

is parallel with Fulton Street, the principal business street of the borough, and about 300 ft. distant from it. The most important retail shops of this borough run from Fulton Street through to Livingston Street, and the latter, which was only 50 ft. wide, was so badly congested by the delivery wagons of these shops that it was useless for other purposes. It was widened to 80 ft. in 1905 for its entire length of about 4,300 ft. at a cost of a little over \$2,000,000. A double track surface railway was constructed in it and it has been of incalculable benefit to this part of the city. It was proposed to assess one-third of the cost upon property deemed to be benefited, but mandatory legislation was secured relieving these property owners and imposing the entire cost upon the city.

Philadelphia also affords a number of instances of the widening of existing streets. Perhaps the most important undertaking of the kind has been the widening of Delaware Avenue along and in the vicinity of the Delaware River. This street will eventually extend from the Navy Yard on the south to Poquessing Creek on the north, a distance of about 17 miles. It was originally 50 ft. wide where in use, and the new width will vary from 100 to 250 ft. The improvement has already been carried out at a width of 150 ft. between Fairmount and Washington Avenues, a distance of two miles, and between Dyott and Cumberland Streets, a distance of one-third mile. The widening to widths of from 150 to 250 ft. between Washington Avenue and Hoyt Street, about  $2\frac{1}{4}$  miles, is now in progress as a part of the South Philadelphia improvement. In portions of this street there are or will be from two to six steam railroad tracks. No estimate can be given of its total cost, but it has been financed from the proceeds of bond issues and without any local assessment.

A more modest improvement in Philadelphia is the widening of Oxford Avenue through the village of Fox Chase. This was originally a toll road, 50 ft. wide, and is occupied by a double track surface railroad. It has been widened to 70 ft. for a distance of about 1,200 ft. through the centre of the village. Some of the buildings were rebuilt and others were moved back to the new street lines, the amount paid in damages being about \$57,000.

Two instances of street widening are taken from Boston, the first being what is known as the Pleasant Street improvement. This consisted of a widening from about 40 ft. to 60 ft. for a distance of about 1,700 ft. The work was carried out under a special act of the legislature passed in 1911, and the assessments were limited to one-half the cost and the area of benefit to a distance of 125 ft. from the line of the improved street, or to the middle of the block. The total cost was about \$681,000. About \$137,000, or 20 per cent., was assessed.

Another Boston improvement which it may be proper to include, although its purpose was not so much to widen a street already congested with traffic as to substitute for a narrow alley a street which might accommodate traffic, is what is known as the Avery Street improvement. This consisted of a widening from about 16 ft. to 40 ft., and it was also done under a special act of the legislature, with the provision that the assessments should be limited to one-half of the expense. Although the improvement extended for a distance of only 400 ft., the cost was over \$1,300,000, of which amount \$601,000, or about 46 per cent., was assessed.

The method of establishing new building lines and progressively carrying out a widening has been used very infrequently in this country, although it is quite a common practice in European cities. Probably the best ex-

amples in this country are to be found in Philadelphia. A well-known instance is that of Chestnut Street, formerly 50 ft. in width, which was widened to 60 ft. on the city plan by an ordinance adopted in 1884. It is a high-class retail shopping street and formerly had a roadway 26 ft. and sidewalks 12 ft. wide, the additional width being added to the sidewalks, the roadway remaining unchanged. Recent traffic counts showed about 4,600 vehicles passing a given point on this street between 5 a.m. and 9 p.m. The ordinance provided that after the adoption of the new lines no buildings should be erected or no buildings should be rebuilt or altered without being made to conform with the new lines. The improvement has been in progress for 33 years, and has been completed for the greater part of the distance. As buildings have been set back the owners have filed petitions for damages and in general awards have been allowed for ground taken where the abutting lots were reduced to a depth of 100 ft., but where a 100-ft. lot remained no awards have been allowed. Up to the present time the awards have reached a total of more than \$500,000. Walnut Street and Arch Street, between the Delaware and the Schuylkill Rivers, are both being widened in this same manner, the former from 50 to 60 ft. and the latter from 66 to 72 ft.

A few instances are to be found in this country of increasing the traffic capacity of a street by converting one or both of the sidewalks into roadway and placing new sidewalks in arcades under the buildings. Philadelphia again furnishes a notable example. Fifteenth street, between Market Street and South Penn Square, has a width of 50 ft., with a roadway of 26 ft. and sidewalks of 12 ft. each. The curb on the east side was set back 11 ft., or within 1 ft. of the street line, while a sidewalk 19 ft. in width was provided back of the new curb line and extending 18 ft. under the buildings. This improvement was also extended eastward along the north side of South Penn Square between 15th and Broad Streets. The arcade thus formed has been treated uniformly, the supporting piers are regularly spaced and all of the same size, and the results of this treatment have been very satisfactory, the shops fronting on the arcade appearing to be desirable, and they probably command good rentals. The total length of this arcade on both streets is 335 ft. and the cost to the city in damages paid for the easements and the reduction of available floor space in the buildings amounted to \$193,000.

Where the rapid development of a particular district may be reasonably expected or where it is necessary to provide more adequate street capacity in order that traffic may be accommodated and suitable transit lines may be constructed within the streets at some time in the future and expensive widenings may be avoided, it is often necessary to lay out streets of generous width following the lines of existing roads which now serve as connections between centres of population, the importance of which will probably increase. An excellent illustration of such a widening is offered by Queens Boulevard in the City of New York. This boulevard follows streets which had already been laid out and acquired at widths varying from 60 to 100 ft. It extends from the Queensboro Bridge across the East River to Jamaica, a distance of approximately 7 miles. It bisects the greater portion of the Borough of Queens, and its future importance as a traffic artery is apparent. For about 6 of the 7 miles it was given the exceptional width of 200 ft. and for the remaining mile of 150 ft., the point of contraction corresponding with its junction with a proposed intersecting boulevard varying from 100 to 150 ft. in width. For the first mile