relieved. Furthermore, and the most important of all, the suburban service of the road is to be electrically equipped, and in all probability electric locomotives will be used for hauling the heavy main line trains through the tunnel.

CONNECTION WITH THE SUBWAY.

Our front page engraving shows one of the most important features of the proposed New York Central improvement, namely, the proposal to carry certain of the New York Central suburban tracks beneath the station to a connection with the Rapid Transit tracks under Park Avenue. As our readers are well aware, the four tracks of the Subway extend on an easy curve from Fourth Avenue westward into Forty-second Street. When the Rapid Transit engineers laid their plans, they saw the obvious advantage of making connection with the New York Central system, and the Rapid Transit Commission proposed several years ago to the company that this be made. The New York Central refused to entertain the proposition at that time; but the Rapid Transit engineers, foreseeing that the connection was demanded by the interests both of the city and the company itself, separated the tracks of the subway beneath Fourth Avenue, where they approach Forty-second Street, so that whenever connection should be determined upon, it would be possible to run the suburban and the Rapid Transit tracks together without having to put in any grade crossings, which latter would be a source of constant delay and peril to traffic. Although the plans for this connection have not been finally passed upon, we are enabled to present on our front page a drawing showing how the tracks will come in. The present Rapid Transit tracks are located a short distance below the street level, and cut through the northeast corner of the block, at Forty-second Street and Park Avenue, as shown. On this block is being erected a twenty-two story hotel, the most remarkable part of which, from a constructive point of view, is the huge excavation which has been made for the basement and sub-basements. After the excavations had been completed, a huge wall of concrete

conforming to the curve of the inner wall of the tunnel was built up to the level of the subway tracks. Upon this will be placed a series of massive built-up steel columns, which will extend the full height of the tunnel, and from them to the northerly wall of the building will be laid a series of very heavy steel girders which will span the tunnel tracks, and carry the load of the northeast corner of the twenty-two story building. This work has called for some very nice calculations, as there is a total load of between 4,000 and 5,000 tons to be taken care of, the load on one of the columns being as high as 900 tons. The New York Central's connecting tracks will swing in beneath the Rapid Transit tracks, the two tracks for express traffic passing beneath and up between the Rapid Transit express tracks, and the downtown local track passing beneath the uptown local and the two express tracks, and rising to the surface between the south-bound express and the south-bound local tracks. By this arrangement all grade crossings at this point will be eliminated, a feature, as we have said, which is indispensable to the safe working of the system. As at present outlined, the New York Central proposes to run two express tracks to a connection with the express tracks of the subway; but this would mean that suburban passengers could land only at Twenty-third Street and Fourteenth Street on their way to the City Hall. By running in four tracks, it will be possible for suburban passengers to stop off at any local station below Forty-second Street that they may wish to. Now that



BUILDING OF COLUMBIAN UNIVERSITY MEDICAL DEPARTMENT, WHERE THE AMERICAN CHEMICAL SOCIETY MET.

the connection is to be made, there should be no half measures. The greatest convenience of the greatest number of passengers should be the object aimed at, and this can only be secured by providing a four-track connection between the New York Central and the Rapid Transit systems.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

BY MARCUS BENJAMIN, PH.D.

The fifty-second annual meeting of the American Association for the Advancement of Science, which was convened in Washington city during the week of December 29, 1902, to January 3, 1903, now known as Convocation Week, proved to be "the largest scientific gathering ever held on this continent."

The opening session was held in St. Matthew's Church on Monday, December 29, at 10 o'clock, when President Hall, after calling the meeting to order, introduced as the presiding officer of the session Prof. Ira Remsen, president of the Johns Hopkins University, and known to science chiefly for his many researches in chemistry while filling the chair of that science in the university of which he is now the head. An address of welcome was made by Commissioner Henry B. F. McFarland, representing the government of the District of Columbia, who spoke of the government museums, libraries, and laboratories as worthy of the visitors' attention, and giving great promise of steady enrichment, both in the public and private scientific

undertakings. He said: "We have in the national capital what must interest you as American citizens above anything that you can find elsewhere. This is the home of the national spirit, of the national flag, of the national government, incomparable in the wealth of its associations and memories and as a center of power and promise. Here the republic finds national expression, and from here confers national and international benefit in its world-round activities." On behalf of the national government, the members were welcomed by Dr. David J. Hill, Assistant Secretary of State, whose remarks pertaining to the scientific character of governmental work are most valuable. He said: "It has been owing to the demand of the scientific men of the country that our governmental work should rise to their apprehension of its needs, that we have at Washington a group of scientific experts of the highest character doing the work of the government in their special branches, and not mere bureaucrats held in their places by political influence. You will meet in Washington, in the employ of the government, men of the highest standing in their respective branches of science, recognized and honored by their colleagues throughout the country and throughout the world; not accepted as authorities because they are officials, but who have become officials because they were fine authorities. The other thought I wish to leave with you is the elevating effect upon the entire official staff of the government, exercised by the presence of acknowledged experts in its scientific branches. It has come to be generally accepted that no man should hold a public office unless he is specially qualified by his knowledge to discharge its duties with intelligence. We may easily insist too much upon mere academic standards; but specific qualification may well be made the test of fitness in every department of the public service." Dr. Charles D. Walcott, Director of the United States Geological Survey, representing the Washington Academy of Science and other scientific societies, welcomed the Association on behalf of the Local Committee, of which he was chairman. The President of Columbian University, Dr. Charles W. Needham, spoke for the educational institutions of Washington, saying: "It is fitting that these institutions should welcome the scientist. He discovers and gathers the facts and the laws which constitute in so large a part the knowledge which universities teach. It is science which gives us those facts, and a knowledge of those forces in nature and life which are the sure stepping stones upon which man rises to higher and nobler living." An acknowledgment was then made to these different addresses of welcome by President Remsen.

