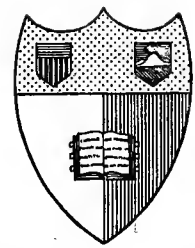

EAST BOSTON

A SURVEY AND A COMPREHENSIVE PLAN

REPORT OF THE CITY PLANNING BOARD,
BOSTON, MASS.

PREPARED BY GEORGE GIBBS, JR., INVESTIGATOR FOR THE BOARD,
FEBRUARY, 1915

[DOCUMENT 116 — 1915]

CITY OF BOSTON
PRINTING DEPARTMENT
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CITY OF BOSTON.

In City Council, January 10, 1916.

Ordered, That fifteen hundred copies of the Report of the City Planning Board on the Development of the East Boston District be printed as a city document, the expense of the same to be charged to the appropriation for City Documents.

Passed. Approved by the Mayor January 11, 1916.

Attest:

W. J. DOYLE,
Assistant City Clerk.

LETTER OF TRANSMITTAL.

DECEMBER 7, 1915.

HON. JAMES M. CURLEY,
Mayor of the City of Boston:

SIR,— We present herewith a report upon a survey and study of East Boston, and a set of plans based upon the results of that study, prepared to show as far as possible what features in the city plan should be, and can be, modified or extended for the best interests of the general public, the local community and the individual property owners.

In this study our investigator, Mr. Gibbs, has consulted the records of the various city departments, has interviewed many persons interested in plans and developments for the district, and has collected maps and statistics of existing conditions and proposed improvements, to serve as a basis for the plans and report.

In this work he has received the generous cooperation of the Directors of the Port of Boston in the study of the proposed waterfront development, and has been assisted by various public officials, charitable associations and citizens of East Boston, and especially by Henry L. Whitney, Landscape Architect; C. Lewis Pitkin, Architect, and Edward H. Trout, Landscape Architect, who have given much valuable aid in the preparation of plans and diagrams.

We submit the report in the hope that it may serve as a basis for the development of such detailed plans for constructive or regulative activities as may prove best in the interests of the city.

Respectfully submitted,

THE CITY PLANNING BOARD,
R. A. CRAM, *Chairman.*
EMILY G. BALCH.
WILLIAM C. EWING.
JOHN J. WALSH.
HENRY ABRAHAMS.

ELISABETH M. HERLIHY, *Secretary.*

Drawn by C. L. Pitkin and H. L. Whitney.

FIG. 1.—BIRD'S-EYE VIEW OF COMPREHENSIVE PLAN FOR EAST BOSTON DEVELOPMENT.

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and state expenditures have given some benefit. Need for greatest economies in maintenance costs and greatest possible advantages from improvement expenditures. Comprehensive plans needed to forestall costly reconstruction. Plan for large expenditures may result in ultimate large savings. Benefits to property and betterment assessments; economic need for rectifying property lines by the taking of fragments or by excess condemnation. Report of Boston Chamber of Commerce on revisions needed in laws and methods for greater economy and greater gross benefits. Methods of obtaining funds for carrying out the city plan.

LIST OF ILLUSTRATIONS. (PART I.)

LIST OF ILLUSTRATIONS. (PART II.)

PART I.—SURVEY OF THE CONTROLLING FACTORS IN THE EXISTING PLAN OF EAST BOSTON.

A CONSIDERATION OF THE PECULIARITIES OF LOCATION, THE PRESSING NEEDS OF THE PRESENT, THE EVIDENT REQUIREMENTS THAT SHOULD BE MET IN THE FUTURE, AND THE EXISTING PLANS FOR DEVELOPMENTS OR IMPROVEMENTS.

Problem Considered.

East Boston is a distinct unit of the City of Boston, limited in extent and restricted in its interests by its partial isolation from all the surrounding districts, but it is near the heart of the city and is intimately dependent upon, and tributary to, the greater activities of the business and financial centers of the city. Because of its natural isolation and its limited interrelations with the surrounding districts, East Boston presents a unit in which there are many civic problems of purely local import, though, because of its peculiar advantages in waterfront facilities and nearness to the financial and industrial center, it offers many problems of great importance not only to Boston but also to all of New England.

History.

Annexed to the city in 1637 as "Noddle Island," East Boston had few inhabitants and was of but little consequence. Not until 1840 did the population begin to increase materially, and even then the island was largely a residential suburb with gardens to the water's edge and pleasant homesteads on the hills. With the increased demand for piers on the open harbor, the overcrowding in

the older city, the introduction of ferries and the development of steam railroads, urban conditions spread into East Boston, and the section near the deep water became more closely built up. Marsh areas were filled and utilized and Breed's Island was added to the district.

With the growth of the district have come added public responsibilities. Private owners have laid out streets and

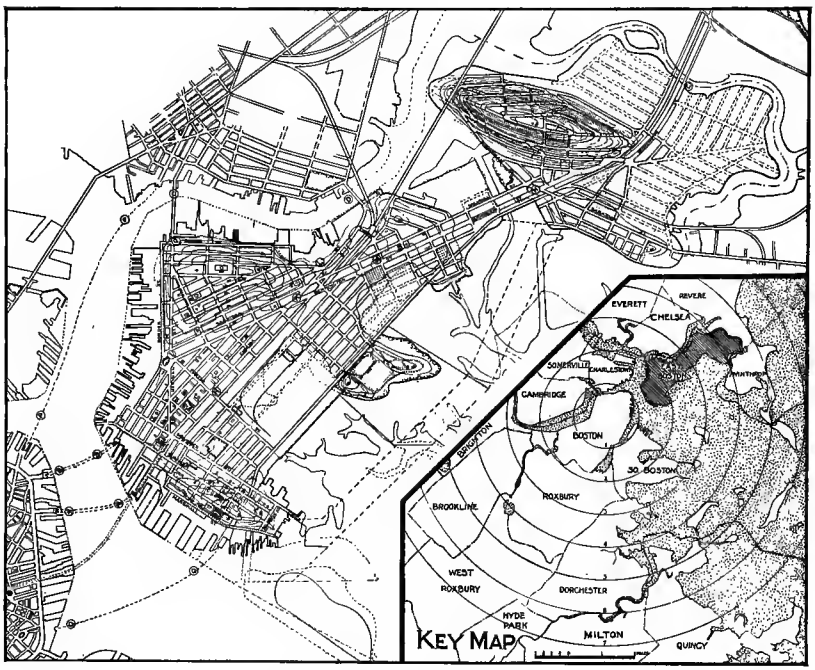

FIG. 2.— LOCATION MAP.
Showing East Boston and its relation to the city as a whole.

sold their lands; railroads have located lines, yards and piers; while telephone and telegraph, street car and gas companies and other public service corporations have acquired rights in the streets. The city has been called upon to build and maintain the streets, to provide schools and libraries, to furnish police, health and fire protection, to construct water and sewer systems, to provide parks and playgrounds and to regulate building and industrial

activities on private properties. To-day the many departments of the city and the public service corporations are called upon to maintain the present systems and to provide for further extensions and revisions.

PLANS.

Plans are being adopted from time to time for such improvements as the extensions of rapid transit and railway lines, the development of vacant lands, marshes and flats, subdivisions of property, street extensions and pier revisions. If any or all of these and other plans are carried out, the city and the public service corporations will be called upon later to build, maintain and operate all the public utilities that will be required as a result of subsequent development, and the cost to the community will be relatively great or small according to the amount of provision that is made for such facilities in advance of costly operations; and the public advantages, the dignity, comfort, convenience and attractiveness of the resultant community will depend largely upon the amount of foresight exercised by the city in providing for the interests, other than private or corporate, in advance of, or coincident with, private development — provision that can best be made through the consideration of and adoption of a city plan or a series of city plans, definite in outline but subject to such modification from time to time as changes in conditions may require.

Under the Board of Survey, which was active between the years 1891 and 1895, plans for the development of certain areas of the city were prepared, but none was made for East Boston. Need for such a plan exists and is becoming more imperative as development is already spreading beyond the area originally platted, in which the best interests of the growing city are not fully safeguarded.

GROWTH.

Upon a portion of the present land area of over 1,500 acres there are now about 60,000 persons living, attracted in part by local industries and in part by the advantages

and amenities of living conditions. The area which is now only partly occupied will be further increased by extension into the marshes and flats. The industries will be encouraged by development of the railroad and waterway transportation, rapid transit and thoroughfare facilities. A greater population will be attracted by improvement and extension of housing facilities if accompanied by an adequate provision of such public utilities as will be required to make satisfactory homes for the people.

With the growth in area, population and industries the valuation of the district will increase and greater expenditures will be warranted for public improvements. The future welfare of the district will depend largely upon improvements to be made at public expense, and satisfactory growth will follow only if such improvements be made at a relatively low cost.

NEED FOR A PLAN.

East Boston will continue an important section of the city so long as the growth in valuation is sufficient to offset the cost of necessary improvements at public expense, and so long as public improvements meet the demands of commerce and industry and the vital requirements for the comfort, health, convenience and pleasure of the people. A plan is needed, therefore, not only to relieve present difficulties, but also to direct development in a way that will lead to a greater increase in the value, the usefulness and the attractiveness of the district. Such a plan should be designed to be carried out gradually but in advance of any development that would lead to wasteful and costly destruction in the future.

The burden of responsibility upon the city as a whole in the direction and control of the city's growth is an ever-increasing one, as the normal course of development toward more concentrated civic conditions, through which the city is passing, leads inevitably to greater mutual dependence upon public service, and the same forces that have made necessary the public ownership of streets, sewers, water supply, schools and parks and the supervision of

public service corporations and of private building operations in the past will inevitably lead to the necessary provision of other facilities that may be required in the future.

PLANNING.

Planning for the city involves two distinct phases: Replanning of the areas now occupied in order to improve housing, transportation and living conditions, and advance planning for the areas not yet built upon, to develop their latent resources for the greatest good of the greatest number. To determine what public requirements should be provided for in such plans, it is necessary, first, to ascertain the controlling factors of the areas in question, then to chart those factors in a graphic, forceful way. Such charts when made serve as the logical basis for plans for the improvement of all occupied and vacant areas. Definite plans and recommendations for improvements in East Boston are presented in Part II., while the results of such a survey are given under the following thirteen headings.

1.— EXISTING PLANS FOR IMPROVEMENTS AND EXTENSIONS.

PORT DEVELOPMENTS, STATE HIGHWAYS, METROPOLITAN PARKS, EAST BOSTON COMPANY, EAST BOSTON TERMINAL RAILROAD, BOSTON & EASTERN RAILWAY, METROPOLITAN IMPROVEMENT COMMISSION PLANS, TEAMING TUNNEL PLANS.

There are now in existence numerous plans for extensive additional developments in East Boston, many of which were considered in the excellent reports of the Metropolitan Improvements Commission, such as the need for a large industrial and commercial terminal on the flats on the east, two diagonal streets east of the Boston & Albany freight yards and a border railroad along Condor and Border streets. A plan for a teaming tunnel to East Boston was prepared by the City Engineer in 1911, and one for a big terminal dock development was made by the Board of Harbor and Land Commissioners in 1910. A terminal

railway for industrial development was recently planned by the East Boston Company and is already started. There is a plan for a new rapid transit railroad, the Boston & Eastern, from Post Office square in Boston across East Boston to Lynn, and there are various plans and suggestions for metropolitan parkways and highways and for bridge revisions that bear upon the development of East Boston even though they may not come within its boundaries. There are also many records and surveys filed in the various city departments, such as an excellent survey of the street tree conditions, now held by the Park and Recreation Department. Extensive plans have just been prepared by the Port Directors for the development of a great railway and waterway terminal, that include most of the best suggestions of various former schemes and allow for a reasonable readjustment of park and other city interests in accordance with the general ideas and plans of the Planning Board, as here presented.

All such plans as were found available have been studied and carefully considered in reference to the possible plans and recommendations for the future. For the plans herewith presented a compiled base map has been made from existing atlas and wall map sheets, but there is to-day no complete and accurate map of existing conditions. An accurate survey based on a careful triangulation survey referenced to the State House or other coordinates and published in sheets at a scale of 200 feet to 1 inch, or preferably 100 feet to 1 inch, would be of great value to the various city departments in charge of streets, water, sewers, park, and taxes, as well as to real estate dealers and other business men.

The existing maps of the district may be correct as far as they go, but no general map has as yet been made. The real estate atlas is good but not based on an accurate survey and the several departments of the city now use various general maps that cannot be accurately correlated. Other cities in this country and in Europe have published such maps and use them as a basis for all public improvement plans. Baltimore and Washington have excellent

sheets covering the entire cities that are sold at a nominal price either as loose sheets or as atlases. Cincinnati and St. Louis have just had such maps prepared and published. Boston started under the Board of Survey to have maps made but the work has not been completed. This work included planning for the future as a part of the survey and was therefore possibly more comprehensive than is primarily needed. The immediate need is for a complete set of topographical sheets showing a large number of accurately located reference points, and these points should be monumented on the grounds if not already so established. Such sheets could be corrected from time to time and reprinted at a relatively small cost.

The cost of the survey in Baltimore, including monumenting and some street planning, amounted to about $5,000 per square mile. In New York the cost ran somewhat higher, but that, too, included the locations for new streets. The survey of Cincinnati, made under contract with a guaranteed and tested high degree of precision but without further planning, cost about $800 per square mile. The cost to Boston of such a survey would be amply justified by the increase in efficiency and the lessening of cause for errors and delays to the many departments of the city and to the general public that would be served.

2.— MAIN THOROUGHFARES. APPROACHES TO THE DISTRICT, MAIN STREETS AND INTERSECTION POINTS.

In the development of any community the size, distribution and interrelation of its main thoroughfares, the convenience of approaches and the character, size and distribution of business and social centers play a very important part. The proportion of the developed area of the city occupied by streets is relatively large — ordinarily from one-fifth to one-third, and in some cases, as that of the Boston market district, one-half of the total area. The first cost for construction and the annual burden for maintenance of the streets represents a large

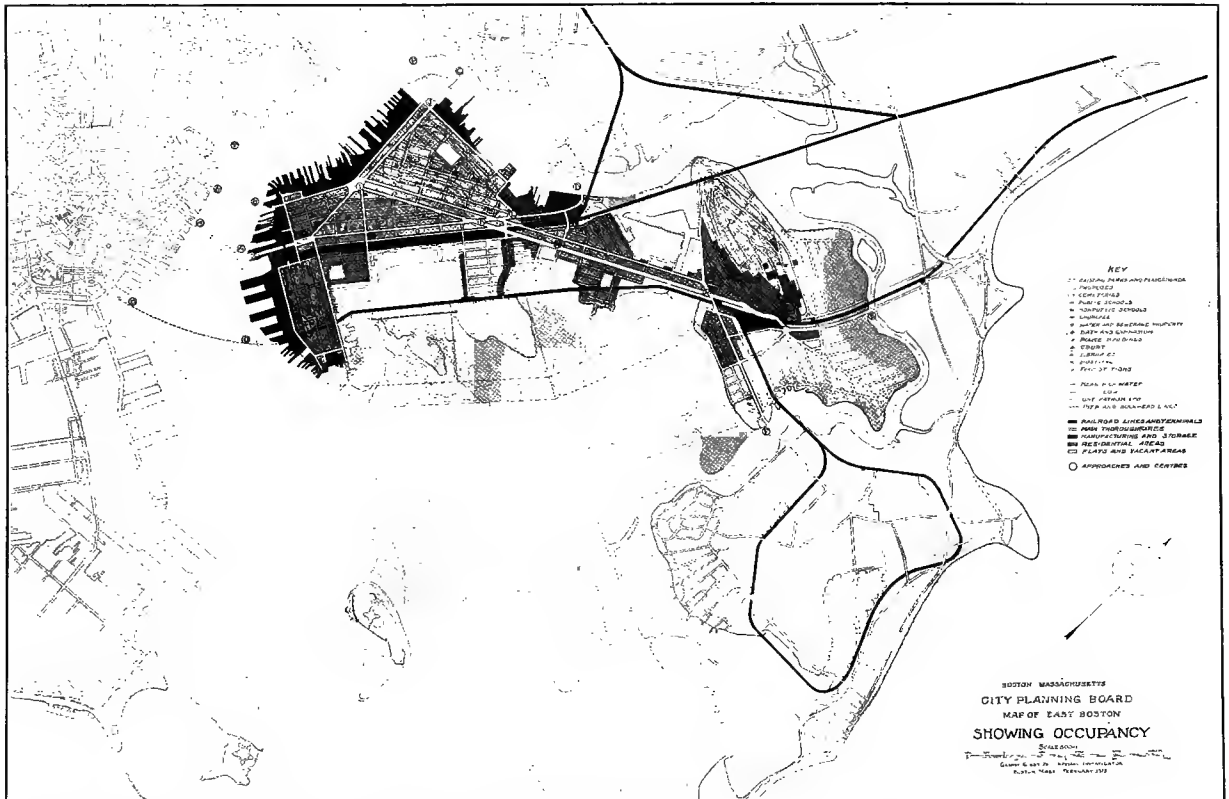

FIG. 3.— OCCUPANCY MAP.

Showing present usage of all areas. Letters refer to main approaches as shown more clearly on general map, Fig. 26, page 80. Railroad lines and terminals shown black. Storage and manufacturing dark, residential areas medium, vacant areas light. Main thoroughfares and parks white.

portion of the total city budget. The cost of street improvements is enormously greater where the original plan was inadequate and where there was no reasonable planning in advance of building. The lack of such foresight can never be fully offset, even at great cost for reconstruction.

The determination of just what are or should be the main thoroughfares depends upon several factors. In the downtown district nearly all radial streets that are at all direct, even though only a few hundred feet apart, become main thoroughfares. Cross streets at intervals of one-fourth mile or so are needed there to provide for travel. Farther out from the center the distance between main lines logically becomes greater, so that in suburban districts a distance of half a mile or even a mile between main thoroughfares is considered no great disadvantage, but where the distances become much greater than a mile development is likely to be very slow, and the burden upon existing thoroughfares is likely to become excessive.

The demand upon the city for main thoroughfares is becoming greater and more varied with the improvement of vehicular facilities, the improvement in electric car service and the development of the more remote suburban districts. Nearly all main thoroughfares must provide for street cars, some also for rapid transit lines, and, further, special provisions may sooner or later be required for electric expresses, jitney busses, trackless trolleys and other demands that are sure to arise in the future.

The use of the main thoroughfares will increase even though rail provision for freight, express and passenger service be greatly improved, as there will always be a large amount of work for vehicles to supplement that of the railroad lines and terminals.

On the occupancy map (Fig. 3) the main thoroughfares of East Boston are shown, the lines of existing approaches and the points of intersection being lettered for convenient reference. For vehicles and pedestrians there are now two municipal ferries from Boston (A and B) and two bridges from Chelsea (C and D), one from

Revere (E) and one from Winthrop (F). At Jeffries Point there is also the railroad ferry from Boston (O) that serves a limited number of local passengers, and (at P) there is a ferry from Boston to Chelsea that does not enter but may affect traffic through East Boston.

In the district there are now several points of main thoroughfare intersections lettered G through N of which G, H, I and K are the most important and have already developed as business centers. Between the sixteen points above mentioned and radiating from them are the main thoroughfares of the existing development upon which must pass much pleasure and passenger travel, local express and delivery business and practically all through travel, and through most of which rapid transit or street car lines must be provided for. Along the main thoroughfares, but especially at their intersections, real estate values are highest as shown on the valuation plan (Fig. 24).

As compared with other parts of Boston the main thoroughfares of East Boston seem well designed, located and developed, but some of the streets will doubtless require widening in the future, and the approaches will need improvement. For such widening and improvements the desired lines should be determined now and restriction lines should be laid down at once to protect the city against unnecessary expense if the streets are to be widened eventually. A wide street has been objected to as a poor business street — excessive width is certainly objectionable; so, too, are congestion of vehicles in the street and congestion of pedestrians on the sidewalk objectionable, while the absence of trees made necessary by the lack of space is in many cases deplorable. The width between curbs for a main thoroughfare to provide for six lines of vehicles should be not less than 54 feet; for eight lines of travel not less than 72 feet. The width of walks on one or both sides of the street may be varied according to requirements from only 4 or 5 feet in the warehouse district to 15 feet or more in the retail shopping district, and not less than 18 feet in the residential district if trees are to be

maintained satisfactorily near the curb. Thus the total width may be reasonably varied where requirements are definitely foreseen to be from 60 feet to over 100 feet, and to even a greater width where special features are planned.

To widen the main thoroughfares by a slow but economical process of establishing setbacks followed by reconstruction where needed will require careful study in each case, careful guarding of public interests, possibly special legislation as a whole or upon particular undertakings and in time a considerable investment of public funds for the public good. The problem of widening the main thoroughfares is confronting every city. Fifth avenue in New York has recently been widened to include a setback that had fortunately been reserved, and that street is now 100 feet wide between buildings, but is none too wide, even though it has no car lines. Commonwealth avenue in Back Bay is 200 feet wide, devoted in part to parkway purposes; Huntington avenue is 100 feet wide and is becoming a very important thoroughfare, in which the entire width is used, but under the present plan is not as efficiently used as it might be.

The established widths of main thoroughfares in other cities is almost everywhere greater than in Boston. In Leipsic, Frankfort and Hanover the standards for local streets are 33 to 47 feet; for secondary thoroughfares 50 to 80 feet, and for main thoroughfares 85 to 118 feet. In Berlin the standards are still wider, 40 to 65 for local streets, 65 to 95 for secondary streets and over 95 for main thoroughfares. In Paris there are to-day over 100 miles of streets more than 90 feet in width. The Royal Commission on London traffic in 1905 recommended the following widths: main avenues, 140 feet; first-class arterial streets, 100 feet; second-class, 80 feet; third-class, 60 feet, and others not less than 40 feet wide.

Provision is made for street widenings in Washington through a well defined building restriction which requires an initial setback on all streets to allow for future change, but, if widening is found unnecessary when the district is built up, that restriction may be abolished at the request

of a majority of the property owners on any street, as it may prove a handicap when the character of the business on that particular street has become such as to require buildings at the street line. In Boston many streets have already been widened and many more must sooner or later be widened at an enormous cost unless plans are adopted at once to require setting back of new buildings to provide for widenings in the future. In many of the streets buildings are now back from the line that could be legally restricted under such a law as that in Washington to protect the local streets and streets that may become main thoroughfares in the future, and on a few streets there are in Boston to-day legal restriction lines. On the main thoroughfares in East Boston there are now many houses back of the street line that should be kept back to provide for future widening.

Of the main thoroughfares indicated on the map, Meridian street between points G, I, J and C; Chelsea and Bennington streets between points G, H, K, M, N and E, and Bennington and Chelsea streets between points I, K, L and D are of primary importance. Border street between I and J and Saratoga between I, K and N are of secondary importance as they now serve as auxiliaries to the nearby main streets. Border street takes heavy teaming on a level grade parallel to Meridian street; Saratoga street between I and K takes vehicles and between K and N takes street cars and some of the heavy teaming as a relief to Bennington street.

The two municipal ferries, started privately in 1833 and 1854 and taken over by the city in 1858, are now run as a burden upon the city, though probably not actually so great a burden as the bridges elsewhere. The total deficit for ferries to date has amounted to over $5,000,000, a portion of which is offset by the present value of the plant. The service is fairly adequate, but the limited facilities for quick transportation and the delays that are inevitable in such a system hamper the development of East Boston and sooner or later the ferry service must be supplemented by a bridge or tunnel.

The present bridges to East Boston over navigable waters are at a low grade and must be opened frequently for passing boats. High bridges to clear all boats would not serve the district, but a height of 40 feet above the city base would clear tugs, lighters and barges, and it is reasonable to suppose that most of the bridges will go up eventually to that elevation.

3.— LOCAL STREETS, ALLEYS, COURTS AND SUB-DIVISIONS OF BLOCKS.

Local streets serve primarily as approaches to the small units of property required for individual buildings and to keep open spaces for light and air and for public protective agencies such as the Police and Fire Departments.

In industrial and business centers the need for local streets, alleys and courts cutting the property into small lots varies much. Where extensive industries occur lots should be large, but in closely built-up residential districts the practical limit for depth of building is relatively small. In the early plan for East Boston many of the lots not bordering on the shore were made about 100 feet square, but larger lots were made between Paris and Chelsea streets and small lots west of Meridian street. In the general plan the inland lots fronted principally upon fairly large streets of a well arranged street system, and the shore front was wisely left to develop to a very considerable depth between the border streets and the harbor line. In recent developments near the Maverick Mills and in the area between the two railroads between Porter and Prescott streets the original system of local streets has been abandoned to allow for the construction of manufacturing plants 300 feet or more between streets.

