on bicycles, 4,153; foot passengers, 22,289; in tramway cars, 12,000. In other words, the tramway cars carried 29 per cent. of the total number of the persons passing the two points considered. At Aix-la-Chapelle during a fête on July 19th, 1909, a record was made at ten different points and it was found the number of persons travelling in the tramway cars was 259,574, or almost 50 per cent. In Dresden a similar record was made in 1908 at one of the principal bridges connecting the two parts of the city, and over 50 per cent. were



Fig. 5—Rheinstrasse in Friedenau; Tracks on Side Reservations.

found travelling by electric cars. A record made September 18th, 1908, in Lucerne showed 20 per cent. In Cologne a count made on two bridges crossing the Rhine showed only 12 per cent. foot passengers and 88 per cent. tramway passengers.

In general it can be stated that the number carried in the tramway cars is between 20 and 50 per cent. of the entire circulation, and this percentage under special conditions will become much larger, as in the case cited in Cologne. It is safe to say, therefore, that in large cities the tramway system



City Planning. Fig. 3—Kurfurstendamm in Berlin; Track Too Near Trees.

occupies a preponderating position in local communication and that its proper and logical development and extension not only have a most important bearing on the development of the city which it serves, but that the expansion of the city is directly affected by the layout of the transportation system, the service given and the speed attained on these cars.



Owing to this close interrelation it would seem almost self-evident that municipal authorities and engineers would



obtain the collaboration and advice of the representatives of their local railway systems whenever new portions of the city are laid out so as to determine the best way of serving these sections by tramways. Somewhat strange to say, this is rarely done. Of the 73 companies which have replied to the data sheet of the committee on this subject, 60, or 70 per cent. stated that they possess no influence with the municipal

authorities in regard to this matter, and are never consulted when new streets are laid out. Twelve companies reported that they are consulted in regard to the transportation features in work of this kind when it is supposed that they have an interest in furnishing the service. Finally the officers of 10 tramways, for the most part municipal enterprises, are asked regularly to assist in the establishment of plans of this kind.

This condition of affairs undoubtedly explains the very grave errors made in the offices of municipal architects when it comes to providing transportation facilities in new districts.



City Planning. Fig. 8—Agnes-Bernauerstrasse in Munich; Tracks in Reservation, Lined with Shrubbery.

Undoubtedly the intentions of these architects are the best, but by ignoring what in a sense is the most important and vital part of city planning they make mistakes which forever handicap and hamper the district which they have laid out.

An unfortunate feature of the entire situation is that in older portions of the city all transportation has to be furnished under conditions originally designed for animal traction. It is impossible materially to alter this situation, but in the newer portions of the city full advantage could and should be taken of the great flexibility and adaptability of design possessed by the electric railway system. As will be explained later, among the points which municipal architects through ignorance of the practical conditions of electric railway operation are apt to overlook are the following: width of roadway; position of tracks in the streets; facilities for the establishment of car houses so as effectively to serve the different lines operated by them; facilities for turn-outs and cross-overs; locations of crossings; number of railway lines required to serve the communities of different size, etc.

The Modern Science of City Planning.

Modern ideas in city planning, very wisely, no longer favor the old idea of the rectangular arrangement of a city



City Planning. Fig. 9—Hardenbergerstrasse, Berlin; Tracks on Centre Reservation, Lined with Shrubbery; a Cood Arrangement.

with all streets either parallel to or at right angles to each other. Such streets not only give an impression of monotony but their busy corners constitute serious obstacles to the circulation of traffic. Two streams of pedestrians, carriages, bicyclists, electric cars, etc., one on the cross street, the other on the longitudinal street, are forced into the narrow confines of a crossing no broader than each of the streets which meet at that point. The result is not only danger but a cause of delay to all.

Modern city architects seek not only to give their creations a picturesque appearance by avoiding so far as possible the interminable perspective presented by a long and straight street, but also to arrange the crossings of the important