The ten sections and the affiliated societies then assembled in the rooms assigned to them in the buildings of the different sections of Columbian University and the United States Geological Survey, where they organized. Sectional committees and other officers of the sections were then chosen, who considered the titles of the papers submitted to them, and arranged them for publication in the daily program, after which the meetings of the sections adjourned until the following day.

During the afternoon the retiring addresses of several of the vice-presidents were read. Of these the more important were the following:

Prof. William S. Franklin, who holds the chair of physics and electrical engineering in Lehigh University, delivered a retiring address before the Section on Physics, entitled "Popular Science." His remarks began with a quotation from President Woodrow Wilson's address, given at the sesquicentennial celebration of Princeton University, when he said: "I am much mistaken if the scientific spirit of the age is not doing us a great disservice, working in us a certain great degeneracy. Science has bred in us a spirit of experiment and a contempt for the past; . . . yet I have no indictment against what Science has done; I have only a warning to utter against the atmosphere which has stolen from our laboratories into lecture rooms and into the general air of the world at large." . . . Science "has driven mystery out of the universe; it has made malleable stuff out of the hard world and laid it out in its elements upon the table of every classroom. Its own masters have known its limitations; they have stopped short at the confines of the physical universe; they have declined to reckon with

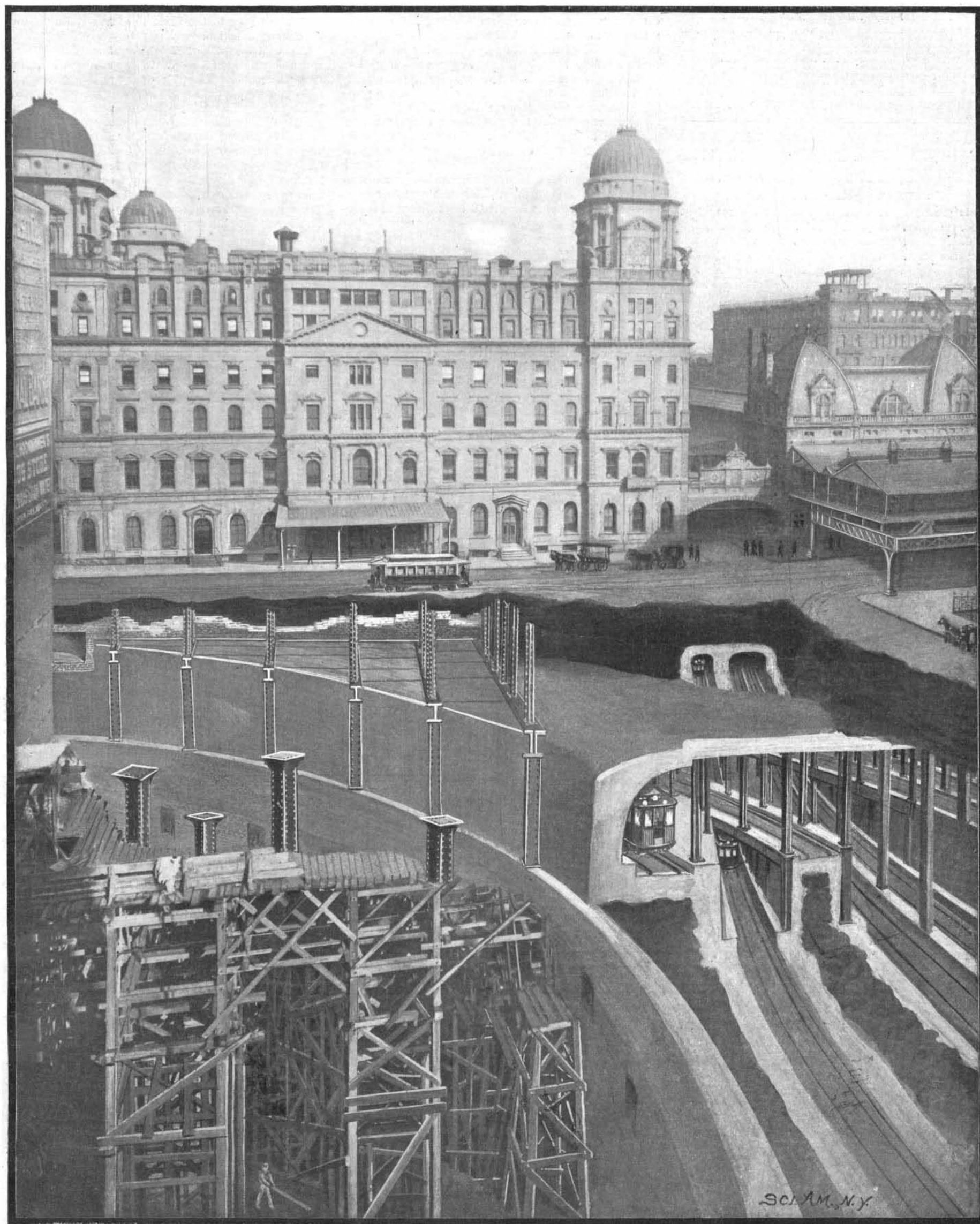
SCIENTIFIC AMERICAN

[Entered at the Post Office of New York, N. Y., as Second Class Matter. Copyright, 1903, by Munn & Co.]

Vol. LXXXVIII.—No. 3.
ESTABLISHED 1845.

NEW YORK, JANUARY 17, 1903.

8 CENTS A COPY
\$3.00 A YEAR.



GRAND CENTRAL STATION IMPROVEMENTS AND TRACK CONNECTION WITH THE RAPID TRANSIT SUBWAY.—[See page 30.]