In the residential districts the original lots of small proportions are in general occupied now as originally intended, but lots in blocks 200 feet or more in depth, however, have been subdivided to meet the requirements of small lot owners, and in such subdivisions many unsatisfactory housing conditions have appeared. Small houses

have been built upon the rear of lots where they are approached only through narrow streets. So long as single family houses remain the paucity of open space for such lots is largely offset by the advantage of having independent family homes in small units; but with the change of ownership and the demand for cheaper housing the small houses are giving way to tenements, and for tenements the open spaces surrounding those rear lots are entirely inadequate.

In various parts of the city where the land is closely built up for residential purposes the evil of the excessive depth of lots and the need for more local streets is apparent. In East Boston local public streets where they now exist seem to be fairly adequate, but sufficient access to certain lands has not been provided and alley houses and buildings on courts have resulted, and the need for more local streets, where now improperly met under private initiative, should be properly met by the city. Conditions so serious as those in the North End will not occur in East Boston, as the distance between reasonably wide streets is nowhere very great, but in certain districts a further subdivision is needed and more public control and usage of the legally required open spaces is to be desired.

There are certain relations between street or alley widths and satisfactory lot depths for densely built-up residence sections that can be definitely determined, the establishment of which by the city will lead to more wholesome housing conditions. In continuous blocks of houses designed for relatively low rentals, buildings can obtain light from front and back only and should therefore be not more than 30 or 40 feet in depth. Back of such buildings for the ordinary heights of less than 50 feet the existing law requires a vacant space of 12 feet. If in addition to this an 8-foot space is added to allow for ells and porches, a total depth of lot of not more than 50 or 60 feet will be required. Where the depth of lot is much greater the lot owner is now forced either to lose the rental of the additional space or else to build other rooms lighted only by alleys, wells or courts.

A lot 60 feet in depth with a 60-foot frontage has an area of 3,600 square feet. Of this lot a house in a block might occupy 2,400 square feet, or 67 per cent of the total. Double tenements 48 feet on the street and 60 feet in depth, similar to those now being built upon Lubec street, can be built on lots having 60 feet frontage and 80 feet depth, with an area of 4,800 square feet, of which the building will cover 2,880 square feet, or 60 per cent of the total area. Blocks of buildings on lots 60 feet deep, as above suggested, need have no windows on inner courts; those on Lubec street

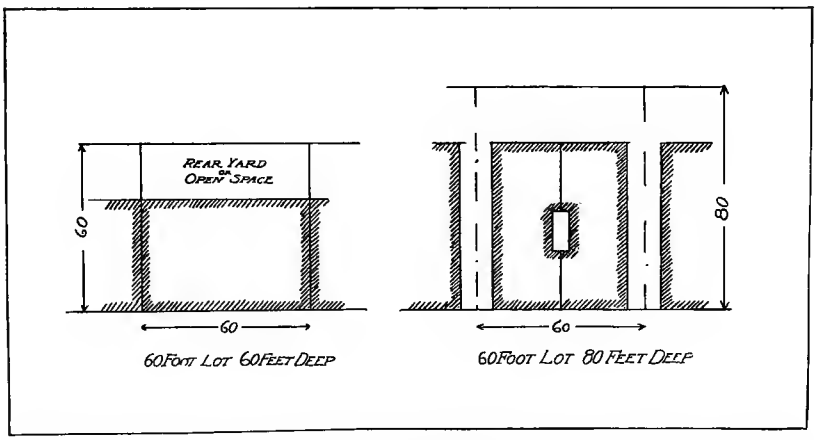

FIG. 4.—DIAGRAM SHOWING TENEMENT HOUSES IN BLOCKS ON LOTS 60 FEET AND 80 FEET IN DEPTH.

have nearly half the windows on 6-foot or 12-foot courts, that may all be reduced to 6 feet, and have side courts to be cared for or to become possible menaces to the city in the future. The buildings referred to are on lots 100 feet in depth with 20 feet extra yard space, that may be and doubtless will be occupied eventually. Lots only 60 feet in depth with continuous blocks of buildings, therefore, might reasonably afford better living conditions than lots of greater depth now permit. Lots 80 or 100 feet in depth with buildings like those on Lubec street do afford reasonable conditions so long as the open space there provided remains open, but are likely to result in seriously undesirable conditions in the future. Lots less than 60 or 80 feet

in depth place a heavy burden upon the city in street maintenance and are likely to result in poor economy if the district later changes to serve for other than residential purposes, unless some of the streets are so designed that they may be closed when the need for them no longer exists. Wherever such intensive use of the land is not required, lots of greater depth are desirable. In planning for such lots it is possible to so subdivide and restrict the land that additional streets can be opened eventually on the rear lines if needed, and so to guard against the danger of repetition of the conditions that have resulted in East Boston and other districts on deep lots not so restricted. Such provision has been considered in the plans of the Roland Park Company of Baltimore.

The present building law requires a space back of tenement buildings which in a block of tenements amounts to 24 feet between buildings not over 50 feet high; 28 feet between 60-foot buildings, 32 feet between 70-foot buildings, and 36 feet between 80-foot buildings, but this space may be reduced to half that amount if industrial buildings fill one side of the open space. This space may be wholly or partly in alley or wholly or partly in private yards, but while vacant it cannot be made a source of great revenue to the owner, and is certain to be encroached upon in any way that can be devised so long as it is privately owned. It has some value as a storage yard and as a clothes yard, but those needs can be met fairly well in basements and on porches and roofs if the yard area is otherwise used. Under public ownership the vacant space could be absolutely protected and it could doubtless be used to serve a real public need if especially designed as a local semi-public space, 24 feet or more in width, accessible from the streets but possibly closed most of the time by gates. Such a space could be so regulated as to be abandoned by the city on the request of a majority of the owners in any block where the need for it has ceased.

Rear alleys have been laid out in very few cases in East Boston. Certain objections have been made to rear alleys in general, but the absence of them results in other objec-

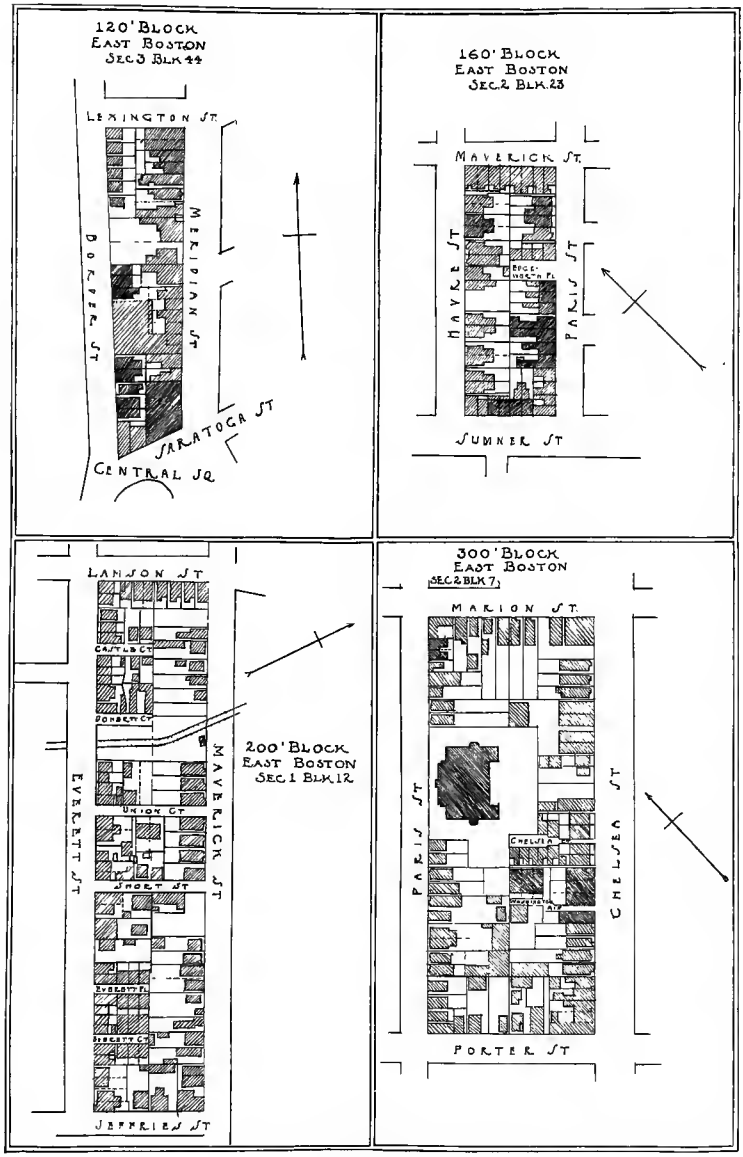

FIG. 5.—PLANS OF EXISTING BLOCKS 120, 160, 200 AND 300 FEET BETWEEN STREETS, SHOWING PREVALENCE OF REAR LOTS IN THE DEEPER BLOCKS.

tions which in a closely built-up section probably outweigh any argument against them. If alleys should be cut through the blocks already built up, certain valuable properties on the ends of blocks on the side streets would be destroyed, but the alley openings would afford access for light and air and for fire and police protection to the rear of blocks where such openings are needed. Under suitable building restrictions alleys so laid out can be designed to be opened later to form local streets if needed.

In order to compare the development of lots of various depths, typical blocks in East Boston have been studied. The 120-foot block (Fig. 5) shows few objectionable features other than that some structures do not appear to meet the present building requirements. The 160-foot block (Fig. 5) shows only one court and for that there is no apparent reason as the buildings are on a square lot that would have given equally good frontage on the street, and in this block, except where the open space does not meet present requirements, the interior conditions appear to be satisfactory. The 200-foot block (Fig. 5) shows a very unfortunate condition as it appears that lots 100 feet square were cut up into rows of very small lots, fronting on narrow courts. The condition of this particular block is interesting as it is an example of a situation that has not been really bad in the past; the houses are small and are largely occupied by owners, each in a family unit, who are reported to be living under conditions morally and physically good. The tendency of the block as it changes, however, is not so fortunate, for the old buildings crowded together are being altered to contain two or more families each and the lack of sufficient open space is becoming a menace.

The 250-foot block (Fig. 6) shows a development similar to that above with even worse congestion as a result of greater depth. Relief for crowding is needed, except at the northeast corner where a school exists with open yard space. In this block it would be possible to open a new special local street as shown in the study for same (Fig. 6). A street 30 or 40 feet in width could be opened across the

rear of the south row of lots on land now partly vacant, to afford an outlet to the three small courts and a suitable widening for Cottage place and to retain a reasonably large area of open space where it is much needed. This opening if made could be treated as a private court for the adjacent buildings, with gates at each end and with teaming access

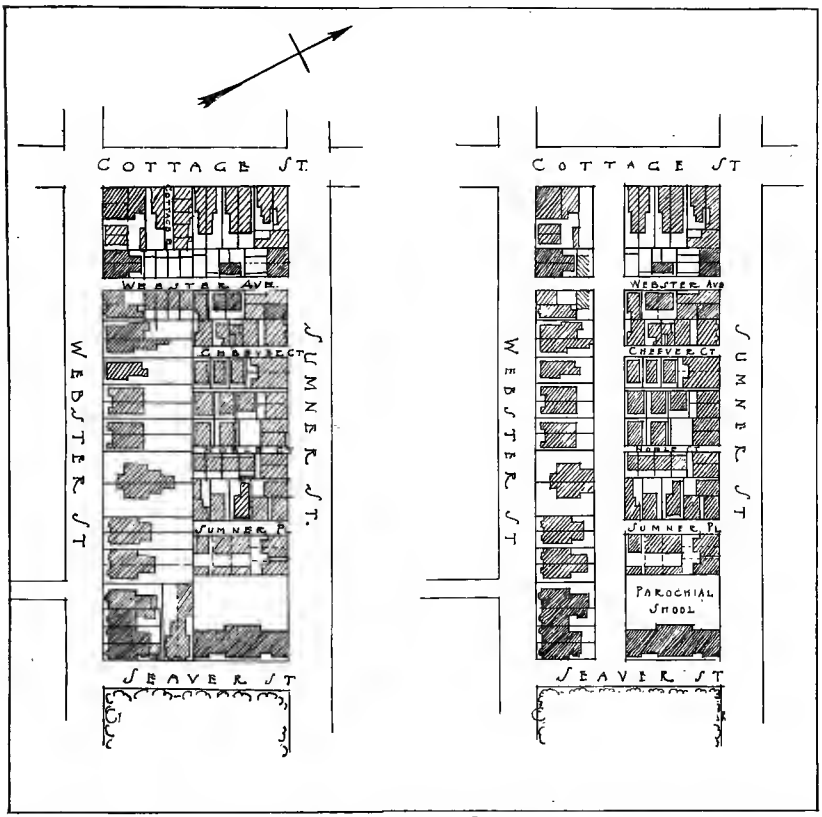

FIG. 6.—PLAN OF EXISTING BLOCK 250 FEET BETWEEN STREETS, SHOWING LARGE NUMBER OF REAR LOTS, AND SHOWING SUGGESTION FOR IMPROVEMENT.

permitted only when required for local purposes, and so could be made of use to the community as a neighborhood open space.

The 300-foot block (Fig. 5) bids fair to result in conditions even worse, for, though not entirely built up, it contains a number of rear lots and a number of rear build-

ings not properly related to any streets. This block is somewhat relieved by the presence of a large public school yard, but further opening is needed.

In the older residential sections of East Boston there are now large blocks with courts or alleys and rear houses as shown in the following table:

JEFFRIES POINT AND HILL.

DEPTH OF BLOCKS.	Number of Blocks.	Number of Courts or Alleys.	Number of Rear Houses.	Average Number of Rear Houses.
200 feet.....	9	15	65	7
240 feet.....	3	9	85	28
250 feet.....	2	4	26	13

NORTH FERRY, THE "FLATS" AND EAGLE HILL.

DEPTH OF BLOCKS.	Number of Blocks.	Number of Courts or Alleys.	Number of Rear Houses.	Average Number of Rear Houses.
150 feet.....	21	13	12	1
175 feet.....	10	.....	.....	.....
200 feet.....	29	21	81	3
250 feet.....	2	3	10	5
300 feet.....	2	12	66	33

From this it is evident that the interior conditions of the large blocks are not the best for housing in wholesome surroundings. Practically all the nine blocks 240 feet or more in depth should be opened either by longitudinal or by cross roads, whichever plan will best suit in each case.

In the laying out of new streets of purely local interest the practical width has been established in a number of towns and cities by the adoption of a requirement of not less than 40 feet, with the result that nearly all streets are made uniformly of that width. For square foot economy and engineering simplicity straight streets and rectangular lots are usually laid out, and unless well designed plans are made for other systems the present custom may

serve best, but far more interesting and convenient local sections could be made if the plan were designed with a view to producing easy lines of access, interesting open spaces, prominent sites for some buildings, narrow passes in places, and other local variations. Such freedom has produced the attractive garden suburbs in England and in this country and the interesting neighborhoods of many German cities, and such variations where not unfortunately accentuated have given to old Boston much of its charm and to Washington its excellent lines for diagonal traffic.

FIG. 7.— WORDSWORTH STREET, FROM SARATOGA STREET, LOOKING NORTH. Roadway little used; street treeless and desolate.

A 40-foot street with tall buildings does not afford space enough for street trees to grow and develop properly. If trees are desired there, either a 10-foot setback should be required or the design of side lines and street intersections should be modified to provide planting spaces. The opportunity for trees can be increased also by modifying the construction details in many of the local streets to narrow the roadway and to increase the walk and tree space. To reduce the cost of construction and maintenance to the city the details of the local streets can well be modified in many cases to provide narrower roadways and perhaps to

omit the curbings. The possible variation in type of the local street details is well illustrated in the much quoted case of Highland avenue, Somerville, where the curbs have been omitted and the road is narrow to allow ample space for trees and shrubs, with a resultant increase in rental values and a positive reduction in the cost of construction, as well as a local charm as shown in Fig. 8.

Some local street now 40 feet wide should be restricted to include existing setbacks in order to provide for widening in the future or to protect existing buildings and trees

FIG. 8.— HIGHLAND AVENUE, SOMERVILLE.

With trees and shrubs instead of curbstone. Planting cost less than a curb would have cost. The houses rent for 50 per cent more than those on the next street where there is no planting.

from the gradual process of piecemeal encroachment which will otherwise take place and will operate for a long period of years in a way that produces very ugly conditions and seriously detracts from the charm of an otherwise good residential street. Such restrictions if forced upon the property owners by the city would doubtless be opposed by them and would be costly to enforce, but if public interest can be stimulated sufficiently to demand the restrictions for the good of the community the cost to the city should be little if anything and the easements so taken should be offset by the benefits to the properties.

The orientation of streets in a residential district is important. A north to south street gives best sunlight on all lots, an east to west street with open back yards gives direct noonday sunlight for all houses, but cold snowy entrances in winter to front doors that face the north, while a northeasterly to southwesterly street is better for the prevailing southwest breezes in summer and is more protected from northwest storms in winter and probably is the best for residential purposes.

4.— FREIGHT TRANSPORTATION FACILITIES, RAILROAD AND WATERWAY LINES AND TERMINALS.

East Boston is an important railroad and waterway terminal. The west shore along the Mystic and Chelsea rivers is occupied in relatively small holdings by industries requiring but little railroad service, in part small factories or industries, such as ship building and repairing, and headquarters for construction and dredging plants dependent on water transportation or local teaming, and in part coal, lumber and storage wharves for supplies brought in by water to be delivered by teams. The south shore, along the main ship channel, is occupied in larger holdings, chiefly for the interchange and storage of materials between the rail and water transportation lines. At the large piers transatlantic steamship lines find excellent accommodations and have served to develop an important business.

A small amount of freight and express is handled over the Boston, Revere Beach & Lynn Railroad, which is a narrow gauge road and necessarily limited in freight operations. A new railroad company, the East Boston Terminal Company, takes cars from the Boston & Albany to the factories in the region known as the "Dump" and has been designed for further extension eastward to Breed's Island, and to encircle that island to develop the flats for factory purposes. The principal railroad, however, is the Boston & Albany, or Grand Junction, which has freight yards in the heart of the district, but those yards are of limited capacity and the freight connections to the piers are

not well situated for efficient train work. The Boston & Maine has withdrawn from the near section of the city. It still serves the region north of the Chelsea Street Bridge, but it now delivers freight for most of East Boston at the Chelsea freight yard, from which it must be moved by teams.

Plans for a belt line railroad along Condor and Border streets have been seriously considered, but the cost of widening streets and eliminating grade crossings for street car lines at Meridian and Chelsea streets and at the two ferries has been considered too great to warrant so large an undertaking, the returns from which would necessarily be somewhat limited because of the relatively small area of waterfront property to be reached and the limited need for a railroad by the industries now operating on the properties.

The railroad and waterfront question is chiefly one of terminals, and as similar problems are to be found in every part of Greater Boston, they have already led to the study of many plans for a single great metropolitan system of terminal development, one of which was reported on at length by Mr. George R. Wadsworth and one by Mr. Desmond FitzGerald, in the 1909 report of the Metropolitan Improvements Commission. (See plan, Fig. 27.) The need for further railroad development in East Boston is fully appreciated, and of the many plans already under consideration some will doubtless be carried out. The need for further improvement on the waterfront is also fully realized and some plan for extension will be carried out there also, probably by gradual steps and possibly in an inefficient way.

Upon the efficiency, extent and completeness of the development of the waterfront and of the terminal facilities of Boston as a whole and of East Boston as an important section must depend largely the extent of the increase in importance of the entire city. The fact is now well established that the development of the waterfront through private enterprise in small units can never produce the maximum values to the community, and that public owner-

ship with wholesale development by a large public or private corporation would serve the city far better. Such development has been established in the great European and in some American ports. New York City now owns most of its waterfront; Philadelphia and Baltimore have begun to acquire frontage, and in Boston a start has been made toward state ownership and control of the terminal lands and transportation facilities, but as yet the work has not been made comprehensive enough to meet the problems involved.

The present situation in Boston of partial state control in the ownership of a few of the terminal piers and railroad yards and of a policy not yet defined as to how far the state may go in the future is unfortunate, as it must necessarily discourage investments of private funds in undertakings of which the value may at any time be lessened by a change in policy on the part of the state. It seems incumbent upon the state, therefore, to determine at once how far it will go in the development of the terminals and to establish a satisfactory limit for public activities beyond which private investment can be encouraged.

The fact that under prevailing customs terminal properties outside New York City provided to meet the transatlantic liners cannot be made to pay the cost of ownership and operation and that in Boston these facilities are now provided at a loss, in part by the railroads and in part by the state, involves complications that seriously interfere with progress. The provision of such piers under private initiative is not increasing materially, as the only large investment recently so made, that of the Cunard Docks in East Boston, was made not through initiative as such but because, under the contracts then existing, the railroad was required to make the investment, even though at a possible loss to the company. The reason for terminal holdings by the railroads to-day is far reaching, and the justification for holding nonproductive property in the past has been based upon indirect advantages to the roads as a whole, but with the increase of state intervention through railroad regulation undue advantages have come

to certain roads and disadvantages to others, with the prospect of ultimate loss to all, since the possibility of gaining great profit through advantageous control of the terminals has been very materially reduced.

The railroad and steamship lines, as common carriers outside the city, have relatively simple problems that could doubtless be handled much better if entirely divorced from the terminal problem, while the terminals as a whole could be independent and should be under one management. If the importance of terminal business warrants the present high valuation of rail and waterfront properties, with the prediction of further increases in those values, and if there are possibilities of still greater increase in value through broader developments, improved means of intercommunication, and the extension over larger areas, there is ample reason to justify the state or city in taking possession of those properties and in developing them in the most thorough manner. To finance and to regulate such an undertaking, some definite method of comprehensive development can be devised through which the problem of serving state-wide requirements will be met. It seems to be generally agreed that these requirements can be most satisfactorily attained through state ownership, with corporate development, subject to a well-devised policy of state control. If the high and increasing valuation of the terminal properties as a whole is now carried by the annual returns, such an undertaking, if skillfully administered, can doubtless be made self-supporting, and the greater value of some of the properties can be made to offset the low value of others less productive.

If the waterfront and terminal development is to be undertaken in a broad, comprehensive way, the present plan and present requirements in East Boston will be very materially affected, and if a large and complete plan for terminal development is devised and adopted, the city will be called upon, in the near future, to plan and to provide for public development to meet the changed conditions. A plan for East Boston waterfront development, with provision for a railway terminal, has just been presented by

the Port Directors which is comprehensive enough to provide ample terminal facilities for East Boston as referred to in detail in Part II., Section 1 (page 80), and this plan has been considered in the preparation of the recommendations herein presented.

5.— PASSENGER LINES AND TERMINALS.

RAPID TRANSIT LINES AND PASSENGER RAILROADS, FERRIES AND LOCAL STREET CARS.

Passengers now enter East Boston from Boston, Chelsea, Revere and Winthrop through the rapid transit tunnel, over the two city ferries, over the Boston, Revere Beach & Lynn Ferry and Railroad and over the four highway bridges. Of these lines, the Boston, Revere Beach & Lynn Railroad carried in 1913 the greatest number of persons,— nearly twenty million,— most of whom crossed to or from the city proper. The rapid transit tunnel carried nearly as many in 1914,— seventeen million for the year,— while the city ferries carry about six million a year to and from Boston. Together they carried about forty-three million passengers, or an average of nearly 120,000 per day. In addition to these there were a large number of persons passing between Chelsea and Boston through Charlestown who would use a rapid transit line if there were one through East Boston.

The car service is at present much congested in the tunnel, but it will soon be relieved by the terminal improvements now being made in Boston. The present burden in the tunnel of 44,000 per day is much less than that of the new Boylston Street Subway, where 55,000 a day are carried without serious crowdings, and 65,000 a day now pass in and out of the portal at Arlington street over two tracks. The full capacity of the tunnel may be required eventually, and it can be reached if approaches are improved and if trains or trailers are run. The number of cars per hour outbound through the tunnel during the rush hours was shown September 4, 1913, to be seventy-three (a little over one a minute), while 177 left the Boylston street

entrance (about three cars a minute). The large cars now seat about fifty passengers and can carry fifty more standing, and may average ninety passengers each in a rush. At the rate of three a minute such cars would carry 16,000 passengers an hour, or several times the present burden. Six-car trains, similar to those run on Washington street, carrying 120 passengers each, are easily run on three-minute time (and have been put through every one and one-half or two minutes), and so will carry 15,000 to 20,000 passengers per hour — possibly a total of 150,000 per day, or a total greater than that now carried to and from the city by the ferries, the tunnel and the Boston, Revere Beach & Lynn Railroad combined, from which fact it may be concluded that the present tunnel is sufficient not only to meet the present needs, but also to do a much greater service. The present outlet at Maverick square causes considerable congestion, and while it may be made to serve for some years yet, it must eventually be relieved by subway extensions in East Boston. Subway extension should eventually go under Central square toward Chelsea or out toward Orient Heights, or both.

If the present tunnel is extended both to Chelsea and to Orient Heights it may be fairly questioned whether the two tracks can be made to serve for all who may wish to travel in a rush hour or on a popular holiday at Revere, but if a teaming tunnel is built and if some of the ferries continue, a part of the rush can doubtless be diverted, and until the tunnel has been used to its full capacity, the city should not spend or encourage others to spend large sums for establishing parallel rapid transit lines.

The Boston, Revere Beach & Lynn Railroad now serves a large district beyond the city and a part only of its passengers are going to or from East Boston. It is primarily a through line, and while very attractive as a pleasure road and convenient for a large number of persons it is not a satisfactory unit in the rapid transit system. Unless it is extended and revised to form a part of this it is destined to be supplemented or possibly eventually

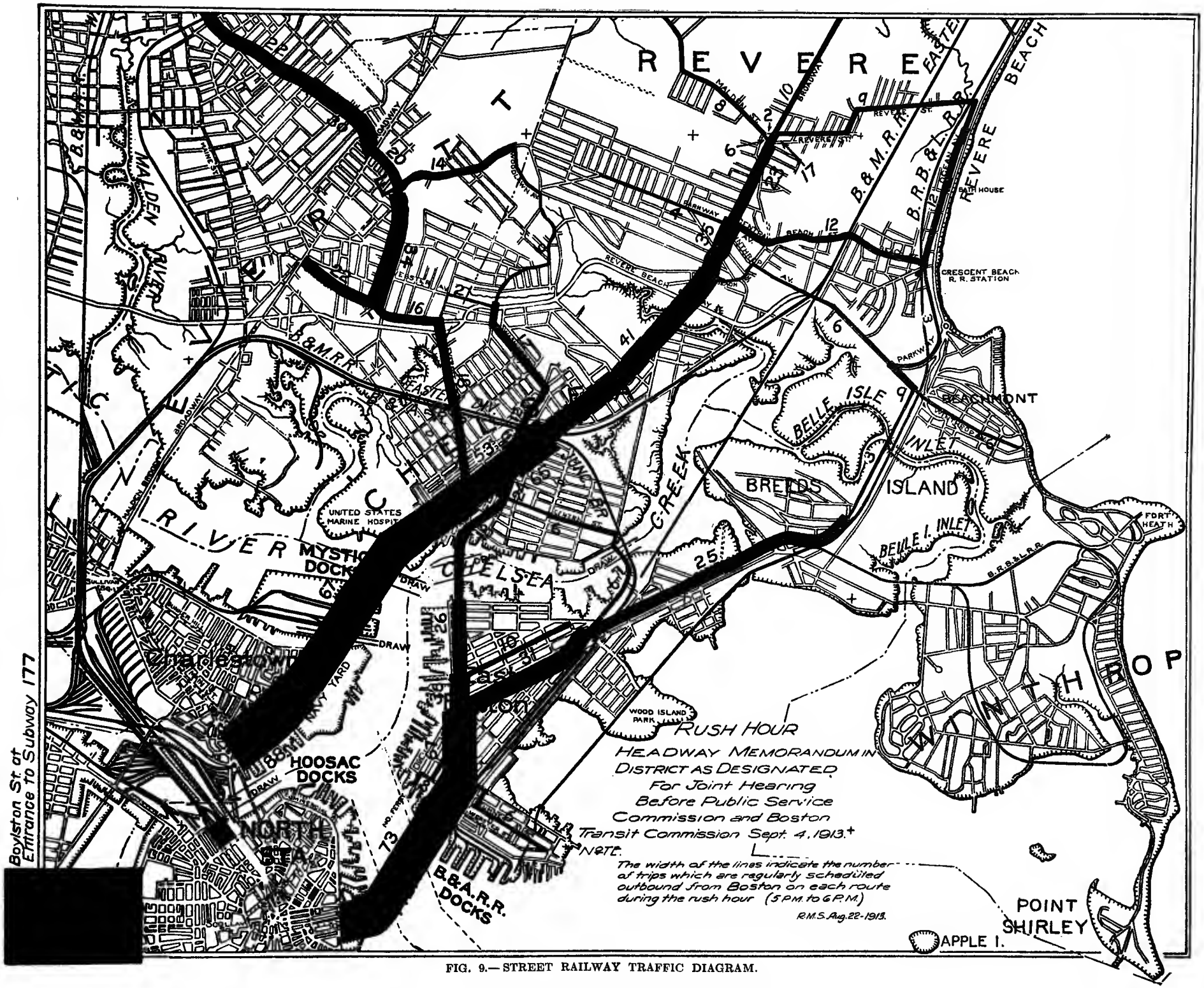

FIG. 9.—STREET RAILWAY TRAFFIC DIAGRAM.

superseded by a unit of the rapid transit system. By proper changes it could be connected with the present system and made a highly efficient rapid transit unit. The Boston & Eastern, a proposed line from Post Office square through East Boston toward Lynn, now has a good plan, but it is not yet begun and may never be built, as the present travel will hardly warrant a new tunnel and an expensive private line in competition with the city-owned tunnel.

Of the street car lines entering and crossing East Boston the number per hour on September 4, 1913, are shown on a diagram (Fig. 9) that was published in the report of the joint hearing before the Public Service Commission and the Boston Transit Commission, September 4, 1913. The diagram shows a relatively large service through Chelsea and Charlestown to Scollay square, nearly all of which passes through the center of Chelsea. The two present connections between Chelsea and Boston are neither of them very satisfactory and a new tunnel has been considered, as reported on December 22, 1913, by the chief engineer to the Boston Transit Commission with an estimate of cost of $6,700,000. (Twentieth annual report.) It is possible that the rapid transit system through East Boston can be revised and extended to give better service there, and also to relieve the situation in Chelsea at the same time. Such a change will involve a solution of the present difficulties between the Boston Elevated Railway Company and the Bay State Street Railway, but such a solution must be and will be found eventually for the good of all concerned.

The city ferries are important as passenger lines. They carry about 6,000,000 passengers a year, or an average of 16,500 per day. They perform an important service as a bridge between East Boston and the heart of the city and serve to carry a large number of persons over an attractive route at a fare of only one cent each way, and for such purposes they will probably continue to be required so long as the interests of many pedestrians continue to be

found near the terminals. Some change in routing, however, may prove desirable as suggested in connection with Central square (Part II., Section 9, page 103).

The problem of providing efficient passenger service in such a relatively small district is much complicated by the variety of existing conveniences, so that with the city bridges, the Boston Elevated Railway system, the Boston, Revere Beach & Lynn Railroad, the Bay State Street Railway, the city rapid transit tunnel and the city ferries, and with a possibility of the Boston & Eastern Railway, and the development of jitney busses or other new services, it is surprising that the present service is as good as it is, but for the benefit of the public a more concentrated system of control must be effected if still greater efficiency is to be attained.

6.—SANITATION AND FIRE AND POLICE PROTECTION.

In the planning for the city much consideration must be given to the methods, systems and cost of sanitary and protective services.

In East Boston the water and sewerage systems are well installed, rubbish and garbage are cared for by the city and fire and police protection are provided, and additions and extensions are made from time to time as needed. The plan of the district is such that no serious obstacles appear to require special consideration, and aside from possible means for decreasing the annual cost of maintenance and for increasing the efficiency and completeness of the systems there is little as to their effect in the city plan that need be commented upon here.

The smoke nuisance in East Boston, as in other sections of the city, is now regulated by the Board of Health, but the smoke is still a menace to the residential districts, especially from the railroad locomotives. The damage to property by smoke is twofold: It tends to reduce the value of a residential community by producing unwholesome and unpleasant living conditions, and it means

destruction to all kinds of materials through the action of acids carried by the tar-bearing soot. The University of Pittsburgh in an exhaustive study has recently determined that the fuel waste in Pittsburgh amounts to over 20 per cent of the value of the coal used and involves also a waste of valuable acids in the soot and tar of the smoke — acids which in part adhere to the soot and tar and later cause great damage as they fall or are washed down from the

FIG. 10.— FIRE HAZARD MAP.

Compiled from records of the Boston Board of Fire Underwriters, showing the approximate rates of insurance required by them for the various buildings in East Boston, which show definitely the sources of greatest fire danger in the opinion of business experts. The rates range from one-half per cent in the light areas to as high as 6 per cent in the darkest spots.

air. In London the annual fall of soot is estimated to be 426 tons to the square mile. The smoke and soot adhere to everything, glued on by the tar, and the acids brought into contact with metal, stone, wood and clothing attack them all. If breathed in large quantities smoke causes serious slow poisoning and general loss of vitality. Relatively little soft coal is used in Boston and the smoke nuisance is not so great as in Pittsburgh or London, but any possible further reduction in smoke will be beneficial.

While a great fire protection system is maintained by the city at a very considerable cost, East Boston is in danger of having a serious conflagration like that of Chelsea or Salem, because of the prevalence of waterfront industries involving the storage of great quantities of highly combustible materials and especially because of the prevalence of so large a proportion of wooden buildings, erected before the building laws were made as strict as they now are. This danger is greatly increased also, especially the danger to life, through the existence of so many small industries and fire hazards throughout the residential districts as shown on the fire hazard map (Fig. 10). This latter risk could and should be reduced by a more strict segregation of the sources of greatest risk.

The troubles that now face the police in juvenile lawlessness can doubtless be materially lessened if the city will provide a more satisfactory outlet for juvenile energy, in more park or playground space in the more densely occupied district where such space is now conspicuously lacking. (See plan, Fig. 11.)

7.— RECREATIONAL, EDUCATIONAL AND AMUSEMENT PROPERTIES AND OPEN SPACES.

PUBLICLY OWNED BUILDINGS AND OPEN SPACES, PARKS, PLAYGROUNDS, SCHOOLS, SPECIAL STREETS, RECREATION PIERS, GYMNASIA, BATHS; ALSO PRIVATELY OWNED SCHOOLS, CHURCHES, THEATERS, CLUBS.

The city now maintains in East Boston a number of public open spaces, most of which are controlled by the Park and Recreation Department, and are as follows:

Large Parks.

Governor's Island, owned by United States . . .	73 acres	
Wood Island Park . . .	55.60 acres land	
	155.40 acres flats	
		284.00 acres

Public Squares.

Belmont	0.69 acres	
Central	0.92 acres	
Maverick	0.10 acres	
Prescott	0.28 acres	
Putnam	0.27 acres	
		2.26 acres

*Playgrounds.**

Cottage street, near Maverick street	3.85 acres	
Orient Heights	8.31 acres	
Paris Street	1.27 acres	
		13.43 acres

City Land.

(That may also be used eventually for park purposes.)

Apple Island †	9.50 acres	
East Boston Reservoir	5.09 acres	
		14.59 acres
		314.28 acres

Of this total of 314 acres only a little more than 68 acres is now available for use and this amounts to a little less than $4\frac{1}{2}$ per cent of the present land area, or a relatively small proportion to meet the various park and playground requirements of the district.

Of these areas Wood Island Park serves for large gatherings and day's outings for the entire community, and serves effectually also as a local playground for those persons living within easy walking distance — not over one-quarter mile for elderly people and small children, those most in need of access to small parks. The other playgrounds serve as local outing places for persons living nearby, but are limited in area, and most of them cannot be expected to satisfy all the people that will eventually live within a radius of one-quarter mile of each playground upon an area of approximately 100 acres, if that population must depend wholly upon those areas for its daily recreation.

* Wood Island Park Playground, included in park, 10 acres.

† Near to but not yet a part of East Boston.

There were in 1910 about 29,000 people living in Ward 2, on an area of 357 acres of land, much of which is devoted to commercial and industrial purposes, an average of eighty-one persons to the acre, of whom nearly 6,000 were between the ages of five and fourteen years. In the ward there are now 6.83 acres of park or playground space, or an average of less than 2 per cent of the area. The number of persons is increasing and will doubtless continue to increase, while

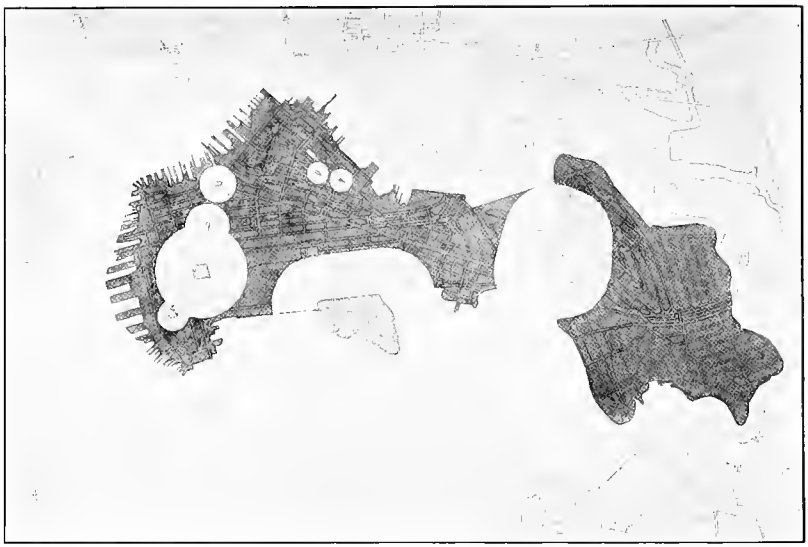

FIG. 11.—PARK SERVICE DIAGRAM.

Showing park areas or playgrounds, and the adjacent areas for which they may be considered to serve the local requirements, and showing in black the large areas for which there is no adequate public open space within reasonable walking distance. Figured on the assumption that no house should be more than a quarter of a mile from the nearest public open space, and that no public open space will serve adequately for an area of which it occupies less than 5 per cent.

the possibility of acquiring more space for their use, except at enormous cost, will become less.

There are in addition to the areas above enumerated, private and public school yards and the public streets in which some provision for recreation can be made, but these possibilities also are limited and will tend to decrease as buildings are extended over larger sections of the school yards and as the streets become more used for traffic purposes.

Just how much of the area in a residential section can reasonably be set aside for public recreation uses is a question. The Special Park Commission upon a Metropolitan Park system for Chicago, in their report of December, 1904, recommended that no dwelling should be more than half a mile from grounds adapted to serve local purposes, and that an area of twenty acres (as large as can be reasonably set aside in one tract without seriously interfering with traffic) will afford far greater returns for the annual cost of maintenance than a tract of less area. Upon this basis Chicago has developed the most complete system of small parks yet provided by any city, upon a large number of areas ranging, because of local conditions, from 6 to 80 acres each.

The Chicago system provides for many community interests not now considered in the small parks in Boston, but fairly well provided for in other ways, and real estate conditions in Boston are so different from those in Chicago that such a basis cannot be applied in just the same way here. The equipment of buildings and the supervision in Boston small parks is of a less costly type than in Chicago, so the need for concentration is not so great here, and it seems fair to assume that a further distribution of areas in smaller units would serve even better, especially if restrictions are placed upon the smaller areas against the rough games such as ball games that occupy relatively large areas for the good of but a few players, and if those games and general gatherings be provided for in a few large parks. On such a basis five-acre tracts within one-fourth of a mile of every house, that is, in the center of each hundred-acre section, would mean a devotion of 5 per cent of the city's area to local parks. On this basis Ward 2, with an area of about 357 acres, should have eventually at least 18 acres of small parks devoted to purely local needs, far more space than is now so set aside. This proposed area might be somewhat reduced because of the fact that a large portion of the ward will not be used for residences, but if extensive industries are developed, requiring a large number of employees, they, too, should be reckoned in an estimate

of the open spaces required for the real good of the district. The areas effectively served by existing park spaces figured on this basis are shown on the plan (Fig. 11), from which it appears that there is still a large area of East Boston in which further reservations should be made, and for which the existing need is only too well proven by the large amount of juvenile lawlessness now reported in the hill district.

The city also maintains sixteen school buildings, each with some open ground that is now used by the children, of which the areas are approximately as shown on page 37.

There is also one vacant lot of 44,877 square feet in the Samuel Adams School District, numbered 1, but the future of this lot has not yet been determined, and there are playgrounds in the first, second and seventh districts as listed on page 37, which supplement in part the need for school grounds, but from the figures it is evident that the distribution of open spaces is not equal and that the proportion of open space in districts numbered 3 and 4 where there are no parks or playgrounds is far less than in some of the others.

The relation of open spaces to children in the schools is shown more clearly on the plan (Fig. 12), on which the solid line circle in each district represents the present area of school yards, and the dashed circle shows the amount of space required to furnish 50 square feet for each child. In the blackened circles the inner edge represents the present area, the outer edge the area required, and the black band represents the additional space needed to provide 50 square feet for each child. Whether 50 square feet of total yard space per child is enough to furnish adequate healthful exercise is a question, especially as some portions of that space are frequently used for other purposes and are not accessible to the children. A space of 30 square feet per child of *usable playground* at each school has been established in crowded London as the minimum practicable allowance, but that amount is not considered adequate.

The number and size of school buildings required is largely a question of educational administration and efficiency and

PUBLIC SCHOOLS IN EAST BOSTON FOR GRADE AND KINDERGARTEN CHILDREN.

DISTRICT.	Name of Building.	Rooms.	Halls.	Portable Buildings.	Lot Area in Square Feet.	Lot Area Not Built Over. Approximate Number of Square Feet.	Average Number of Children in 1913.	Square Feet Area of Vacant Lot.	Square Feet of Vacant Lot per Child.
1. Samuel Adams	Samuel Adams	16	1	.....	40,680	29,500	2,291	63,000	27.50
	Commodore Barry	13	1	.....	21,000	21,000			
	Plummer	16	.....	4	35,073	20,500			
2. Theodore Lyman	Theodore Lyman	15	1	.....	26,200	16,200	1,123	30,200	26.89
	Cudworth	11	.....	2	25,000	14,000			
3. Ulysses S. Grant	Ulysses S. Grant	18	1	.....	43,903	32,000	1,360	46,500	34.20
	James Otis	12	.....	3	26,000	14,500			
4. Chapman	Chapman	17	1	4	29,150	12,000	1,265	19,000	15.00
	Tappan	8	.....	.....	11,500	7,000			
5. Emerson	Emerson	16	1	2	39,952	25,500	1,271	55,500	43.60
	Noble	8	.....	2	17,500	9,500			
	Emerson District	12	.....	.....	28,558	20,500			
6. John Cheverus	John Cheverus	16	1	.....	53,986	40,500	694	47,500	68.40
	Paul Jones	10	.....	.....	17,500	7,000			
7. Blackinton	Blackinton	18	1	3	58,768	34,000	635	34,000	53.70
Total Grade and Kindergarten,	.....	.....	.....	.....	.....	.....	8,639	295,700	34.23
Also High School	High School	22	2	.....	26,000	14,500	688	14,500	21.00

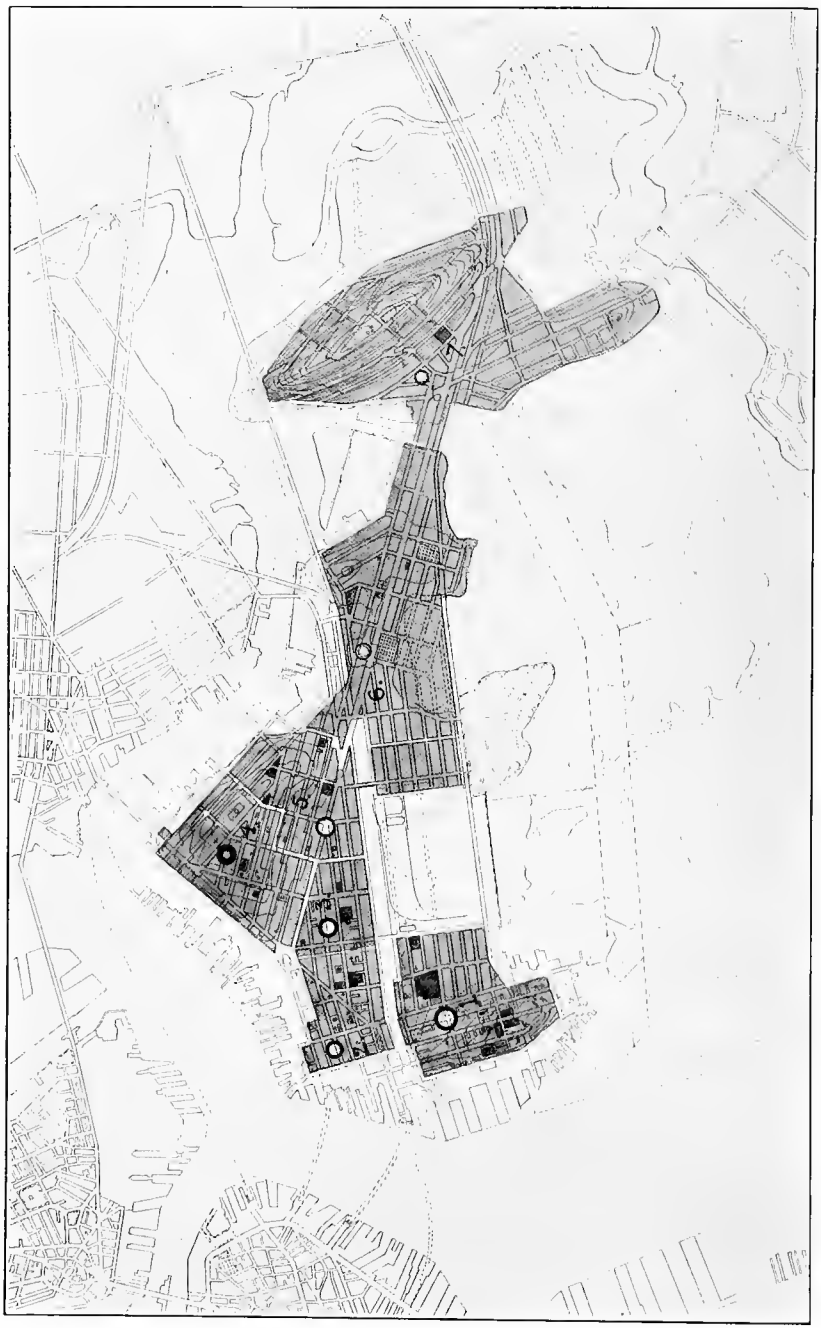

FIG. 12.—GRADE SCHOOL GROUND AREAS.

Diagram showing districts of grade and kindergarten schools and showing in circles the approximate areas of space now provided and space that should be provided if each child now in school be allowed 50 square feet of space outside the building. Light center represents space now available; black bands in 1, 2, 3, 4 and 5 additional area needed; dotted lines in 6 and 7 represent excess over present requirements.

has little bearing on the city plan. The location of school buildings and school centers, however, has been urged as a factor in the plan, and arguments are frequently presented for the selection of monumental sites for the great buildings that are now erected for schools.

Monumental sites on local streets where available are to be desired for such buildings, but sites on the main thoroughfare are not, because the school should be away from noises and dangers and should be on land of relatively low value where a large open space can reasonably be set aside for recreation.

Still further use of school buildings and yards during a greater portion of the twenty-four hours for the benefit of the community is to be desired and will doubtless develop, and a closer relationship also between school yards and the public playgrounds is to be desired.

In addition to the public schools there are in East Boston a number of private schools, but facts have not been collected as to conditions there. The total number of children in East Boston over five and under fifteen years of age was reported September 1, 1913, to be

In public schools	8,315 =	65 per cent
In private schools	3,053 =	24 per cent
Not in school . .	1,464 =	11 per cent
Total . .	12,832 =	100 per cent

from which it appears that only two-thirds of the total number attend the public schools.

With many miles of waterfront East Boston now has but one public reservation on the water — at Wood Island Park, which is large and useful, but is rather remote from the mass of the people. Other reservations and better means of access to the existing park are needed, and there are several sections of the waterfront not yet fully occupied that could be made useful for public purposes, as beaches and recreation piers.

To provide recreation space for the children the city now designates certain streets in East Boston to be reserved

for coasting in winter and could well extend the custom, as is done in New York, to provide for play in summer, and might well go further to reconstruct some streets for recreational uses as suggested in Part II for Paris street (Section 19, page 110).

Excellent establishments are maintained in East Boston for bathing; one for all the year at the bath and gymnasium building on Paris street, and three for salt water bathing in summer, in Wood Island Park and in each of the floating baths at Border street and Jeffries Point. Permanent bathing beaches or pools should and no doubt will in time take the place of the floating baths.

As in other communities there are in East Boston many societies and private and commercial organizations that hold property for recreation and amusement for limited numbers of the people, but as most of these are temporary in character and limited in scope, they have relatively little bearing on the city plan.

As city churches are supposed to be monumental in character, and as some are intended to serve as social centers, they should be located on monumental sites and should bear some relation to the city plan; unfortunately in most cases they do not, while most of those that do are likely to give way in time to commercial interests. With the changes that follow urban growth it frequently occurs that a church holds property of relatively great value that is not used to its full capacity, a part of which at least could be made of greater service to the people for social and recreational purposes.

The clubs, societies, saloons, theaters and other gathering places are scattered where chance sites or good trade can be found and may be moved or abandoned at any time. Cemeteries, of which there are two in East Boston, form valuable open spaces for light and air and possible vegetation to break the monotony of the buildings, but under the present system of crowding in heterogeneous collections of memorial stones, they do not tend toward beauty and are hardly available except as burial places.

8.—HOUSING CONDITIONS.

BUILDING CODE, LOCAL HOUSING CONDITIONS, SINGLE AND TWO FAMILY RESIDENCES, THREE-DECKERS AND TENEMENTS.

Population in East Boston has been attracted in part at least by the facts that rents so near the heart of the city are relatively low, buildings are fairly sunny and open, and garden spots are still available in many sections. With the increase in population the gardens are gradually being built over, the exposure to light, air and sunshine is reduced, families are more and more crowded, and much of the attraction is destroyed. This building over of privately owned open spaces will probably continue until all areas available under the building laws are covered and until the population is as dense in the built-up area as the law will allow, and probably more, because experience has shown that through the ever-active personal interests of individual owners, conditions gradually develop that are worse than the law was intended to permit, while the objectionable conditions so established are not easily remedied later.

To protect the residents against injurious conditions the city has recourse to two agencies: First and most effective, the actual taking over of certain areas for public ownership, as street alleys, playgrounds and park areas, and second, the passage of laws regulating the design, construction and control of privately owned buildings, and the percentage of the total area of land that may be built upon.

Much difficulty has arisen and will continue to arise through the effort to compel open spaces on privately owned property. When these areas are by chance roofed over they do produce much greater revenue to the owner, and he is therefore loath to remove the buildings and so lose the revenue. To meet this difficulty methods have been suggested for extending public ownership over all area that should be held vacant. Under such a plan of ownership the areas that are not required for public streets could be used for playgrounds and local outing places for the residents by whom they are much needed.

The unwholesome conditions attendant on life in crowded tenements can be reduced by decentralization, but the possibility of this depends upon the relative advantages of the suburbs as contrasted with those of the central districts, and if plans for decentralization are to be successful, advantages must be proven to be in favor of the rural district, and opportunities for gaining a livelihood as well as for wholesome and agreeable living conditions must be evident.

The man of limited means, with a family, has certain requirements that must be met in satisfactory housing plans. He wants to be near to or in the midst of the advantages and attractions of the city. He wants all the benefits of a finished street; he wants to be near his place of employment. The fact that other members of his family must find employment also makes it desirable that his residence should be in a district of varied and multiple activities. Therefore he is likely to choose the "downtown" district unless strong arguments can be presented in favor of the suburbs. The family must be housed either in the busy district on high priced land or in the suburbs or "garden cities" on cheaper land. If on high priced land it must be in closely built-up tenement districts; if in the suburbs greater space and more agreeable and wholesome surroundings are possible, provided the district is properly designed and maintained.

In the crowded section the city provides school yards, parks and playgrounds, at public expense, to make up in part for the absence of the yards and private open spaces of the suburbs. In the city 60 per cent or more of the lot is built over, while in the suburbs the house usually covers less than half this proportion. In the city the community is usually kept in order at public expense; in the suburbs of low land values much of the property, both private and public, is, under the present custom, not so well cared for.

The cost of housing, especially for low rentals, is greatly influenced by the cost of land. The value of land in the built-up sections has largely increased, partly because of great public improvements that have benefited the land, and partly because of the fact that the land is situated in

the midst of activities that produce high revenues. On such land cheap housing in small units is not practical, but except in the business section tenement houses can be made to produce fair returns.

In the neighborhood of a big city the minimum cost of land well located for small houses with suitable street and service connection is seldom less than 30 cents per square foot, and that price under existing laws and customs represents only a fair allowance for the value of the land, the cost of street and service constructions, and a reasonable allowance to the developer for interest, delay in sales, expenses and a fair profit. As ordinarily constructed, a finished street costs 10 to 20 dollars per lineal foot with all improvements, and means a cost of 7 to 15 cents per square foot for lots 100 feet in depth. This cost is not usually paid directly by the lot owner, but must eventually be borne by him either through direct payments or indirectly through taxation, high service rates and private expenditures. Estimates for the development of lands that can be bought near Boston at 9 or 10 cents a square foot undeveloped show that lots when developed must be sold for from 27 to 30 cents or more to produce reasonably satisfactory returns, and such conditions exist generally unless means can be found to induce the city to make large expenditures that will especially favor the property in question, or unless the property owners are willing to accept only partial public improvements. The problem of the single house with reasonable advantages can therefore be said to mean building on 30-cent land, in contrast to tenement house building, which may be upon 30-cent land also if in the suburbs, or on land of high valuation, possibly $5 per square foot, or higher, in the busy city.

A lot 25 feet by 80 feet at 30 cents will cost $600; an area of 600 square feet of floor space in a five-story building on $5 land will also cost $600. To provide a home that will rent for $15 a month or $180 a year on such sites, assuming that 10 per cent gross revenue is required, $1,200 can be spent for the building. To the fact that $1,200 will provide more advantages under existing laws and

customs in a five-story building in the city than in a single house farther out is largely due the prevalent tendency which is driving the people into tenements in preference to more healthful suburban districts, while to the fact that on any land more advantages for each family can be provided in the tenement building than in single houses is largely due the present custom of the building of three-deckers and tenements in the suburban districts. A building for three or more families affords more space and more comforts and conveniences per dollar of investment than a smaller house. The three-family wooden frame house has come to be recognized as the most practical unit for low rentals (wherever wooden frame three-deckers are permitted), but also it has come to be considered a detrimental factor in the development of the community, because of its flimsy character and rapid deterioration, and has led a number of towns and cities to legislate against such buildings.

There are in East Boston a number of single and two family houses, some of excellent quality with very pleasant surroundings and well cared for. Such houses were built some time ago, but almost no single houses have been erected recently near the business section, and few on the cheaper lands farther out. Many of the old houses have been altered for two or more families, and many new tenement houses have been and are being erected. The value of the land has not yet advanced sufficiently to prevent the erection of single houses, but the demand for homes of low rental and the desire for investments that pay relatively high rates have led to tenement house building. In a district containing even a few tenement houses single houses will not attract investors and therefore few are likely to be built. The housing problem in East Boston is therefore largely a tenement house problem, although it is still possible that a district of single houses might be developed either on the hill at Orient Heights or on the flats not yet occupied, and it is still possible that block houses, quadruple houses, or other designs by which each family can become a house owner, may prove practicable.

To regulate building operations in the city a complex set of building laws has been devised. The building code includes three distinct kinds of control — first, structural requirements established for protection against fire and accidents; second, bulk restrictions established to preserve sufficient open spaces for light and air, and for access, and to prevent too large units that may become fire hazards, and third, regulations established to protect the various sections or districts of the city against unde-

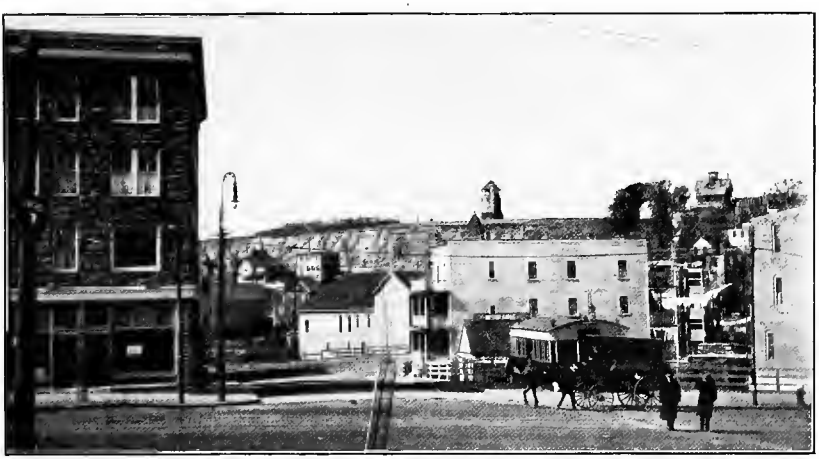

FIG. 13.— BREED'S HILL, FROM SARATOGA STREET BRIDGE.

Showing mixed character of buildings; stores and tenements in the foreground; single houses in places, and single houses, institutions and vacant land on the hilltop.

sirable development, and to encourage growth of the most desirable and most generally profitable character.

The present code in Boston is fairly complete as to structural requirements, but the exclusion of the three-decker should be and doubtless soon will be extended to cover the entire city. In East Boston the line now permits such construction on all of the land beyond Trumbull street. The present bulk requirements in East Boston have established a line not far back from the shore to permit commercial buildings near the shore, and to prevent excessive heights in the interior as shown on the zone plan (Fig. 14). Near the shore, in Zone A, buildings may exceed 80 feet but not 125 feet, and must not exceed

two and one-half times the width of the widest street on which the building faces, and must not exceed other height limits where such may have been established by special acts. In this zone taller buildings are permitted for grain or coal elevators or sugar refineries.

In Zone B, buildings may not exceed 80 feet in height except when fronting on a street more than 64 feet wide, or fronting on a street where there can be no buildings opposite, in which case, unless restricted by park or other

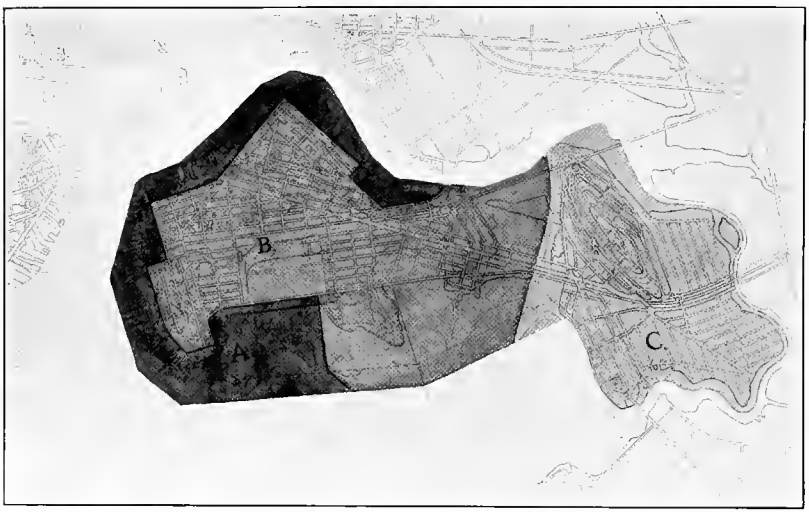

FIG. 14.—EXISTING BUILDING ZONE LIMITS IN EAST BOSTON AS ESTABLISHED BY THE BUILDING LAWS.

A.—High building zone. B.—Lower building zone. C.—Lower building zone outside fire limits.

regulations, the height of buildings may exceed 80 feet but not 100 feet. In Zone C, similar restrictions apply as to height, but construction laws are less rigid. Zones A and B lie within the building limits, which prohibit wood frame construction; Zone C lies outside the building limits, where wooden frame houses are permitted for single and two family houses, provided they do not cover more than 60 per cent of the area of the lot, and where wood frame three-story buildings are permitted provided they be not more than 40 feet in height above the first floor level and do not cover more than 2,200 square feet of area.

The present code also includes some restrictions as to use of the land and buildings, but further restriction is needed especially to protect the residential districts against undesirable industries.

FIG. 15.— REAR VIEW OF TENEMENTS ON LUBEC STREET IN BLOCK 56, EAST BOSTON, FROM THE SOUTHWEST THROUGH SPACE NOT YET BUILT OVER.

The present tenement house law applies to any building occupied by *more* than three families, or by *more* than two families above the first floor, and for tenement houses the law inside the building fire limits is more rigid than for three-

family houses outside the limits, and therefore serves to drive building activities for cheap housing beyond the fire limit — that is, beyond Trumbull street onto Breed's Island. In East Boston there are now a large number of three-family wooden frame houses (not really tenements according to the Boston building law), either old houses rebuilt or three-deckers built inside the present building limits before they were established or buildings outside the present limits mostly of recent construction. Some of these are owned by one of the occupants and are so managed that the owner secures a home practically in return for his services and his equity in the property. In such cases the three-deckers are of much value for holding families together and for placing the ownership in the hands of small investors. Such advantage is largely, if not entirely, offset by the fact that three-deckers in groups are far from attractive in appearance and tend to depreciate land values, especially where of poor design, over-ornate in details and too crowded; and because the wooden buildings depreciate rapidly, are not likely to be kept in repair, and where crowded together, form a fire risk that is a serious menace to life and property. The three-deckers in the older sections must in time be replaced by better structures; those now being constructed outside the building limits will stand for a long time and will doubtless depreciate in value and become a serious menace. Wooden three-deckers have been prohibited in many towns in the state and in a large part of the city. As an investment it has been argued that a brick building is of greater ultimate value, as shown by figures compiled by J. P. B. Fiske of Boston, on the cost of maintenance in a three-family house* as follows:

Frame building, cost $6,500, estimated efficient life, twenty years.

Annual charge-off (interest 4 per cent)	$478 40
Repairs and painting	150 00
Total per year	$628 40

* Published in Report of Citizens' Committee of Brookline, March 16, 1915.

Brick building, costing $7,500, estimated efficient life, thirty years.

Annual charge-off (interest 4 per cent)	$423 50
Repairs and painting	75 00
Total per year	$498 50

Assuming that the estimate of efficient life is correct, this shows a saving in favor of brick buildings of 26 per cent in annual cost with a real increase of only 15 per cent in first cost.

The new tenement houses inside the fire district, which were recently erected in East Boston, although built of second-class construction, with rather flimsy combustible interior work, are of a better class and tend to create a better community. In the exterior design the chance for improvement is great, especially as to rear appearances, as suggested by the illustration (Fig. 15) showing the rear of buildings on Lubec Street from the Cottage Street Playground. In the interior design they appear to meet requirements reasonably and as well as the shape and size of the lots will permit.

The interior plan of the tenement houses must vary according to rents paid, according to size and shape of the lot, and according to the peculiar requirements of the people. The Italians, for whom tenements are erected on Lubec Street in East Boston, are given four rooms and a bath for about $15 a month and seem to be well provided for in eight and sixteen family houses, with floor plans similar to that illustrated (Fig. 16). This plan provides primarily a place for eating and sleeping and in many cases the parlor is used for a sleeping room and the kitchen becomes the living room. Little space is required in the house for pleasure purposes by the Italians, as they have by long ancestral customs become adapted to living in limited quarters and to depending upon public places for their pleasure and recreations. Such accommodations will not satisfy all classes of low rent payers, however, and

more extensive quarters such as those provided in the wooden three-deckers are demanded also.

The character of buildings suitable for housing in the different sections of East Boston must be adapted to the size and shape of lots available and may be greatly varied

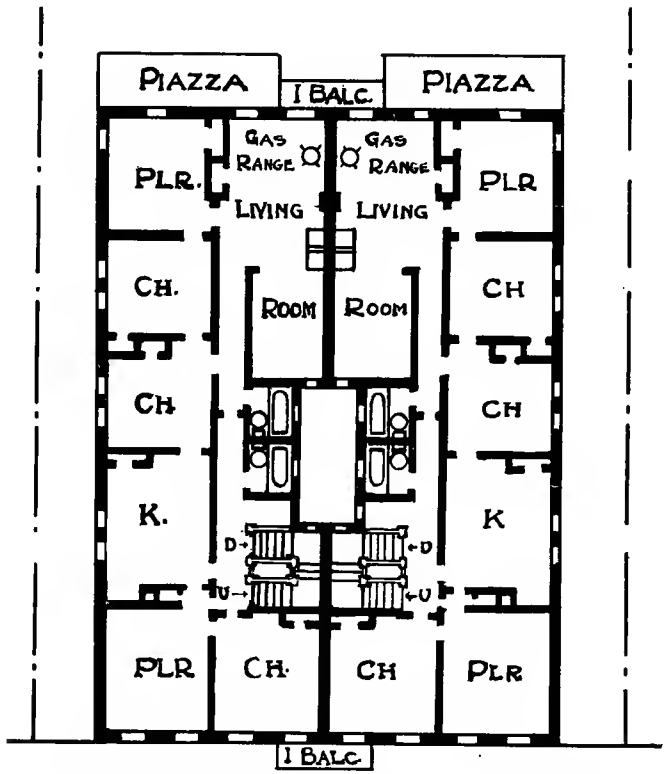

FIG. 16.— PLAN OF 16-FAMILY TENEMENT HOUSE ON LUBEC STREET IN EAST BOSTON.
Scale 20 feet to 1 inch.

to meet the requirements of the various occupants, as suggested above, under the heading of "Local Streets" (page 13), but the size of buildings should be definitely limited to such widths that all rooms shall have windows opening on ample spaces, and for a tenement house the width of building is necessarily not very great.

9.—EDUCATIONAL, SOCIAL AND HEALTH CONDITIONS.

SCHOOLS, LIBRARIES, CHURCHES AND CHARITIES, MORAL AND HEALTH CONDITIONS, HOSPITALS, INSTITUTIONS, COMFORT STATIONS.

The public schools and libraries of East Boston do not appear to differ materially from those of other parts of the city. About two-thirds of the children under fifteen years of age attend public schools and a large percentage of the others are in private schools, mostly parochial. The educational standards of the people are very good, and probably as high as can reasonably be expected. Public libraries are established and in use.

Churches and charities are active and fairly well equipped although it is said that there is evidence among the Protestant churches of a depression and a conservative retrenchment, such as is almost inevitably found in a community that is changing in the character of its population, and in which the community spirit and interest have been seriously disturbed. So, too, charity work, which is still active, is affected there, as it is elsewhere, by changing conditions and by the gradual assumption by the city of duties that were primarily performed by religious or charitable organizations.

Health conditions do not appear to be worse than in other parts of the city, with possibly one exception,—that of the care of mothers and infants, and that chiefly among the less enlightened young immigrants and the very poor people. For them the need of better medical service at little or no cost has been recognized by the charitable organizations and so is in part met, especially through the Maverick Dispensary. This need could be met even better, however, by the well-equipped emergency hospital now maintained by the city, and that without material increase in force or equipment, if its sphere of activity should be extended, as it can be if the

rigid restrictions, now imposed to prevent interference with the practice of local physicians, are somewhat modified. By such extension to reach the really needy the value of the hospital service can be greatly increased and the rate of infantile mortality doubtless can be reduced.

Infantile mortality statistics for local conditions in the past have not been found, but the recent figures show for 1912 a rate per 1,000 births of 104.58 for Ward 1 and of 120.81 for Ward 2, which compare favorably with 148.26 in Ward 4 in Charlestown, but is much higher than that of Ward 11 where the rate was only 63.73, from which the possibility of further reduction in East Boston is evident.

The need for more public comfort stations exists in East Boston as in other parts of the city, and some further provision should be made either separately or in connection with existing or future public buildings.

The social interests in East Boston are fairly well developed, but not as fully as they should be, if it is true, as Mr. Robert A. Woods has said, that "neighborhood life is the real foundation of democracy." Since the stability of the population in any district depends largely upon the existence of a neighborhood spirit and of active neighborhood interests, the more provision made for such a spirit to develop, the more powerful will the social influence of the neighborhood become. In Chicago, under the control of the Small Parks Commission, neighborhood centers of the highest type of usefulness and charm have been developed at public expense and through them the effect on community life has been so great that the undertakings have been fully justified, and more such centers are now being established. While it is probable that Boston will not go so far in providing social centers for the people, the lack of such centers is now deplorable and is no doubt in a large measure responsible for the paucity of civic interest and civic pride, so apparent in the greater part of East Boston.

While there are no dominating neighborhood centers in East Boston there are definite neighborhood districts, with more or less overlapping boundaries, and with fairly definite centers in which are found neighborhood interests.

In the early settlements strong neighborhood ties existed that stimulated the communities to struggle for better health conditions, for better facilities for recreation, education and vocational training, and for general improvements in community and individual interests. Such ties exist in small towns to-day. In the crowded city districts, where conditions are changing with the movements of the classes and the races of population, or with the progressive movements in the same races, such as are now going on in East

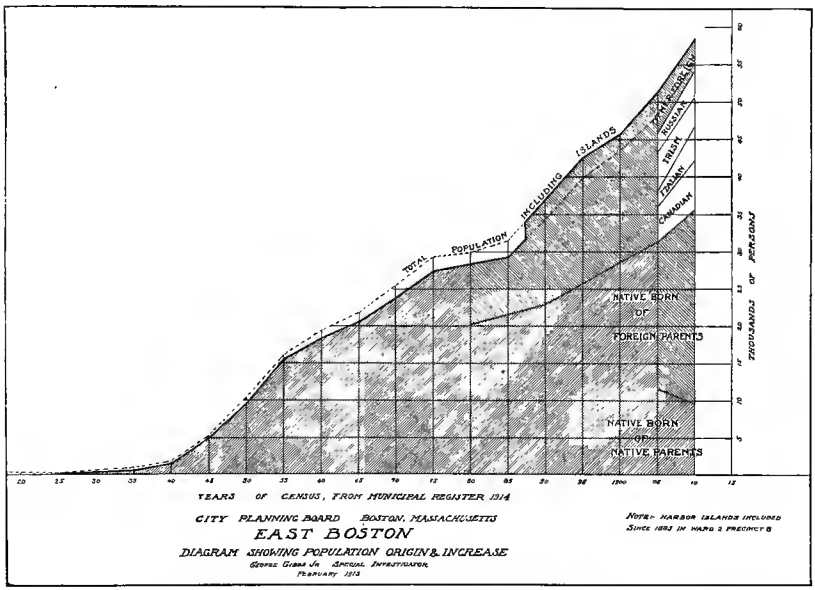

FIG. 17.— DIAGRAM SHOWING ORIGIN AND INCREASE IN POPULATION.
NOTE.— Much of the local character depends on the native born of foreign parents, many of whom are said to be Italian.

Boston, much of the original neighborhood spirit is lost. But even there new interests develop and are stimulated through school activities and through church and settlement work so that centers of interest do grow up about the business district or the public squares even though no other definite public space is provided. Such development would be much stronger both for the individual and for the community, however, if more definitely provided for in the city plan.

The existing forces which direct the gatherings of

national and religious groups in certain districts and cause them to spread or change are in part due to housing conditions, but even more to the changes in business opportunities that attract different classes of inhabitants. The greatest force to hold the groups together and to keep them contented, however, is found in the neighborhood interests.

The moral standards of East Boston are said to be relatively high and but few disturbances are reported except from along the waterfront, where the rougher class of men gathered in the saloons occasionally cause trouble. Owing to the peculiar isolation of the district East Boston is fortunately free from such disturbances as frequently occur at centers where nonresidents congregate.

10.—POPULATION FACTS.

GROWTH, DENSITY, NATIONALITIES, CLASSES OF EMPLOYMENT, LOCATION OF EMPLOYMENT.

The population of East Boston is increasing and has increased at a fairly rapid rate since 1840, when it appears to have taken a sudden start. It has been advancing at a steady rate as is shown by the curve on the diagram of increase (Fig. 17), except between 1875 and 1885, when there was a marked check in growth. If the curve maintains its present tendency, or if the increase continues as it has since 1885, the population bids fair to double in another half-century, and even though it is true that there is not so great a rural population to draw from as there has been in the past, it seems likely that with immigration from abroad, drawn by improved industrial and transportation facilities, East Boston will continue to grow.

The present population of East Boston is concentrated very largely near the harbor, as shown on the population map (Fig. 18), and there is still a large area of land available for further spreading. The crowding in the older sections has begun to produce congested areas in which unwholesome conditions are developing, and for which the city should even now provide some form of relief. The

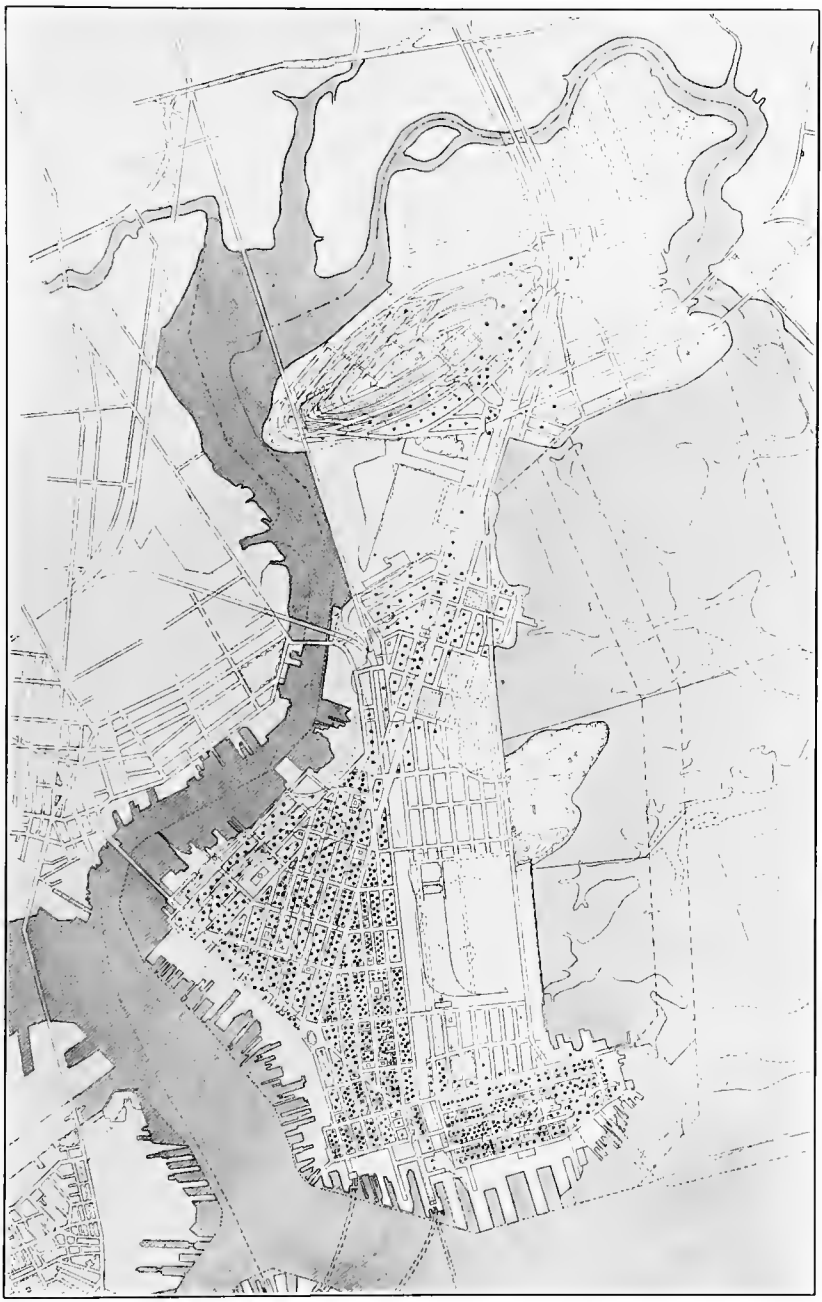

FIG. 18.—PLAN SHOWING DISTRIBUTION OF POPULATION FOR 1905.
Each dot represents fifty persons. Facts from block census of 1905.

total number of persons now in any block would not be excessive if they were housed in better buildings, so the present problem is chiefly one of congestion in small or unsuitable buildings rather than of congestion on small areas.

The make-up of the present population is indicated by the list of nationalities shown on the increase diagram (Fig. 17). This population has come to exist through a series of steps which were the direct result of changes in means of approach and in the requirements of the community.*

The near section of East Boston, formerly Noddle Island, was in the early days chiefly the home of influential American citizens, and among them were but few immigrants. The suburban character of the early development attracted business men and bankers from Boston and made good homes for the leaders in local industries, while the high class of early industries attracted a good class of employees, whether native or foreign born. Native craftsmen, especially shipbuilders and carpenters, were attracted from all over New England, especially from the shore towns, many of whom became permanent citizens and doubtless played an important part in the increase in growth of population before efficient ferries were started.

With the establishment of the North Ferry better connections with the city proper rendered East Boston accessible for the residence of clerks, tradesmen and others of moderate means, and with them came a demand for more boarding houses and more cottages and indirectly for more laborers and more local tradesmen. As the population increased and changed somewhat in character the more prosperous and influential residents began to move away, and so the evolutionary process that has taken place in other parts of Boston was begun.

With the development of railroads and freight yards and of piers for transatlantic shipping, the demand for cheap immigrant labor increased and the loss of suburban

* For facts concerning the history and general character of the people I am indebted to Mr. Kennedy of the South End House and to charitable organizations of East Boston.

character reduced still more the attractions for the more prosperous, while the decline in shipbuilding lessened the demand for skilled labor. As the population changed, the property changed hands, houses were remodeled to hold several families and to provide cheap housing facilities; and these changes, together with greater improvements in city connections, attracted still more residents who could live in East Boston and find employment in the city proper.

Descendants of the American citizens who settled in East Boston in the early development still form an important community, but they have been driven to restricted districts and now exert a relatively small influence in the progress of development. Following the first settlers there was a marked influx of Irish population and for a long time they have predominated in the community life, but the relative number has since declined though they still continue to exert a controlling influence through the prominence of the more successful members in local politics, law, medicine and business. Many Canadians also have been attracted by the waterfront activities and recently by some forms of manufacturing, and they form a part of the present population but they do not appear as an important factor in the public activities. A fair number of Scandinavians and some Portuguese have been attracted, too, by the waterfront industries and one community near Jeffries Point is still chiefly Scandinavian.

In recent years there have been two marked movements into East Boston, either as overflow from the city or as direct immigration. The first increase was largely Jewish, the second was Italian. The Jews built a synagogue in East Boston in 1892, and established a real home center. Since 1900 they have greatly increased in numbers though many of the more successful have moved away. [redacted] As tailors, small storekeepers, traders, junk dealers and industrial workers, they have been largely seekers for low rents. The character of the Jewish section has not been kept up; it is [redacted] much in need of repairs, due in part

to the slackness and indifference of the occupants who still remain, and in part to the neglect on the part of the landlords to keep the buildings in repair. Conditions are bad also because most of the buildings were poorly built at the start, cheap wooden structures put up by Jewish speculative builders who were primarily interested in cheap construction and quick sales.

The Jews are ambitious to get ahead and especially to give their sons the advantages of education and training; they aspire to better surroundings and the more prosperous families move away. The Jewish colony which started at Jeffries Point has since moved almost entirely over to the Porter and Chelsea street district and has given away to Italians at the Point.

Attracted by the low rentals, pleasant open spaces and sunny gardens on Jeffries Hill, the Italians began ten years ago to cross from the North End and to buy or build with a view to establishing permanent homes in East Boston. They have increased greatly in numbers and now form an important factor in the community, where they bid fair to spread over much more of the territory in the future. They have found cheap land and agreeable living conditions and appear to be contented to make their homes permanent, and they seem to thrive even in the more crowded sections. As builders the Italians prefer masonry to which they have been accustomed, and they construct buildings of a better and more permanent character than those of the Jewish speculative builders.

Italians have replaced the Jews at Jeffries Point, with a center at Cottage and Maverick streets. They have spread into Chelsea street nearby and are building out into the newly-filled marsh areas. They have formed a colony on the eastern slope of Eagle Hill and another on Breed's Hill. They appear to have prospered in East Boston and have greatly improved their condition of living. The settlement on Breed's Hill is made up chiefly of property owners who can afford to build more extensive homes and to maintain gardens both attractive and useful. Relatively

few of the Italian children go in for higher education, and many do not finish the grade schools. There seems to be a lack of ambition among them, and, among the young men, there seems to be an unfortunate tendency to be less industrious than the hard-working newcomers or the children of other races.

The distribution of the population of East Boston is indicated on the population map (Fig. 18). The relative numbers of different races from census facts are shown on the population diagram (Fig. 17). Some idea of the make-up of the population may be gained from the census taken by the Massachusetts Bible Society in 1914, by whom the religious preferences were found to be as follows:

TOTAL POPULATION BY RELIGIOUS PREFERENCE.

	Ward 1.	Ward 2.	Total.
Roman Catholic	20,036	20,778	40,814
Protestant	9,329	2,152	11,481
Jewish	3,429	2,888	6,317
No church	41	417	458
Not home	14	36	50
Greek Catholic	15	14	29
Chinese	8	19	27
Armenian	8	6	14
Declined to state	6	4	10
Totals	32,886	26,314	59,200

Some of the citizens of East Boston are employed in the neighborhood, but many work in the city proper. The local industries employ largely local residents but draw also from Chelsea and other districts. A survey of employment was attempted by mail, but replies have not been sufficient to show the real condition.

An idea of the classes of employment filled by men living in East Boston is suggested by the police records which for 1913 show about

6,200 unskilled laborers.
6,000 skilled laborers.
2,900 clerical men.
500 unemployed.

A few women find employment in the new industries such as the cotton mills, in which cheap labor is required, but most of those who work cross daily to the city proper.

11.—ZONES AND AREAS OF OCCUPANCY.

MANUFACTURING, COMMERCE, RETAIL TRADE, SINGLE AND TWO FAMILY HOUSES, THREE-DECKERS, TENEMENTS, VACANT AREAS.

Originally East Boston consisted of two islands, which have been united by filling in for streets and railroads. Breed's Island contains one small hill, Shay's Hill, and one large hill, Orient Heights. Noddle Island contains six small hills, Jeffries Point, Eagle Hill, East and West Wood Island Hills, Harbor View and Pope Street Hills. Of these hills, Orient Heights is an absolute barrier to through streets from the southwest to the northeast. Most of the other hills, although crossed by streets, tend to divert all through travel. Around these hills a large area of practically level land mostly near high tide level has become occupied or is now being filled for occupancy. The use of the land is divided, largely because of adaptability into a number of more or less distinct zones or regions as shown on the occupancy map (Fig. 3).

Along the waterfront, where accessible to boats and to teams, large areas are devoted primarily to storage or to wholesale business which requires water service; near the Chelsea Street Bridge the Standard Oil yards cover several acres, served both by water and by the railroad; near Maverick square a small area is used for storage that is served by the railroad and convenient for teaming, but is

not on the waterfront, and at the railway dock terminals there is a large space devoted to both commercial and storage purposes. Nearly all of these storage and wholesale districts require relatively few employees and relatively little skilled labor.

Among the storage yards and piers and along Border street there are also a number of manufacturing concerns, and back from the shore there are two regions now held by the owners (the East Boston Company) primarily for manufacturing purposes, one the "dump" east of the railroad yards, and one north of Addison street. The advantage to factories there results in part from the presence of favorable rail and teaming facilities and nearness to the water and in part from the presence of relatively cheap land and of a nearby source of labor.

Along the Boston & Albany Railroad there is a fairly large yard for train work, with sheds for local freight business; at Orient Heights there is another small railroad yard, and at the terminal docks there are still other areas devoted to the interchange of railroad and steamship business.

At the principal thoroughfare intersections at Maverick, Central, Porter, Day and Breed squares (G, H, I, K and N, shown on the plan, Fig. 3), and at several other places along the main thoroughfares, retail districts occupy the most prominent points. The principal retail, banking and office section is at and between Maverick and Central squares. All through the residence areas in and among the tenement houses are many small stores, too many, in fact, for the good of the community, since they are not well supported and therefore cannot be well maintained.

The areas not especially adapted to use for wholesale and storage purposes, for manufacturing or for retail trade are in part used for residential purposes and in part still vacant. Among the residences there are a number of small industries that have developed in old buildings on cheap rear lands and in stables, where they constitute a serious fire menace as suggested by the spots shown on the fire risk map (Fig. 10). Woodworking and

paint shops and junk shops especially are recognized to be very great fire hazards that should not be permitted in the housing district, since many lives are so endangered.

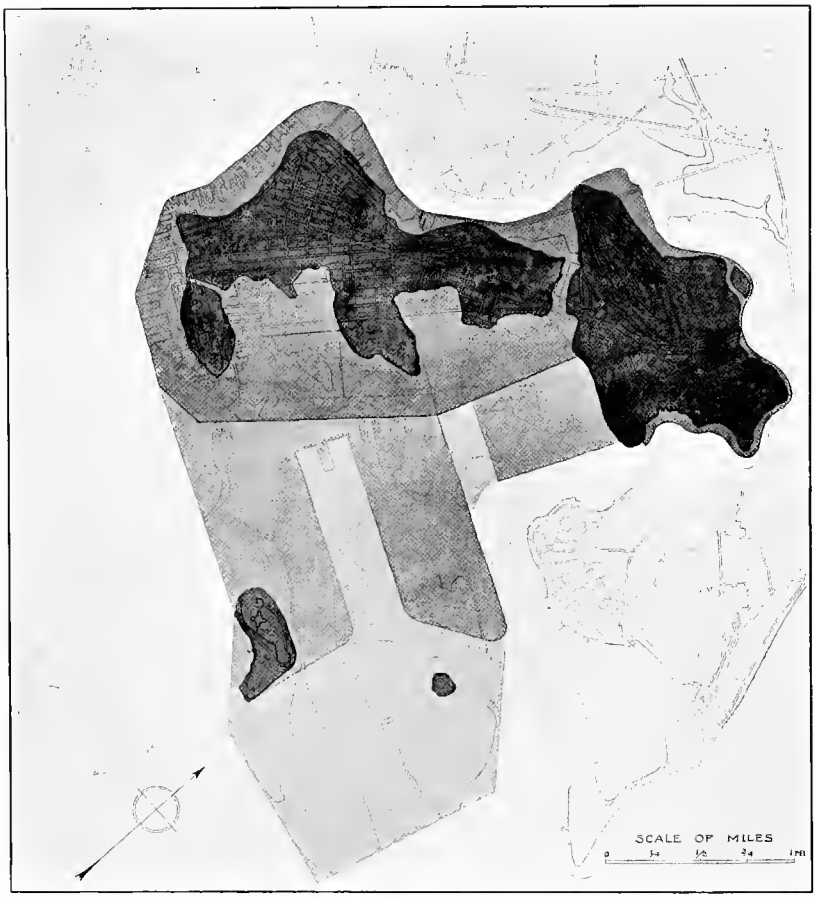

FIG. 19.—BOUNDARY AND AREA, MAP.

Showing original areas of the four islands, black; area within existing harbor lines, dark; extensions proposed by the Port Directors, medium; and maximum area that may eventually be included in the East Boston boundaries, light.

Further development of such industries should be prevented and those that now exist should be removed.

The approximate area of land within the limits of East Boston was reported in 1912 to be 528 acres occupied,

356 acres unoccupied and 907 acres of vacant marshes and flats, or only about 60 per cent of the available land and only about 30 per cent of the total possible area inside the river and harbor lines occupied. The original area of the two main islands and of the two islands in the harbor that may eventually become part of East Boston was 1,435 acres. The present area to the harbor lines is 1,925 acres. The extension proposed by the Port Directors will raise the total to about 3,035 acres and the maximum possible further extension would make a total of 3,990 acres, or over two and a half times the original area. These relative areas are shown on the plan (Fig. 19). While it is not possible to say that this maximum area will ever be entirely developed, it is quite probable that large extensions will be made, and the present plan of the Port Directors contemplates an addition by filling that will increase greatly the total area, as shown also more in detail on the general plan (Fig. 26).

An extension even so great as that proposed by the Port Directors will require many years to complete, but it is entirely practicable and if business continues to increase in Boston it will be justified because of the great water-front advantages. Such an extension has already occurred in the city proper as shown on the area diagram (Fig. 20).

While there are certain fairly definite existing limits for the zones of occupancy, no such zones have as yet been established by law, and there is now an unfortunate overlapping of zones. This should be prevented and could be, as in some European cities, by the establishment of special zones in which the character of occupancy is restricted. There are in Boston now certain restrictions that form zone regulations, such as the restrictions of the market district and the regulation of heights and types of construction permitted, and there should be and doubtless will be more extensive restrictions in the future.

One serious objection that has been raised to definite zone limits comes from the fact that land now devoted to residential purposes may come to have much greater value for commercial or industrial purposes in the future.

It is possible, however, to provide for meeting this emergency and yet to protect residential communities in the meantime, either by periodical readjustment of the lines, or possibly by a special allowance that established lines may be crossed and that any zone may be so extended if such extension be made only by progressive steps on property contiguous to that already within the zone. Such a provision carefully followed should make it possible to permit legitimate and normal changes in the zone boun-

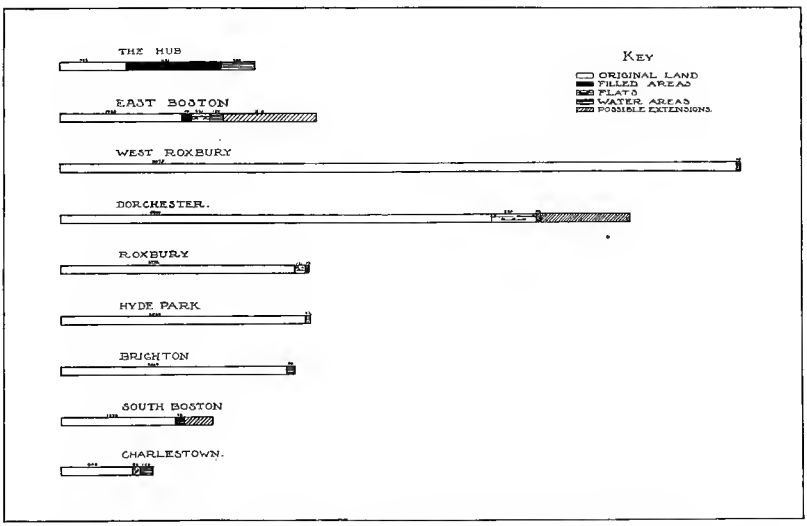

FIG. 20.— DIAGRAM OF AREAS IN BOSTON DISTRICTS.

Showing proportion of original land, filled areas, water and marshes, and the possible areas that may be added by fill in each of the districts of Boston.

daries where circumstances may require them, but should prevent isolated development of a character objectionable to the zone so invaded.

Since the efficient life as a paying investment is estimated by real estate men to be only about twenty years for wooden frame structures, and only about thirty years for those of brick, it would seem possible to provide that land now vacant should be built over at once for residential purposes, to be later rebuilt for industrial or commercial purposes. Such a development has been made successfully under private initiative, and might well be encouraged

under public control if definite zones be established now for use solely as residential districts with allowance for the necessary local stores and with a provision that the limits are to be revised when requirements warrant any changes. Such zones should not interfere with area now occupied or likely to be needed in the near future for a reasonable spread of commercial and industrial activities. Further restriction might logically be made for such districts as that on Breed's Hill to permit only the building of single or two family houses, or of public or semi-public buildings.

Certain zones could even now be established for residential purposes for which the lines should not be materially changed for a long time, if at all, and for which any change should be carefully studied, as a serious matter, in order to prevent heavy losses to the city and to the community in the value of invested public funds in schools and open spaces, in case that value is likely to be greatly reduced with the crowding out of the residents, and to mean that a further burden will be placed upon the city for making additional and similar public investments in the region to be occupied by the population so driven out.

12.—CONSTRUCTION DETAILS.

STREET DESIGNS AND USES; TREES, POLES, SIGNS, SUB-SURFACE USES, LIGHTS AND EMBELLISHMENTS.

Under the present system of control of the streets it is customary to allow abutters to make use of such open space above and below the street levels as do not interfere with the use of the street; and that at no profit to the city. In some cities it is customary to require for such projections an annual payment as rental. Such a payment seems only fair to the community that does maintain the streets, and does also pay liberally for any easements or property taken for street widening or improvements. To obtain complete control over such incursions the city must first acquire a proper title to the land in the streets, and, should it acquire title to the streets that it is called upon to maintain, the city can then with such control let to abutters

such space as can be made to produce revenue commensurate with the advantages so gained by the abutters or with the value to the city of the space so occupied.

In the construction of streets certain general rules as to widths and proportions are generally followed by the city departments or by the persons developing land, and these generally meet all reasonable requirements, but for the best service of each community a greater variation seems desirable. There are streets in East Boston, especially on Eagle Hill, that could well be revised to reduce the width of the little used roadways, and to afford better sidewalk and tree spaces.

The streets of East Boston are seriously defaced by overhead wires, street poles and advertising signs. The wires are unsightly and are dangerous because they are likely to fall in storms, and even though they may not be themselves heavily charged, they may become so by crossing with other wires. They are a menace to fire fighters also and they damage shade trees. The wires of the city are being put underground by gradual steps, so that this danger will be reduced in time.

Billboards and advertising signs have been seriously criticised in many recent civic movements and have come to be regulated by the city, but even so, the size and character of street signs now permitted are seriously detrimental in many locations where they destroy much of the agreeable character that the streets might otherwise possess. This is especially noticeable in the residential districts where many corner stores display glaring advertisements much out of place and having little if any artistic merit.

The lighting system of East Boston is simple and effective but there has been no attempt to adorn the business streets with decorative lights and poles, a feature of no little merit that might be made to give character and stimulus to the district.

In the details of the present design the question of street trees plays a most important part. At present there are few trees standing in the streets of East Boston, and in most of the existing streets as now designed there is little

chance for trees to be planted. Many streets of East Boston, as of other early towns, were once well shaded with rows of trees, mostly set out by the East Boston Tree Association, organized in 1845 and very active for the next twenty years. A few were survivors of the fine old forests. Up to a certain time these trees grew and thrived. A few trees have been set out in recent years as the result of the activities of the Home Club of East Boston. With the increase in severity of city conditions

FIG. 21.— SARATOGA STREET, EAST FROM MOORE STREET.

Two car lines, two lines of vehicles, two narrow sidewalks, and no regular tree space. Trees at curb on one side are doing well because buildings are low, but will doubtless be crowded by buildings and starved at the roots.

and the lack of sufficient public care to offset these, the number and quality of the trees in streets and open spaces have been actually decreasing for many years. The trees have been cut into by wiremen at the top, by horses at the trunk, by pavers at the ground and by trench diggers below the surface. They have been starved and stifled at the root by the removal or destruction of the soil and by paving that shut off the surface water; blistered on the trunk by severe exposure to wind and to the heat that is reflected from the pavements and buildings, and starved at the top by the over-shadowing buildings which shut off sunshine

and fresh air. They have been poisoned at the top by the soot and smoke of the city and poisoned at the roots by the souring of the soil and by the gases that escape from the sewers and gas mains; and lastly, they have been defoliated by leaf-eating insects, sapped by scale insects, and dismembered by borers that cut off twigs and branches even up to two or three inches in diameter. Insects have done enormous damage because of the feeble condition of the trees; they have spread rapidly as they have been carried by vehicles and trains, and they have increased greatly because of the reduction in the kinds and numbers of birds that are real pest destroyers.

Enemies of the trees are so numerous it is surprising that so many still stand in the city and continue to grow under such a handicap, but the fact that the present tendency is decidedly retrogressive, calls for an heroic measure on the part of the city if trees are to be maintained and increased in numbers. The question of establishing and maintaining trees under such obviously adverse conditions calls for careful treatment such as that which was recently given to the trees on the Common, where the soil was entirely renovated and the trees were thoroughly examined, repaired and freed from all pests at a very considerable cost to the city.

Trees can be planted in our streets in a way similar to that followed by the Park Department in 1912 and 1913, in the planting of Bennington street, Blue Hill avenue, Dorchester street, Huntington avenue, and several other fairly wide main thoroughfares, where the soil was removed from large pits and replaced with good material in quantity sufficient to ensure a satisfactory growth for eight or ten years, or until the trees are large enough to reach out for other sources of support. Trees so planted cost the city $15 to $30 each when planted, and trees in the downtown district unless so planted will have little chance to make a satisfactory growth.

In the narrow streets the tree problem is even more serious than that faced in the planning for those above

referred to. The prevailing width of 40 feet between property lines and between ultimate building lines does not afford space enough to provide even for one broad topped tree either at the top or at the roots, though it may serve for small growing pyramidal trees or for those kept clipped to a relatively small head. In such locations vines on the buildings add much to the interest and should be

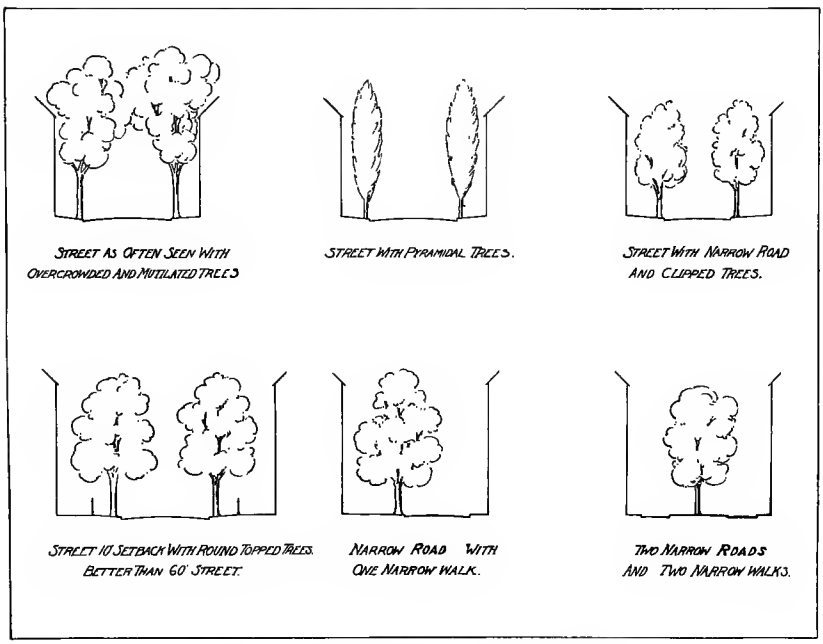

FIG. 22.—SECTIONS OF NARROW STREETS.
Showing various possible arrangements to provide spaces for trees.

given more care and encouragement, especially where trees are not likely to be established, and it might well repay the city to give some material aid to the property owners in the care of vines in order to improve the general appearance in some of the public streets.

In East Boston there are a number of streets in which trees can be established and maintained if given special consideration. In the case of Paris street a plan is suggested (Fig. 40) to provide that the street be redesigned for

use as a recreation street with a row of trees in the center. In the residential section on Jeffries Point and Eagle Hill there are several streets in which the roadway should be narrowed to 18 or 20 feet and restriction lines should be established to keep back buildings that are now back and to require that buildings which now project beyond the general frontage line should go back also eventually so that the street can ultimately be widened if needed and ample space for walks and trees can be maintained.

Any plans for trees in existing streets must be based upon a consideration of the value of trees to the city as a whole, to the property on the streets, and to the people who will benefit by them. On some streets trees could well be planted on one side only, especially on the north side of those running east and west, possibly in a wide walk to leave a narrower roadway like that on Laconia street in the South End. On some streets trees can be planted to take advantage of existing setbacks at schools, churches or other buildings of a permanent character. For planting, there are a number of trees that can be used, especially suited to the various conditions existing, and a greater variety of selection than is usually made would produce more satisfactory results. (See Fig. 22.)

There are at present very few streets in East Boston in which a full complement of trees exists. (See plan, Fig. 23.) There are a large number of old streets in which trees were set out in the past and in which there are still survivors. In these old streets the survivors are gradually dying out or being removed because they interfere with the adjacent buildings, and in almost no cases are the vacancies refilled. Thus there is found to be a broad treeless area in the greater part of the district, as shown on the plan in black. Other areas are partly shaded but gradually approaching a treeless condition, shown dotted. In a few areas, especially the east end of Bennington street, new trees have been planted which bid fair to hold their own for a long time to come, shown gray.

The present survey shows the tree situation to be in

FIG. 23 — STREET TREE MAP.
Streets having no trees shown black, with few trees shown dotted, filled with trees shown gray.

a very bad state. Of a total of approximately 36.5 miles of streets in East Boston,

26.2 miles, or 72 per cent, have no trees.
7.2 miles, or 20 per cent, have less than a fair number of trees.
3.1 miles, or 8 per cent, are well filled with trees.

The present efforts of the city authorities are directed chiefly toward the care of the decadent trees and removal of the dead, and every effort to replant properly in the built-up streets will involve great expense and would in many cases be of doubtful worth on account of lack of proper space. If trees are to be established and maintained as a permanent feature of the built-up district a definite provision of space must be made for them, and a definite plan for planting and maintenance must be adopted and followed up.

Outside the built-up areas new streets are being opened up but not properly planted. Such streets are created by private enterprise and trees are neglected. The streets are mostly laid out as narrow as custom allows, and little room is left for trees. In such districts certain wide streets should be demanded not only for through traffic but also to provide space for tree growth, and in all reasonable locations trees should be properly established and protected.

13.—FINANCIAL AND LEGAL.

REAL ESTATE VALUATIONS, REVENUES, BUDGET OF APPORTIONMENT, COST OF IMPROVEMENTS, ASSESSMENTS OF BETTERMENTS, EXCESS CONDEMNATION.

For land so near the city the assessment valuations in East Boston are not extremely high and the selling rates are reported to be but little if any higher than the assessment. The assessed values as shown on plan (Fig. 24) run to as high as $4 per square foot on Meridian street, and to $2 along the pier frontages. Beyond the commercial and trade zones there is another zone of fairly high valuation, dropping toward the edges to 40 cents, in which

FIG. 24.— REAL ESTATE VALUATION MAP.

Values above three dollars per square foot shown black; one to three dollars, dark; forty cents to one dollar, medium; ten to forty cents, light; one to ten cents, white. From the assessors' records for 1914.

are located the better class of residences or buildings having good values because of special advantages of location and transportation, and the nearness to Boston. Back of and around the 40-cent land are considerable areas valued at from 20 to 40 cents that are fairly well improved and accessible for buildings, but are less favorably situated. Still farther from the center are areas not fully improved, but already platted and opened to occupancy, valued at 10 to 20 cents, and outside all are lands which have little value as yet, other than as so much acreage, but which are assessed chiefly because of potential value.

The assessed valuations in East Boston are steadily increasing as shown on the diagram (Fig. 25) and bid fair to continue to increase along a curve that has shown a rapidly rising rate since 1900, both for land valuations and for total valuations, which, if continued, will lead to great increases in the future.

The city is now called upon to make large annual expenditures in East Boston to maintain public properties and public service, and will continue to do so at a growing rate so long as the occupied areas and the activities in East Boston continue to increase. The serious question has been fairly raised as to whether East Boston receives a proportion of the city expenditures commensurate with the revenue raised there by taxation, and this question could be fairly answered if the annual expenditures for a number of years were fully analyzed to determine what proportion thereof is directly spent in or for East Boston, and also what proportion is spent for general city improvement by which East Boston benefits in common with the other districts, but such facts are difficult to obtain and to interpret and have not been considered.

In addition to the city expenditures East Boston is entitled to some benefits from the state and metropolitan funds. It has already profited by the water and sewerage systems and has benefited somewhat from the park and the highway improvements that lie outside the city limits at Chelsea, Revere and Winthrop.

The large annual city and metropolitan expenditures

are made in part for maintenance and in part for construction work or improvements. The requirements for maintenance should be proportionately reduced by every possible means through economies and improved efficiencies in administration and through expenditures for

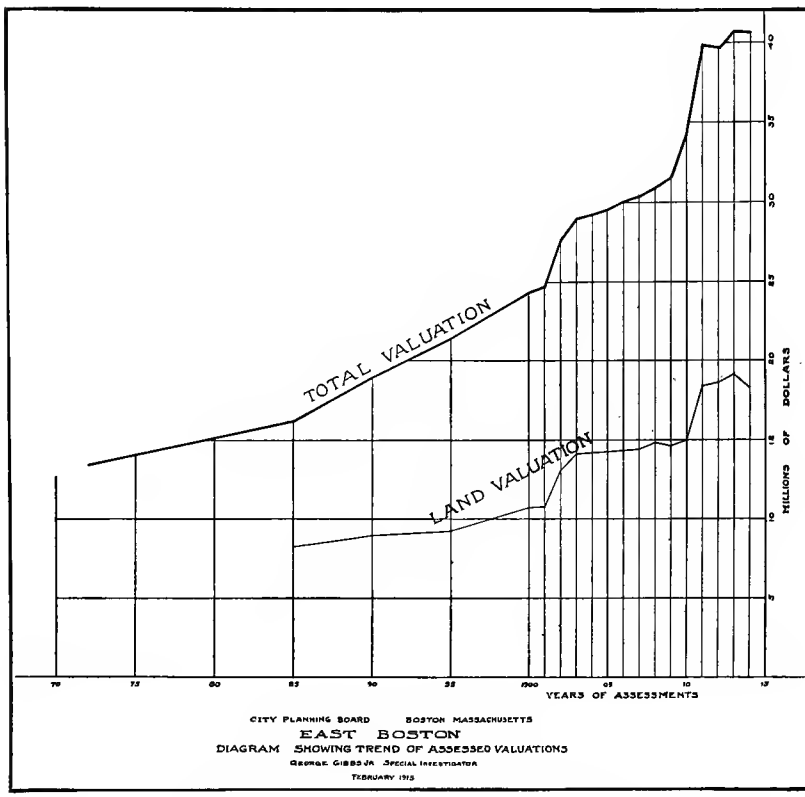

FIG. 25.—ASSESSED VALUATION DIAGRAM.

Showing rise in assessed valuation for East Boston.

improvements that will lessen the cost of maintenance in the future, but the opportunities for improvements and for new work should be studied and designs should be made and adopted that will produce the greatest practicable benefit and variety. The funds for maintenance are raised largely if not wholly through taxation, while the funds for improvements are in part so raised, either in

one year or by bonds extending over a period of years, and in part paid for by the property benefited through direct assessment.

One of the greatest and most wasteful expenses to the city to-day is that of making improvements in districts already built up, that have been developed with little regard to ultimate public requirements. To prevent such wastes and to provide for civic economy and improvements as a whole, comprehensive plans should be adopted that will control development in the future and prevent private interests from needlessly interfering with public improvements that will be required in the future, and also to protect private property from depreciation due to improper use of adjacent lands, and to lack of adequate approaches.

The city is every year called upon to spend large sums of money in East Boston for the public benefit, and these demands will doubtless continue and will increase in the future. A comprehensive plan that on the face of it calls for the ultimate expenditure of millions of dollars, if wisely designed, adopted and followed, should mean not only an ultimate saving in cost for the city over expenditures that must otherwise be made, but should mean also an attainment of far greater public good than will result from the present system of fragmentary planning.

As the benefit of city improvements accrues chiefly to the nearby real estate, the question of making large improvements and so benefiting adjacent property, especially through the widening or opening of streets, has led to the system of assessing betterments. The needs for better property lines on lands remaining, after public improvements have been made, has led to the suggestion that the city should acquire property in excess of that actually needed, either by purchase of fragments as now legally permitted in Boston, or by broader acquirements through excess condemnation methods devised to readjust the existing arbitrary and ill-adapted property lines to the new conditions. The present relations between the city and adjacent property owners in such improvements are admittedly not satisfactory, and lead to enor-

mous cost to the city for improvements, the benefit of which can be obtained only partially by property owners, where property is not left in suitable shape. This condition has been recently studied by a committee of the Chamber of Commerce and has led them to recommend, among other things, that:

Separate and adequate appropriations should be provided for planning work, whether of a board of survey or a local planning board. So long as the funds required for studying the problems of the future and preparing plans to meet them must be drawn from the same limited appropriation that has to provide for immediate pressing engineering needs, the more far-sighted planning will suffer.

When possible in new undertakings the fee in streets should be acquired rather than the easement.

The present betterment and assessment laws the committee believes to be unequal and inequitable in their working and have resulted in the actual collection of a small percentage of the betterments assessed, and we believe they should be amended in such a way as to remedy their defects.

These conclusions were based on investigations of Flavel Shurtleff, Esq., who reported to them in part as follows:

(*a.*) KIND OF ESTATE.

Of the cities studied in the metropolitan district, Cambridge alone, since 1908, has been taking the fee in streets.

(*b.*) DISTRIBUTION OF COST.

1. *Under the general law* less litigation is involved, but jury estimates of values are a crude method of approximating the real value, and the city or town usually pays an undue share.

2. *Under the betterment acts.*— Betterment act used in Quincy, Newton and Boston. Results outside of Boston satisfactory, but in Boston tradition is against act and assessment is protested as unfair since previous improvements were not so assessed. Cost of collection in Boston is high because owner can bring two suits,— one to have damages increased and one to have betterments lowered.

Recent laws (chapter 536 of Acts of 1913) in revision of chapter

393, Acts of 1906, extend the area over which betterments may be assessed, and remove the limits as to percentage of cost that can be assessed.

There should be still further revision of both the highway act as amended in 1913 and the general betterment act (Revised Laws, chapter 50, section 1) to provide that the award of damages should be made at the same time as the assessment of betterments.

3. *Excess condemnation.*— Under the constitutional amendment (Resolve 1911, chapter 91) the city is permitted to take land for street improvements in excess of needs and to sell the remnants and thus to reap the benefits that may accrue, and to improve the property lines. The power is limited, however, by a requirement that each undertaking shall be sanctioned by special act. The power has not yet been used here and where used in Europe is apparently not very satisfactory. If tried under present laws the taking would probably prove costly and would require a large investment on the part of the city, possibly for a long time, without return. Therefore the betterment act as recently revised seems more promising.

In addition to the cases cited by Mr. Shurtleff:

Under the Remnant Law (chapter 443 of the Acts of 1904) land may be taken in Boston in excess of that needed for public improvements, the remnants to be sold later. This privilege offers opportunity for much general benefit if well planned and followed up but does not appear to have been used so far.

Mr. Shurtleff's report deals quite fully with street widenings or improvements having to do especially with through travel and general welfare, but there is also a local question, purely local, that is of enormous importance in a place like the North End, where the present public holdings are entirely inadequate to provide reasonable means of access and to admit a reasonable amount of light and air. There is need for adequate open space adjacent to every home lot that evidently should be met largely if not wholly at the expense of the property benefited and should be required by the city in cases where such improvements are needed for the good of the tenants that are now housed in seriously unwholesome surround-

ings, even though opposed by the property owners. There are relatively few such cases in East Boston, but there are cases for the improvement of which the city should adopt definite plans and methods and establish a definite policy for action, such as that shown in Fig. 6 (page 19).

To provide for carrying out the general plan the city can have recourse to the ordinary methods now followed for obtaining funds for successive improvements in each of the following ways:

1. Through direct taxation either from one year's income, or by bonds from a number of years.

2. Through bonds for self-supporting or speculative improvements to be repaid from betterments or sale of excess takings.

3. Through bonds for improvements that can be made self-supporting like the subways that are leased to private corporations, or like the water system that is run as a business enterprise.

The city can also do much by establishing lines and regulations for economy in changes to be made in the future, and if the laws are revised to require the decision of betterments and damages at the same time, and preferably in advance of the appropriation of funds for the work, the cost to the city of establishing lines and regulations and of actual construction could doubtless be materially reduced.

PART II.—RECOMMENDATIONS FOR A COMPREHENSIVE PLAN AND FOR SPECIFIC IMPROVEMENTS.

Any plan for the future East Boston, to be truly comprehensive, must provide primarily for a complete occupancy of all existing and possible future land and water areas which come within the natural boundaries of the district. It must be founded on a logical recognition of the ultimate requirements such as, *first*, the development of the entire waterfront; *second*, the improvement of approaches on all sides; *third*, a complete system of thoroughfares; *fourth*, public ownership of all spaces in the entire district that may be needed by the public; and *fifth*, public control, so far as required for the general and individual welfare of the people, of all property not publicly owned.

To meet these requirements a comprehensive plan has been prepared covering the entire district, and for the more important specific improvements, recommendations and more detailed plans have been made, based on the data referred to in Part I.

1.—A COMPREHENSIVE PLAN.

The entire boundary of East Boston lies along salt water and can be developed for commercial or other purposes in a way to profit by waterfront advantages. The improvement of the waterfront has already been extended to include much of the south, west and north shores of Noddle Island, two-thirds of the shore being already established for commercial and industrial purposes, while the east side is as yet practically unimproved. Breed's Island shores are as yet undeveloped and are of limited value, as they are approached by a relatively shallow and narrow channel

that would be costly to improve, and as they lie fairly remote from the city harbor activities. The shores of Breed's Island have been reserved for commercial purposes by the owners, the East Boston Company, and most of the remaining shores of Noddle Island are now being considered for a large waterfront development under state, city and private initiative. The state must in the near future determine upon a plan to develop the great area of flats and frontage now largely under state control, and upon that plan will depend the extent of the water frontage and the land area of East Boston, and the value that will accrue to it.

With an original area of 1,435 acres, including the two nearby islands, East Boston has been extended to contain within the present harbor and city limits an area of 1,925 acres. If the city limits were extended eastward to the farther edge of the flats, so including all that can logically be reckoned as a part of East Boston, the total area would amount to nearly 4,000 acres, or over twice the present area. To develop the entire area of flats, all of which can be made valuable either as land area or as deep water docks and channels, will require a long time. The most practical uses for the remote portions cannot easily be determined and the practical plan for immediate adoption must necessarily provide for the use of as much of the total area as can be definitely designed for profitable and practicable usage. A plan for extension on the flats has been worked out based upon suggestions and plans proposed in the past, and from this a perspective sketch has been prepared (frontispiece). The plan has been modified in consultation with the Port Directors to meet the lines as determined by them, and as herewith presented it now contemplates an addition outside the harbor line of nearly 1,100 acres, a large portion of which is included in the plans of the Port Directors and is intended for business development. That such a port development is possible and also probable has been the conclusion of a number of persons who have given the question serious thought. In the report of the Metropolitan Improvements Commission the plan for

docks recommended by Mr. Desmond FitzGerald (Fig. 27) proposes to extend over a somewhat greater area, but involved far more dredging and produced less land area. The Joint Board on Metropolitan Improvements reported in 1911 that

"the most favorable place for a large development of a water and railroad freight terminal in Boston Harbor is the easterly side of East Boston,"

and referred to a scheme for development in accordance with the new harbor line of 1910, but even that has been considered not sufficiently comprehensive by the present Board of Port Directors who have extended the line as shown on the comprehensive plan.

Under chapter 648 of the Acts of 1910 they are authorized to construct highways and to locate and fill for railroad connections, also to build piers whenever any person or corporation desires to lease and use the same, and, since they control large land areas that should be developed, some work is likely to be undertaken before long.*

If such a plan is adopted three important questions involving the vital interests of the rest of the city should be considered. *First*, ample railroad and thoroughfare approaches to the property from all directions must be provided; *second*, the vital interests in Wood Island Park as the one large area for the health, recreation and pleasure of the people should be safeguarded, either by preservation of the area and the character of the present park, or, better, by revision and extension in a way to produce an equally good or better public utility, properly adapted to the necessarily changed conditions; and *third*, the advanced planning for urban conditions upon the areas, now vacant, that will not be required for commercial or industrial purposes. Suggested lines for such main thoroughfares are shown and numbered on the general plan and referred to in detail herein under corresponding section numbers.

* Since the above was first written harbor lines have been changed as shown on the plan and filling has actually been started on the area east of Jeffries Point.

A plan for Wood Island Park revision has been made (Fig. 28) and a possible development of the remaining areas for residential purposes is in part suggested on the general plan, although not worked out in detail as it should be when the main lines have been finally decided upon. Suggestions for the regulation of these areas have also been considered.

2.—POSSIBLE ZONE LIMITS.

FOR PRIVATE IMPROVEMENTS AND FOR USAGE OF THE VARIOUS SECTIONS.

In order to protect both public and private property interests from injury through misplaced development certain zones should be established in connection with the determination of the fundamental lines of the general plan. On the general plan (Fig. 26) those areas shown for commercial and industrial development are nearly all owned or controlled either by the state or by the East Boston Company, or are already in part occupied by industries and therefore likely to be so developed.

The plans for the port development have established three distinct zones for the terminal area. The first is designed for high class shipping, passenger and express business near the existing main channels, with ample space for storage buildings, car sidings, main thoroughfares, and other terminal requirements, a zone that will require a large number of employees and extensive traffic facilities. The second is to be used for industrial buildings for manufacturing and storage that will profit through being near to the waterside and to the city, and having ample teaming and railroad facilities; and will require many employees, involving much passenger travel to and from work. The third is to be used for terminal railroad yards and storage space large enough to provide for economical railroad activities, with easy connections to all existing railroad lines; an area that will not require a relatively large number of employees or a large passenger travel to and from other parts of the city.

All other areas should be definitely restricted for resi-

dential occupancy, with a proviso that retail business may be permitted in the main streets and at important centers. The top of Breed's Hill is an especially good location for institutions and for private residences, and while it is not now in great demand, it will undoubtedly be required in time, and all the area lying one block or so above the main encircling thoroughfares should be restricted against three-deckers and tenement houses. The proposed development on the flats will produce a large area of residential property northeast of Wood Island Park. That area will necessarily be very flat but will have a pleasant outlook over the proposed park and playground areas and the channels. The row of blocks nearest the shore should be restricted to single houses or two and one-half story buildings in order to reserve a certain area that can be developed for such buildings and to preserve for the back lands a little of the shore front advantages.

For the improvement of living conditions in advance of possible development, Belle Isle inlet might well be controlled by tide gates at the Saratoga Street Bridge and the Boston & Maine Railroad Bridge, to keep out the high tides and prevent the daily tides from flooding the marshes.

On the plan, definite boundaries are shown for the zones proposed. These lines could be so established with a provision as suggested in Part I. that the boundaries may be modified under a reasonable system of changes.

3.—WOOD ISLAND PARK REVISION AND EXTENSION TOWARD REVERE AND WINTHROP, AND TOWARD THE CITY PROPER.

When the plans now being considered by the Port Directors have been settled upon, either in their present or in a modified form, the boundaries of East Boston will be practically defined for all time. If the present plans of the Port Directors and of the East Boston Company are adopted, the entire boundary will front upon navigable water, with a harbor line about fourteen miles in length,

and a pier frontage line considerably greater. Of this frontage some portion should be preserved for public uses for recreation and pleasure. The present frontage of Wood Island Park is in some ways not well situated for such reservation, while just east of the park along the channel, that will doubtless be kept open near the Winthrop shore, a frontage can be developed between the present Wood Island Park and the bridge at Saratoga street admirably adapted to pleasure uses. Somewhat remote from the harbor and the heart of the city the frontage there will be less valuable for commerce than that nearer the city and could well be devoted to parks. Looking out upon the shore of Winthrop, which will doubtless continue to be occupied largely for residential purposes, this shore offers agreeable surroundings to pleasure seekers, and it fronts on a broad channel to the open sea that is somewhat cut off from the more intensely used commercial channels of the harbor, so that the water can be kept fairly clean and attractive. This shore if properly developed can be made to compensate very largely for the surrender of similar advantages in the present frontage of Wood Island Park.

The land area of the present park need not be materially changed except that a through road for pleasure travel should be provided, as suggested on the plan herewith (Fig. 28). The waterfront character of the existing park can be preserved if a satisfactory pool is retained at the existing bath houses. The park area should be extended to include all the land southwest of the present park, between the location of the existing railroad and the proposed freight yard area, and as far south as the proposed diagonal extension of Porter street. In this area a pool can be reserved, the pleasure way extended, and a playground made that will compensate for the proposed reduction in the area of the Cottage Street Playground. From the south end of this proposed extension a broad boulevard to Maverick square is suggested. This boulevard can be made to serve as an important highway, and a location also for a rapid transit subway, and for it the land should be acquired at once before further improvements interfere.

FIG. 26 — COMP

Note.— Letters referred to on this plan and on Fig. 3, page 8, are as follows: A, South Ferry. B, North Ferry. C, Meridian Stre
of Chelsea and Porter Streets. I, Central Square. J, Intersections Meridian and Condo
N, Breed Square. O, Boston, Revere Bea

ELSEA

REVERE

REVERE BEACH

WINTHROP

KEY

- EXISTING PARKS AND PLAYGROUNDS
- PROPOSED " " "
- CEMETERIES
- PUBLIC SCHOOLS
- NONPUBLIC SCHOOLS
- CHURCHES
- WATER AND SEWERAGE PROPERTY
- BATH AND GYMNASIUM
- POLICE BUILDINGS
- COURT
- LIBRARIES
- HOSPITAL
- FIRE STATIONS

- MEAN HIGH WATER
- " LOW "
- ONE FATHOM LINE
- PIER AND BULKHEAD LINES
- TEN FOOT CONTOUR LINES

- RESIDENCES, NO TENEMENTS
- RESIDENCES, ALL CLASSES
- RAILROAD LINES AND TERMINALS
- RAPID TRANSIT LINES
- MAIN THOROUGHFARES
- WATER WAYS
- COMMERCE AND INDUSTRIES
- RETAIL TRADE
- REFERENCE TO LETTERS AND NUMBERS IN REPORT

BOSTON MASSACHUSETTS

CITY PLANNING BOARD

MAP OF EAST BOSTON

WITH A

COMPREHENSIVE PLAN FOR DEVELOPMENT

SCALE 1600'=1"

1000 500 0 1000 2000 3000 4000 FEET

¼ ½ ¾ 1 MILE

GEORGE GIBBS JR SPECIAL INVESTIGATOR

BOSTON MASS FEBRUARY 1915

HENSIVE PLAN.

Bridge. D, Chelsea Street Bridge. E, Bennington Street Bridge. F, Saratoga Street Bridge. G, Maverick Square. H, Intersection reets. K, Day Square. L, Eagle Square. M, Intersections Bennington and Curtis Streets. & Lynn Railroad Ferry. P, Chelsea Ferry.

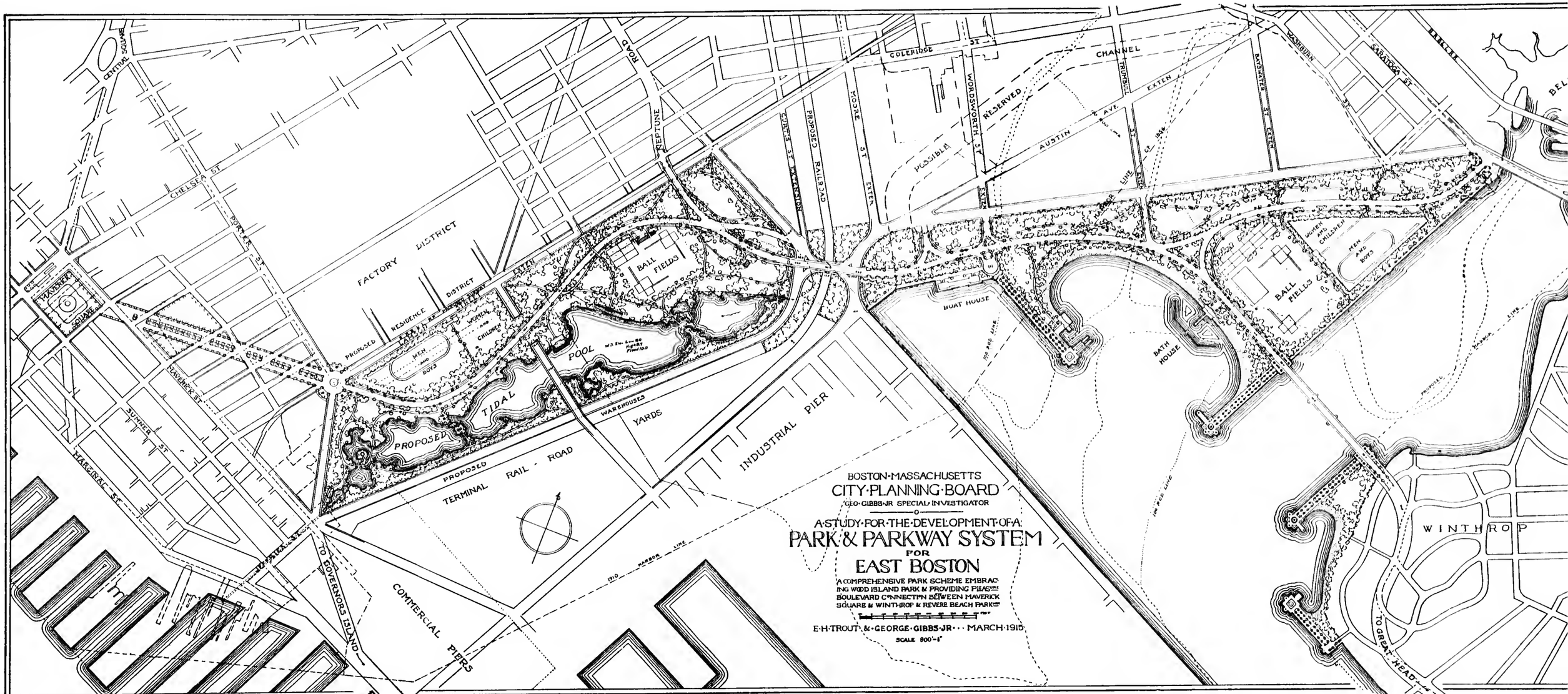

FIG. 28.— WOOD ISLAND PARK REVISION AND EXTENSION PLAN.

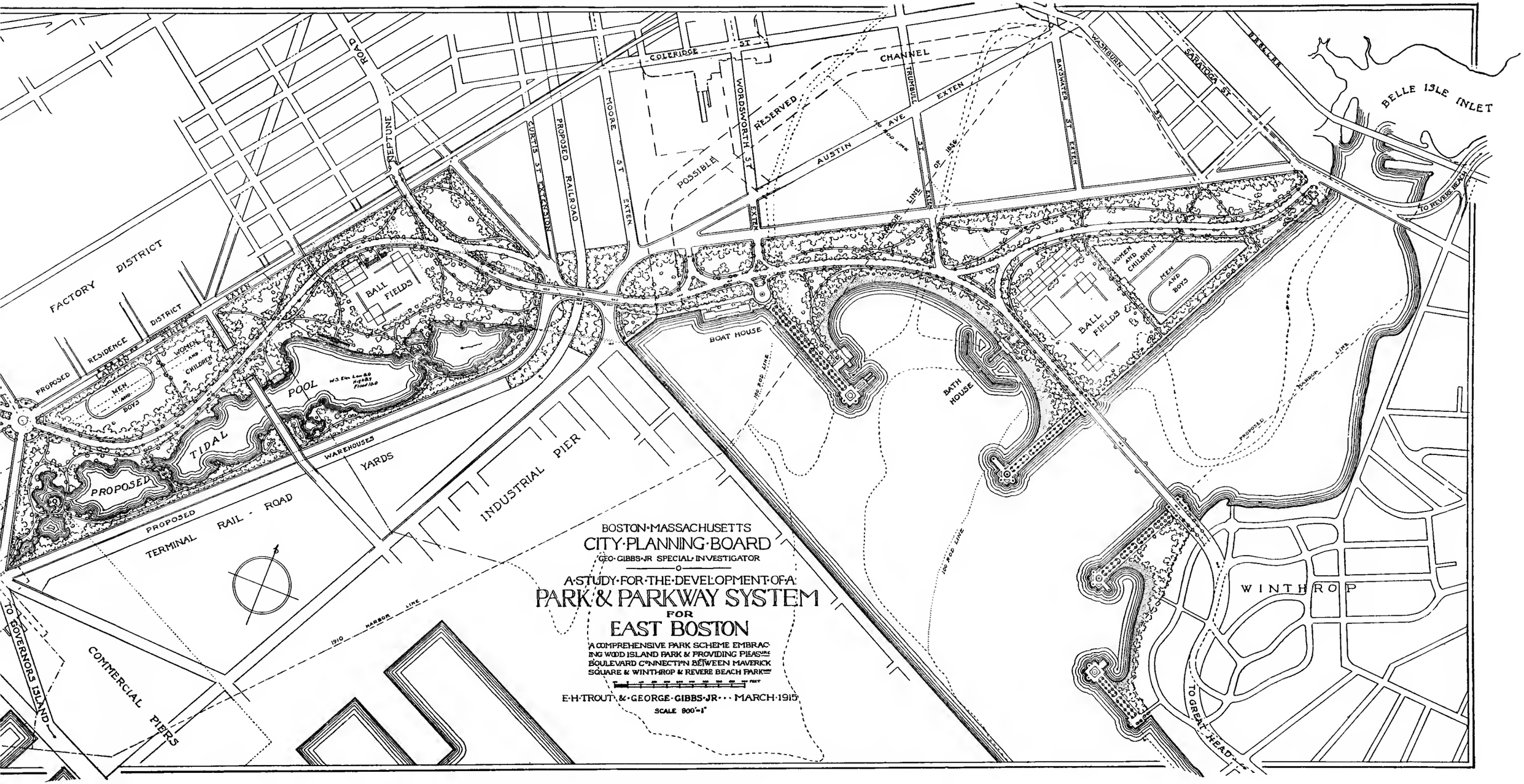

FIG. 28.— WOOD ISLAND PARK REVISION AND EXTENSION PLAN.

Beyond the city limits the proposed park extension northward should be further continued to connect with the metropolitan park system, either at Short Beach along Belle Isle inlet or over a bridge and through Cottage Park to Winthrop Beach reservation at Great Head, or, better, through both routes as suggested in Sections 42 and 43.

If main thoroughfares are located as suggested on all sides of the proposed extended park (numbered 30, 38, 39, 18 and 38 again), with a crossing at the narrow point (45), there will still be a stretch of park nearly a mile long next to the railroad yard location with no cross street. The

FIG. 29.— FLATS WEST OF BATH HOUSE AT WOOD ISLAND PARK.
Showing area proposed to be regraded and provided with a permanent pool. Jeffries Point in the distance.

plans of the Port Directors do not call for any such crossing, but it seems fair to suppose that the time may come when this will be much needed, and one has therefore been suggested a short distance south of the present line of Wood Island Park to connect with the south line of the proposed industrial pier. In order that this crossing may interfere as little as possible with the park interests, it is suggested that the street be carried across on a low grade, to tunnel under the proposed pleasure way. (See Section 29.)

The waterfront of the present park is very charming at high tide, but very dismal at low tide, when a broad area

of muddy flats extends half a mile or more from the shore. The water now varies from a mean high tide at elevation 10.63 or a maximum tide at elevation 15.64 to a low tide near elevation 0.5, or extreme low tide 3 feet lower. A pool with water standing at about the level of mean high tide would serve the park much better, provided it could be kept from becoming stagnant. There is no convenient source for obtaining an ample supply of fresh water to fill such a pool and it is not likely that a supply could be procured at a reasonable expense, but a salt water pool can be maintained and can be kept fresh by a flow of tide water through controlling devices at an inlet and an outlet to the sea.

A pool 4,200 feet long with an average width of 300 feet would have an area of 1,260,000 square feet. If one foot of water should be allowed to run off with each ebb tide at the harbor end, and if an equal amount be allowed to flow in with the flow tide at the Winthrop end, there would be a change of water amounting to 1,260,000 cubic feet, or $9\frac{1}{2}$ million gallons, twice daily, more than enough change to ensure clean water at all times provided the source is clean. A 36-inch pipe inlet flowing at a pressure of 6-inch head would let in 1,000,000 gallons of water per hour; at 1-foot head, 1,500,000 gallons; at 2-foot head, 2,000,000 gallons; and at 5-foot head, 3,000,000 gallons. If the lower level of the pool is made at about elevation 8, a 36-inch pipe in three hours' normal tide above elevation 8 would let in 6,000,000 gallons of water and would mean two-thirds of a foot rise in the pool. If the pool were higher than elevation 8.0 the average tidal flow would be less and the pool might suffer, but if some material is excavated to be used for constructing the park, the pool can be made satisfactory at about elevation 8.0, and it should be made as high as can be maintained, but not too high to allow an ample flow of water through a reasonably large inlet. An outlet slightly smaller than the inlet, working for a longer time, would draw the pool down again at every ebb tide. Ordinary tide gates at each pipe would prevent flow in the

wrong direction, and the elevation of outlet and inlet would prevent too great a lowering of the pool, while the diameter of the inlet would be such that extreme high tides might raise the pool a foot or so more, but no excessive flooding need be anticipated. A larger pipe or a lower level pool would provide a greater change, but also a greater flooding in extreme high tides. A special weir at each pipe would be required to allow a large quantity of water to flow in a shallow stream to and from the pipes, and the pipes would have to be almost entirely below elevation 8 in order to obtain a maximum service. The intake should be adjusted in a way to obtain clear water from beneath the surface, free from scum or débris.

From the business center and the probable outlet of a teaming tunnel from Boston, at Maverick square, to the proposed park extension, an ample parkway is proposed that will serve both business and pleasure vehicles. At the park entrance the Revere Beach Railroad should be put under ground, business vehicles should be deflected to a marginal street along the park (Lamson street extended and widened). Pleasure travel should be taken into the park to skirt along the pool, then rise over the proposed location for a cross street at about elevation 40, then drop down to pass the present boathouse, and cut through the west hill of the present park and pass back of the field house on or about the present elevation, 18; and finally to rise again and connect with the extension of Neptune road. Beyond this point Neptune road should be extended along the top of the east hill to pass back of the existing overlook building at about elevation 40; then to cross by way of a high bridge or viaduct over all traffic roads and the railroads at about elevation 50; then to descend again to the proposed shore park beyond. Through this proposed park extension the pleasure way could be extended to the present Winthrop Bridge, to connect there with a parkway along Belle Isle inlet to Short Beach. A branch could also turn off to cross the Belle Isle channel to Winthrop on a fairly high bridge, possibly at elevation 40,

high enough to clear tugs and barges, to connect with a parkway through Court Park and Cottage Park toward Great Head. (For more detailed descriptions, see Sections 16, 46, 45, 44 and 42.)

The plan for a pleasure way through the park involves four important crossings, all of which will call for costly construction. A separation of grades will be needed first at the intersection of Porter and Lamson streets with the Revere Beach Railroad (Section 46), but such a crossing must be made sooner or later for the benefit of Porter street travel, if business increases in East Boston, and should be made for the good of all interests, including pleasure travel. The proposed crossing of a new cross street near the bath house can be postponed until a street is needed there, but the grading should be made as far as possible consistent with such a plan. The suggested double bridge or viaduct (Section 45) over the proposed terminal railway would add greatly to the value of the park, both for vehicles and for pedestrians, and would afford a fine outlook eastward over Winthrop and the pleasure bay, and westward over the present park and the proposed tidal pool. The building of this bridge can well be postponed, but the plans should be considered in any construction that is made at that point. A branch road from Neptune road to the lower level should be made along the side of the hill north of the overlook building as a permanent entrance, and this can be made to serve all requirements until the proposed viaduct is constructed.

The proposed bridge over the Belle Isle channel (Section 44) will not be needed for many years to come, but should form a part of the plan, and if it is to be built eventually, plans for the Winthrop approach should be made now before further development in Winthrop interferes with the possible opening of a suitable parkway on that side, and this matter should be referred to the Metropolitan Park Commission and to the citizens of Winthrop.

In the areas proposed for park purposes ample space will be available for playground development on the present site, on one area near the east end, and on one near

the west end of the extended park. Those areas are sufficiently large to afford space for large games and open play, and are so distributed that they will serve also as local playgrounds for a large number of occupants of the adjacent properties.

The pool and the bay will provide extensive bathing and boating facilities for the whole of East Boston and can be developed gradually as the need increases. Upon the park areas not required for other purposes, ample space can be found for planting, to produce an interesting park-like character, and in the more quiet sections seats, shelters and special features can be installed for the use of persons seeking rest and quiet recreation.

The plan for the park contemplates a large amount of work to produce a finished result, and while the present size of the city does not seem to warrant any such development, the possible need for it in the future does warrant the consideration of such a plan, and does call for a definite move on the part of the city to procure the necessary lands and to direct developments in a way to produce the greatest ultimate value for the park areas.

As a protection against the noise and the undesirable view of the large area designed for use of freight yards east of the park, a row of tall warehouses or freight houses along the proposed extension of Jeffries street (Section 38) would doubtless be of much value, and the need for such buildings should be urged upon the Board of Port Directors.

The presence of the great freight yards may become a serious detriment to the park if steam engines are continued in use, but it seems fair to suppose that by the time the yards are developed other means of locomotion will be adopted, and then the presence of so large an area of comparatively open space may prove advantageous rather than objectionable.

4.—FREIGHT RAILROAD EXTENSIONS AND A POSSIBLE TUNNEL.

To provide better railroad access to the existing piers, and to possible new piers on the flats, a new terminal rail-

road will be needed and one free from the sharp turns that now hamper the Boston & Albany Railroad. The best chance for such an approach is evidently that shown on the plan, a new line from near Chelsea creek to tunnel under the narrow section of the city and under the Revere Beach Railroad, then to pass around outside Wood Island Park, where an ample clearing yard and suitable approaches to the piers can be established. This location is perfectly feasible if established now before further building operations interfere.

From East Boston to South Boston, or to the city proper, better railroad connections are needed and will be more needed in the future. A tunnel to the city from the Revere Beach Railroad has just been proposed by the Public Service Commission, and a tunnel to the freight yards in South Boston has been several times suggested and is recommended for eventual construction by the Port Directors. A freight tunnel to South Boston seems reasonable and practical for building when business warrants it, but the Boston, Revere Beach & Lynn Railroad is not primarily a freight road, and it should not be made a part of the freight system. It seems doubtful whether a tunnel to Boston from the passenger railroad would be warranted, and if not, it would seem that the passenger travel can best be cared for in a different way by proper connections with the existing rapid transit system as suggested under subway extensions (Section 6).

A marginal railroad near the Mystic and Charles rivers has been considered and there is now a spur track from near Maverick square to the National Docks, and another at the Standard Oil yards near the Chelsea Street Bridge, but a further extension would involve very costly changes and does not seem warranted by present requirements. It would probably be of still less value if a greater port development is undertaken on the eastern shore.

5.—PLANS FOR A TEAMING TUNNEL.

East Boston needs and should have a direct highway connection with the city proper, to supplement, if not to

supplant, the existing ferry lines. This need has been long recognized and various suggestions for a suitable connection have been made.

In 1868 plans for a bridge were discussed and at that time Gen. J. G. Foster, United States Army Engineer in Boston, submitted a plan and report for a tunnel in preference to a bridge, as better both for the service required by the public and for the protection of the harbor from obstructions.

In 1892 the City Engineer made studies for several possible routes and several possible designs for a tunnel to carry street cars, teams and pedestrians. Of these studies it was estimated that Plan E, on Route No. 2, for a single tube with a roadway 27 feet wide, designed for teams only, to run from the corner of Clinton and Fulton streets, down a 4 per cent grade, then to rise on a 3 per cent grade to the corner of Paris and Meridian streets, a distance of a little over a mile, would probably cost about $4,026,000. (Document 211 of 1892.)

In 1904 the existing rapid transit tunnel was opened from Scollay square to Maverick square at a cost of about $3,300,000.

In 1907 the question of a bridge was again revived and a plan for a high bridge with a capacity equal to six tunnels, to extend from Adams square in Boston to just beyond Central square in East Boston, was prepared by the City Engineer, and an estimate was made that it would cost about fifteen million dollars.

The Boston Transit Commission, in its report of January 10, 1908, to the Legislature (1908 report, Appendix D, on congestion of traffic), suggests a tunnel along the North Ferry route 2,200 feet long, with elevators and with space for two lines of teams and two narrow walks. The cost of same was estimated at about $1,600,000, exclusive of land damages. For a similar tunnel on the line of the South Ferry the estimate was slightly higher.

In 1911 the commission reported again, reviewing the above. As a relief for delays in a narrow tunnel, they estimated a four-track roadway, exclusive of land damages,

at $2,600,000. Their report advises against construction, but suggests that "This matter may, however, properly be reviewed when mechanical power is more generally substituted for animal power since such substitution will do away with some of the existing obstacles to successful operation, and will render possible shorter and less expensive approaches with steeper grades."

In 1911 a plan was prepared also by the City Engineer for a tunnel from the corner of Atlantic avenue and Commercial street in Boston to the corner of Lewis and Sumner streets in East Boston. This plan was designed to have

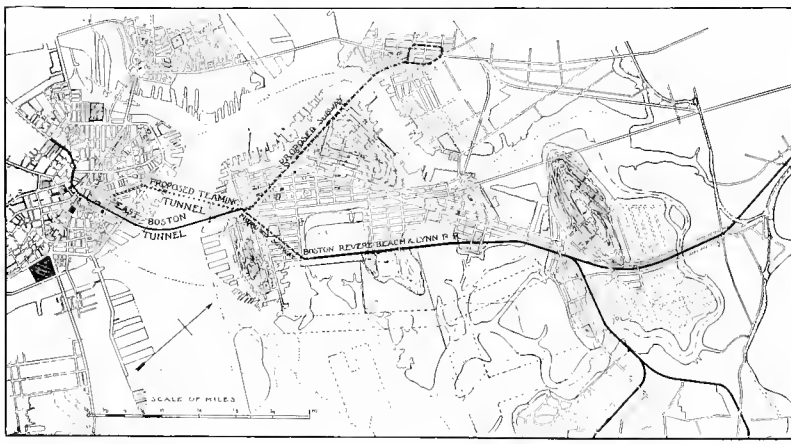

FIG. 30.— PLAN FOR A TEAMING TUNNEL AND FOR SUBWAY EXTENSIONS.

no grade steeper than 2 per cent and to depend upon elevators at each end, with no grade entrances. The plan calls for a 17-foot roadway and two 5-foot sidewalks.

As a direct connection between the two districts now served by the ferries, a tunnel with outlets at the marginal streets at each end would serve much better than a bridge on a high grade. The cost of one or more tunnels large enough to meet all present requirements would be much less than the cost of a high bridge. The annual cost of the upkeep of a tunnel would be much less than that of a bridge. The exposure to rough weather on a bridge is necessarily objectionable, while the tunnel would be at all times protected. The objections to a tunnel on account of

light, air and sanitation have been successfully met in England and can be met here, and even if a high bridge seemed more desirable the expenditures already made in the rapid transit tunnel have reduced the value of a bridge by at least the cost of that tunnel.

As a practical scheme there is every reason to believe that a tunnel can be satisfactorily built. The work of construction would not be materially different from that which

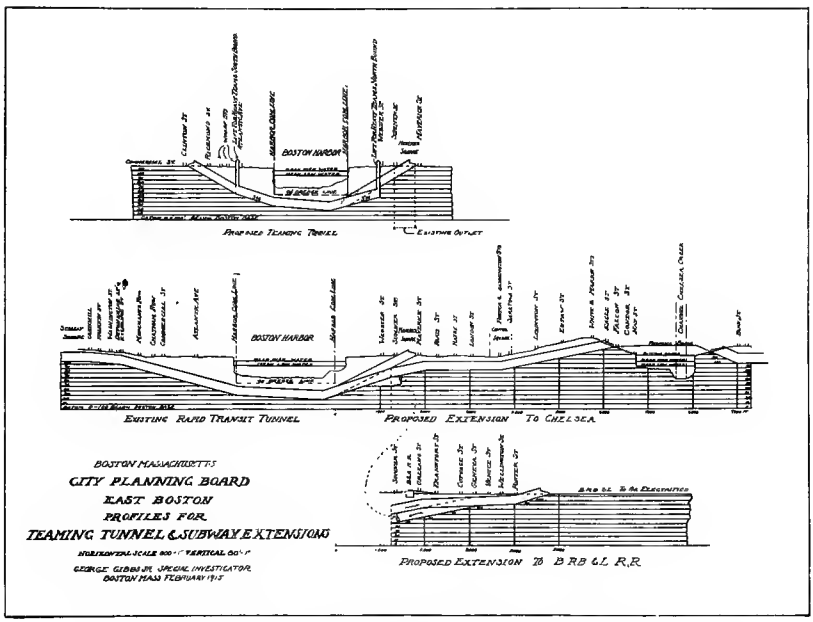

FIG. 31.— PROFILES FOR A TEAMING TUNNEL, AND FOR SUBWAY EXTENSIONS.

was done in the existing rapid transit tunnel. The question of maintenance would not be materially different from that now successfully carried out in teaming tunnels in England. The question of approaches can be met in either of two ways, or preferably both, by incline entrances and by elevators as shown on sketches herewith (Figs. 30 and 31).

A thorough study of bridges and sub-aqueous tunnels has recently been made by Messrs. Jacobs and Davis of New York, consulting engineers, as reported upon by them to both the New Jersey and New York Interstate Bridge

and Tunnel Commissions, and also presented in a paper by George D. Snyder, published in the proceedings of the American Society of Civil Engineers, Vol. XL., No. 5, May, 1914, pages 1323–1376. In these reports reasons are shown why a high bridge would be suitable for connections between the highlands of New York and New Jersey, but for waterfront connections in the low area a tunnel would be much more useful as well as much less costly, and facts are given concerning tunnels now in use in England which serve requirements not unlike those of New York. This report is fairly applicable to East Boston also as the conditions there are similar.

The two best examples of teaming tunnels comparable to that needed for East Boston are the Blackwall and the Rotherhithe tunnels in London, each of which reported in 1912 having carried about one million vehicles in one year, about the same number as are reported by the ferries to East Boston. For the sake of easy comparison the main facts are set forth on the accompanying table.

From these facts it is fair to assume that a tunnel can be built and operated satisfactorily, and that the cost need not vary materially from that of the English tunnels or the existing East Boston Tunnel.

The plan proposed in 1911 by the City Engineer calls for two shafts with elevators, but does not provide grade approaches. Grade approaches should be built, even though steep, as practically all vehicles could enter on a descending grade and most empty vehicles, autos and high-powered trucks would doubtless prefer to climb a grade rather than depend on elevator service.

The outlet in East Boston should be at Maverick square and could be through the present subway incline, as that will be abandoned if the subway is extended as suggested in Section 6. If a teaming tunnel is built before the subway is extended, the East Boston end could reasonably depend temporarily on an elevator, the elevator to be so located at the corner of Lewis and Webster streets that it will serve permanently to lift heavy vehicles that cannot climb the grade outlet.

TABLE OF TEAMING TUNNEL FACTS.

NAME.	Brunels-Thames Tunnel.	Blackwall Tunnel.	Rotherhithe Tunnel.	Hamburg-Elbe Tunnel.	Estimate of 1892 by Engineer, for East Boston.	Possible Plan for East Boston.
Date opened	1843.	1897.	1908.	1911.	Plan E, Route 2.	
Annual vehicular travel	Now a railroad.	About 1,000,000.	About 1,000,000.	.....	.....	Ferries carry 1,000,000.
Number of tubes	Two arched passages.	Single and space for other.	Single tube.	Two tubes.	Single.	One tube.
Soil	Clay and gravel.	Clay, sand and gravel.	Clay, sand and gravel.	Sand.	Gravel or clay.	Probably sand, gravel and clay as in existing tunnel.
Material used	Brick built with shield.	Iron, concrete lined.	Iron, concrete lined.	Steel.	Iron, brick lining.	
Ventilation	.....	Possible but not necessary.	Intentionally omitted.	.....	None.	
Length, portal to portal	1,200 ft.	4,465 ft.	4,930 ft.	1,471 ft.	5,900 ft.	5,000 ft.
Length under channel	925 ft.	1,220 ft.	1,480 ft.	1,214 ft.	1,600 ft.	1,800 ft.
Outside width	37 ft. 6 in.	27 ft.	30 ft.	19 ft. 8 in. each.		
Outside height	22 ft. 3 in.	27 ft.	30 ft.	19 ft. 8 in. each.		
Road widths	13 ft. 9 in. each.	16 ft.	16 ft.	5 ft. 11⅛ in. each.	27 ft.	27 ft.
Vehicular headway	16 ft. 4 in. each.	14.6 ft.	18 ft.	14 ft.	10 to 18 ft.	
Maximum grade	.....	2.92 per cent.	2.75 per cent.	Shafts at each end 78 ft. lift.	4 per cent.	3 per cent to elevators; 6 per cent at grade entrances.
Depth to invert	65 ft.	80 ft.	75 ft.	72 ft.	100 ft.	100 ft.
Walks	None.	Two, 3 ft. 1½ in. each.	Two, 4 ft. 3½ in. each.	Two, 4 ft. 1½ in. each.	None.	Two, about 5 ft.
Cost	$2,532,000.	$4,242,000.	$5,300,000.	$2,386,000.	$4,026,000.	Probably $4,000,000 to $5,000,000.

In Boston an elevator should be built to serve as an outlet for heavy vehicles, but in addition there should be also a grade outlet and this might reasonably be through Commercial street to the corner of Cross street. For this outlet Commercial street should be widened by taking the row of buildings between Clinton street and the alley on the west side.

The tunnel as proposed will have a drop of about 100 feet from the streets to the lowest point, with 3 per cent

FIG. 32.— PRESENT SUBWAY OUTLET AT MAVERICK SQUARE.

grades between the elevators, and about 6 per cent grades to the portals, as shown on the profile (Fig. 31).

6.— SUBWAY EXTENSIONS TOWARD CHELSEA AND TOWARD REVERE.

As mentioned in the general survey (Part I.), an extension of the tunnel in East Boston must inevitably be required if the transit requirements continue to grow. For such an extension two routes seem practicable and necessary, and, in either or both, subways could be built at any time.

On the plan (Fig. 30) and profiles (Fig. 31), one extension to Chelsea and one to the Revere Beach Railroad are shown. To cross Maverick square and the Boston & Albany tracks, more space is needed, and for that the block between Maverick square, Sumner street, Orleans street and Maverick street should be taken by the city and held for rapid transit and other purposes.

To extend toward Chelsea, the subway should be lowered, abandoning the present outlet, then curved eastward to provide space for a station, and to make a better curve into Meridian street. Through Meridian street the subway should follow just below the surface to a station at Central square with another at the top of the hill, near Eagle street. Here the tracks should emerge to cross Chelsea creek on a bridge 40 feet above the water, similar to the Charlestown bridges, then descend to a terminal and turn in Chelsea to meet all the lines of cars that converge there. The descent in Chelsea could be made in a private way on the west side of Pearl street, and for that the land should be acquired now while still practically unused. Toward the Boston, Revere Beach & Lynn Railroad the subway should dip under the Boston & Albany tracks, then follow under the center of the proposed diagonal street, to emerge for the present at the railroad tracks just beyond Porter street extended.

If the present railroad is to form a part of the rapid transit system it could be rebuilt as far as Orient Heights to form a rapid transit terminal there, or could be rebuilt all the way if that seems best for the interests beyond the city.

7.—MERIDIAN STREET BRIDGE REVISION.

The Meridian Street Bridge has recently been rebuilt, but it is even now only a temporary structure that will eventually require further revision and possibly enlargement. This is a busy bridge and likely to become more so, especially if it is to carry the rapid transit lines, and a high level crossing over the channel would serve the traffic much better. From the East Boston end the proposed rapid

transit tracks and one roadway could be kept high, and another roadway to accommodate the low level streets could start low, as it does now, to rise on a $2\frac{1}{2}$ per cent grade to meet the other roads at about 40 feet above the channel. On the Chelsea side some change in the street lines and grade would also be required to make a reasonable approach.

8.—MAVERICK SQUARE EXTENSIONS AND APPROACHES.

To provide ample spaces for rapid transit extensions, teaming approaches, street improvements in connection with the port development and to form a dignified and reasonable open space, Maverick square should be widened and could reasonably be extended to include all the property eastward to Orleans street. If this property is acquired, the present streets on the west and north sides can be amply widened to leave a block practically 400 feet square as a "center." This block is cut in two by the Boston & Albany Railroad tracks, and to make it really useful, the tracks should be decked over at or slightly above the level of the existing bridges.

The open space so formed would then be 10 or 12 feet higher over the railroad than at the Maverick and Orleans street sides, and would require a special treatment to make it serve effectively as a city square. A practical plan would be to raise the entire area to form a level platform at the upper level, and to use the frontages on Maverick square and on Orleans street for stores or for market purposes, having direct railroad communications at the rear and easy access to the existing storage warehouses nearby. Such a plan might well be developed as a municipal undertaking and would doubtless be of great benefit to the community.

A platform so produced would be above the level of the adjacent streets, and would seem incomplete if treated as a vacant public open space, but if the entire center were occupied by a public or semi-public building, it could be made dignified and useful. The site is large enough for

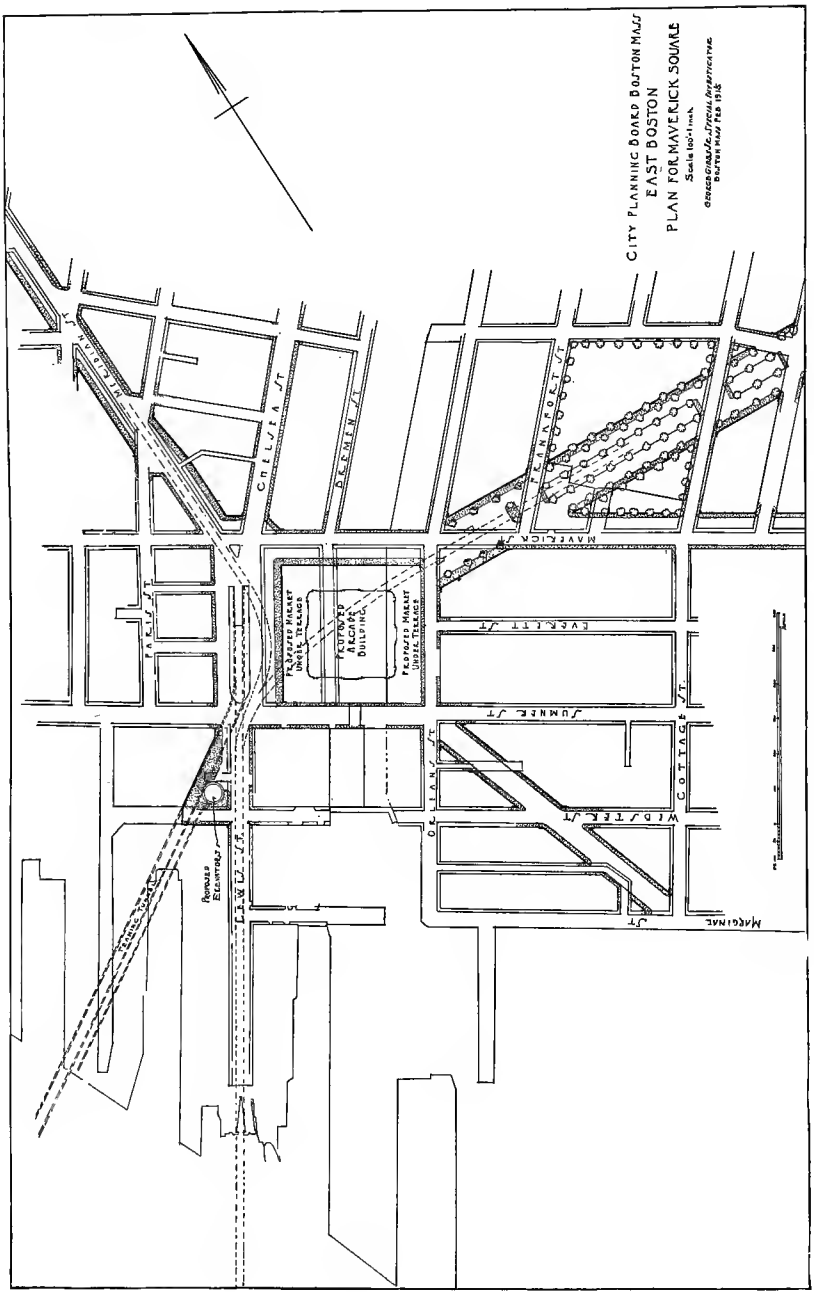

FIG. 33.— PLAN FOR MAVERICK SQUARE EXTENSION AND APPROACHES.

Drawn by C. L. Pitkin.

FIG. 34.— BIRD'S-EYE VIEW OF PLAN FOR MAVERICK SQUARE EXTENSION AND APPROACHES, LOOKING EASTWARD.

the erection of an arcade building similar to those in Rochester, New York, and Cincinnati, Ohio, that are privately owned, and those in several cities in Italy that are public property. Such a building might possibly be made a paying investment if devoted in part to small booths and stores in a way similar to that of the arcades in Milan and other Italian cities where restaurants, drug stores, banks and other concessions are rented out. Spaces could also be

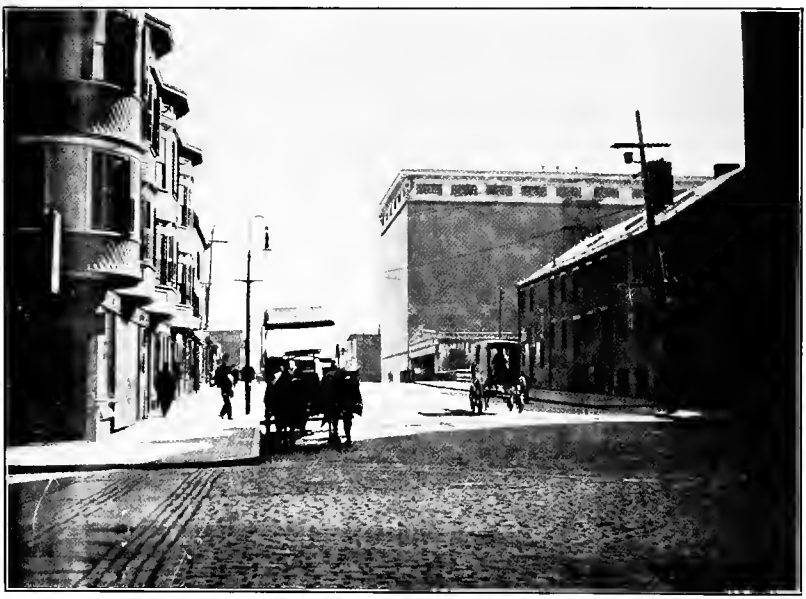

FIG. 35.— SUMNER STREET, SOUTHEAST FROM MAVERICK SQUARE.
Buildings on the left in proposed taking; big warehouse in the distance.

reserved in the building for music and other public functions. To determine fully the possible value of such a building to the city would require further study and estimates, but the need for an enlarged square is imminent, and if this is to be extended as it should be, it can well be made to include the entire area, and thus to provide an important center for East Boston. The space is now occupied by relatively small and unimportant buildings and could be acquired by the city at much less cost now than will be possible in the future.

As a further provision for traffic, the corners between Chelsea street and Meridian street and between Chelsea street and Maverick street should be cut back, and an isle of safety could well be made opposite the present tunnel portal as shown on the plan (Fig. 33).

The importance of this square has grown to be considerable to-day. If the district continues to grow and if

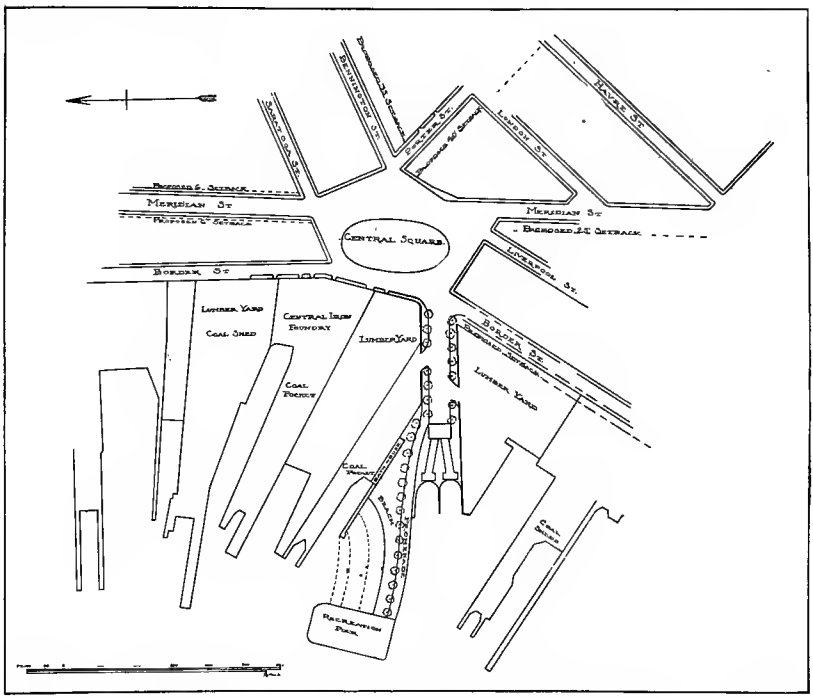

FIG. 36.—PROPOSED STREET AT CENTRAL SQUARE WITH PUBLIC PIER AT END AND POSSIBLE FERRY CONNECTIONS.

improvements are made, such as subway extensions, a tunnel to the city, better approaches toward the park area and toward the proposed docks, the need for an ample public space will be enormously increased, and the entire taking above proposed will be amply justified.

9.—CENTRAL SQUARE EXTENSIONS.

Central square is an important center and will continue to be. It is attractive and fairly spacious, but it lacks one

important feature, it is near the waterfront but it is entirely cut off from the water by large commercial piers and old buildings. A public opening to the water should be made either as a waterfront park space or as a new street with a terminal recreation pier. The entire waterfront would make an admirable outlook, but as the land is now assessed relatively high, and as several other waterfront holdings are needed, a relatively small opening at Central square can

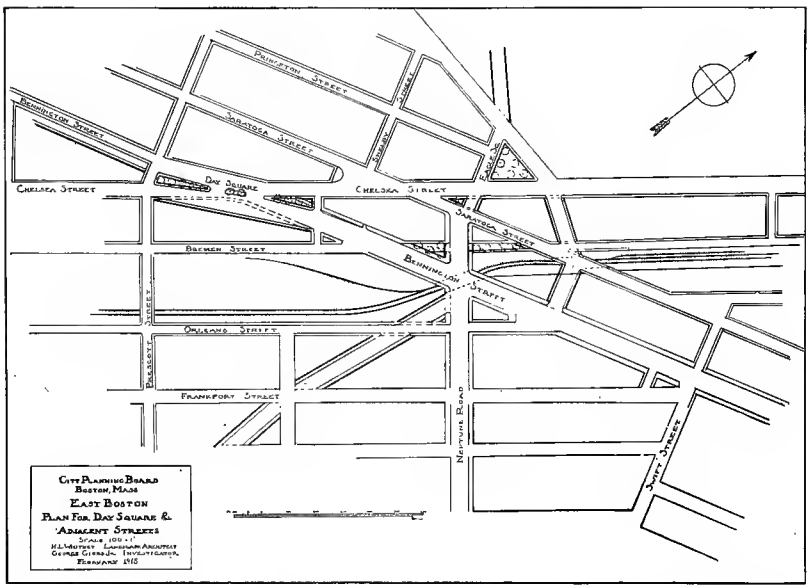

FIG. 37.—PLAN FOR DAY AND EAGLE SQUARES AND ADJACENT STREETS.

reasonably be made to provide for a street and a recreation pier. The present route of the North Ferry is not far removed from that of the South Ferry and it is quite possible that in connection with such an improvement at Central square the North Ferry might logically be combined with the Chelsea Ferry, which is now somewhat embarrassed financially, and that a new and better line could be established to take the place of both to run from the Hanover street landing in Boston to Central square in East Boston.

10.— DAY SQUARE AND EAGLE SQUARE IMPROVEMENTS.

There is now at and near Day square, Eagle square and Neptune road a most incongruous and uninteresting collection of unrelated street ends, street intersections and public open spaces. The present plan is the result of the meeting of two distinct rectangular systems of streets with little attempt at adjustment, and with a railroad cut through it

FIG. 38.— EAGLE SQUARE, NORTH FROM CHELSEA STREET.
Showing open space that could be made a park triangle.

that has necessitated rising grades and rendered the district still less satisfactory. These street intersections form an important center that has already resulted in a rise in value of lands and bids fair to increase in importance. A plan for still better public development and more complete separation of the lines of travel should be devised before further improvements interfere.

A study for such a revision has been made, with the suggestion that Day square be still further widened on the southeast side and that the south end of Chelsea and east

end of Bennington street be made a separate street from the west end of Bennington and north end of Chelsea street. Neptune road should also be extended through to Eagle square. Bremen street should be closed between Bennington and Saratoga streets and a new street should be opened from the Saratoga Street Bridge to Bennington street and to Eagle square. The center of Eagle square should be filled in with a grass plot and a few trees, and the present location of Bremen street, when closed, could be grassed over and used as a small open space if it cannot be sold to the abutters. Such a change would greatly improve the present situation and would safeguard the future development.

In addition to these streets a new diagonal street is also proposed, to start at the Neptune Road Bridge and run toward the proposed port development, as referred to in Section 29, and a better outlet from Condor street at Eagle square is suggested (Section 53).

11.— A BATHING BEACH ON MYSTIC RIVER.

At the corner of Condor and Border streets and along the west side of the Meridian Street Bridge there is now a large area of vacant flats that should be acquired by the city for the development of a bathing beach and a local playground where they are much needed by the people on the "Hill," and this area is admirably suited for such a development. The property could be acquired now to be developed gradually in case it cannot be improved immediately.

12.— A POSSIBLE RESERVOIR PARK.

The land of the Eagle Hill reservoir has been coveted for years by residents on the hill for a much needed local park space, and it could be made very useful if not needed for its present purposes. It is now a part of the water system, held as a reserve, and may not be abandoned for some years although it doubtless will go eventually. To use a portion of the grounds for recreation, some regrading would be necessary as the slopes are very steep and the

flat space very limited, but the view from the top and the exposure to breezes in summer are fine, and by a moderate expenditure for inclined walks and fences, some space could be made accessible. Two inclined walks from White street northward, one up each end of the reservoir, could be made to the top to connect with an encircling walk, protected by a fence at the water's edge, or at the top of the bank against the reservoir, and by a fence just low enough down the outside slope to be clear of the views from the walk. Around the top a row of Scotch pine trees could be planted to afford shade and protection for seats along the walk, and a small amount of shrub planting should be added to break the monotony of the necessarily straight and ugly lines of the embankments and street lines. A similar treatment has just been successfully carried out at Cobb's Hill reservoir in Rochester, New York.

13.— BLOCK INTERIOR IMPROVEMENTS.

HAYES STREET AND OTHERS.

One of the worst block interiors in East Boston to-day is probably that cut by Hayes street, near the Cunard Docks. Vital conditions there are bad chiefly because of the character of the old buildings, but also because the street is narrow and not well approached. If a diagonal street is cut through from Marginal street to Sumner street, as proposed, the east end of Hayes street will be opened up, a number of the old buildings will be removed, and the others will doubtless be made more nearly to meet the requirements of the Health Department. Of the other bad block interiors several have been mentioned in the general discussion of block subdivisions and a plan for one is there presented (Fig. 6).

14.— SARATOGA STREET EXTENSION THROUGH FORD STREET TO ASHLEY STREET.

Saratoga and Bennington streets are the two through east and west streets between the Boston, Revere Beach & Lynn Railroad and the big hill on Breed's Island, and they will both be very important in the future. They

now converge to form a very bad congestion point near Orient Heights Station that could easily be relieved.

If Saratoga street were extended through Ford street and across one short block to Ashley street it would make a much better thoroughfare, and through it the car tracks could be carried so they would not interfere with the stream of vehicles on Bennington street. This extension could have been made a few years ago across almost open lands. The block is now built up or in process of building and could be crossed only at a cost of destruction of some property, but the location should be definitely determined

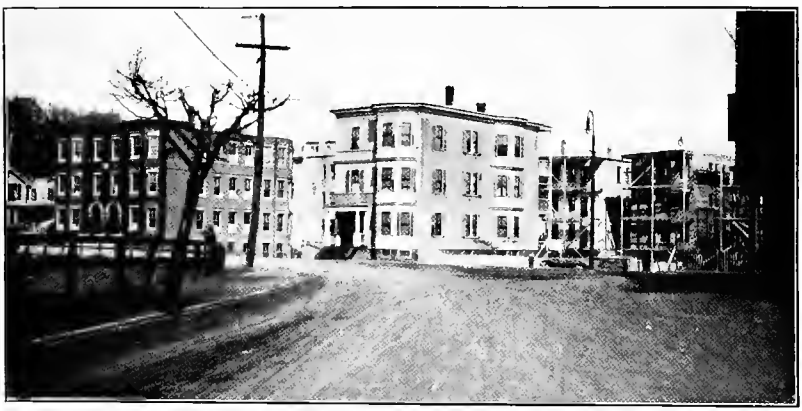

FIG. 39.— FORD STREET, LOOKING NORTH FROM SARATOGA STREET.
Showing buildings through which street should be extended to Ashley street.

upon to be opened in the future, and in case of fire or removal of buildings, no new buildings should be permitted to interfere with the ultimate extension. This extension, if made, will cause a complication of names that can be remedied if the present eastern end of Saratoga street be renamed as suggested in Section 25.

15.— MARGINAL STREET CUT-OFF AND WIDENING.

With further growth in port development, the need for a better approach to Marginal street from Sumner street will become more acute than now, and even now the con-

ditions are unfortunate. The need for a diagonal approach was recognized by the Metropolitan Improvements Commission, and was recommended in their report of 1909. This diagonal should be made a definite part of the city plan, to be opened as soon as funds are available or the demand for it is sufficiently urgent. From the proposed diagonal cut-off eastward, Marginal street should be widened on the north side, either gradually as the existing buildings are removed, or as a definite undertaking. Beyond the angle at the Revere Beach Railroad the street could be widened on the south in connection with port development, in case the property there is to be rebuilt, or it could be widened further on the north if that prove better, but it should be widened to meet the streets proposed by the Port Directors. To carry the burden that can be ultimately expected, the street should be not less than 90 feet in width.

16.— WOOD ISLAND BOULEVARD, FROM MAVERICK SQUARE, FOR TEAMING AND PLEASURE.

From Maverick square eastward the need for a diagonal street exists and was recognized by the Metropolitan Improvements Commission in their report of 1909. The location here proposed varies somewhat from that then recommended but is not essentially different. For heavy teaming, pleasure travel, surface cars and a subway extension, a broad boulevard should be laid out to be not less than 160 feet in width, and to provide one of the main arteries of the future for travel, not only for East Boston but also for all the country beyond, as shown on plan (Fig. 28). The width of 160 feet will allow for a development somewhat similar to that of Beacon street in Brighton and Brookline, which is also 160 feet wide.

17.— MAVERICK STREET WIDENING AND EXTENSION.

To further meet the plan of the Port Directors, and to provide a level route from the heart of the city to the pro-

posed pier development, Maverick street should be widened to not less than 90 feet. Of this width the greater part will eventually be required for teaming, though for present purposes the existing roadway is ample. It would be possible to establish a line on the north side to act as a setback for buildings, against the time when the widening becomes imperative, but the setback should be established now before more buildings interfere. It is possible that the street could better be widened on the south side, and could thus be made to remove some of the rear lot conditions on that side that bid fair to become worse in the future, but the length of the widening through built-up spaces on that side would be materially greater, while the relief to rear lot conditions would be but partial. Maverick street now ends at the old waterfront but should be extended in connection with the proposed port development.

18.— NEPTUNE ROAD EXTENSIONS.

Neptune road is now set aside as a park drive and is the principal approach to Wood Island Park. If the new approaches to the park are made it will still be important, but will be only one of the several ways and need not be restricted against use as a teaming thoroughfare.

It should be extended northward to Eagle square as recommended in Section 10, page 105, and should be continued eastward around the end of the existing park area to connect with the proposed port development thoroughfares. The extension proposed is shown as 80 feet in width.

19.— PARIS STREET REDESIGNED FOR RECREATION.

Paris street might well be made a recreation street, to keep mothers and children off Chelsea street, and to supplement the several school yards along the street.

In East Boston there are several streets surrounded by densely occupied residential blocks that could well be redesigned to serve more purely local requirements, and

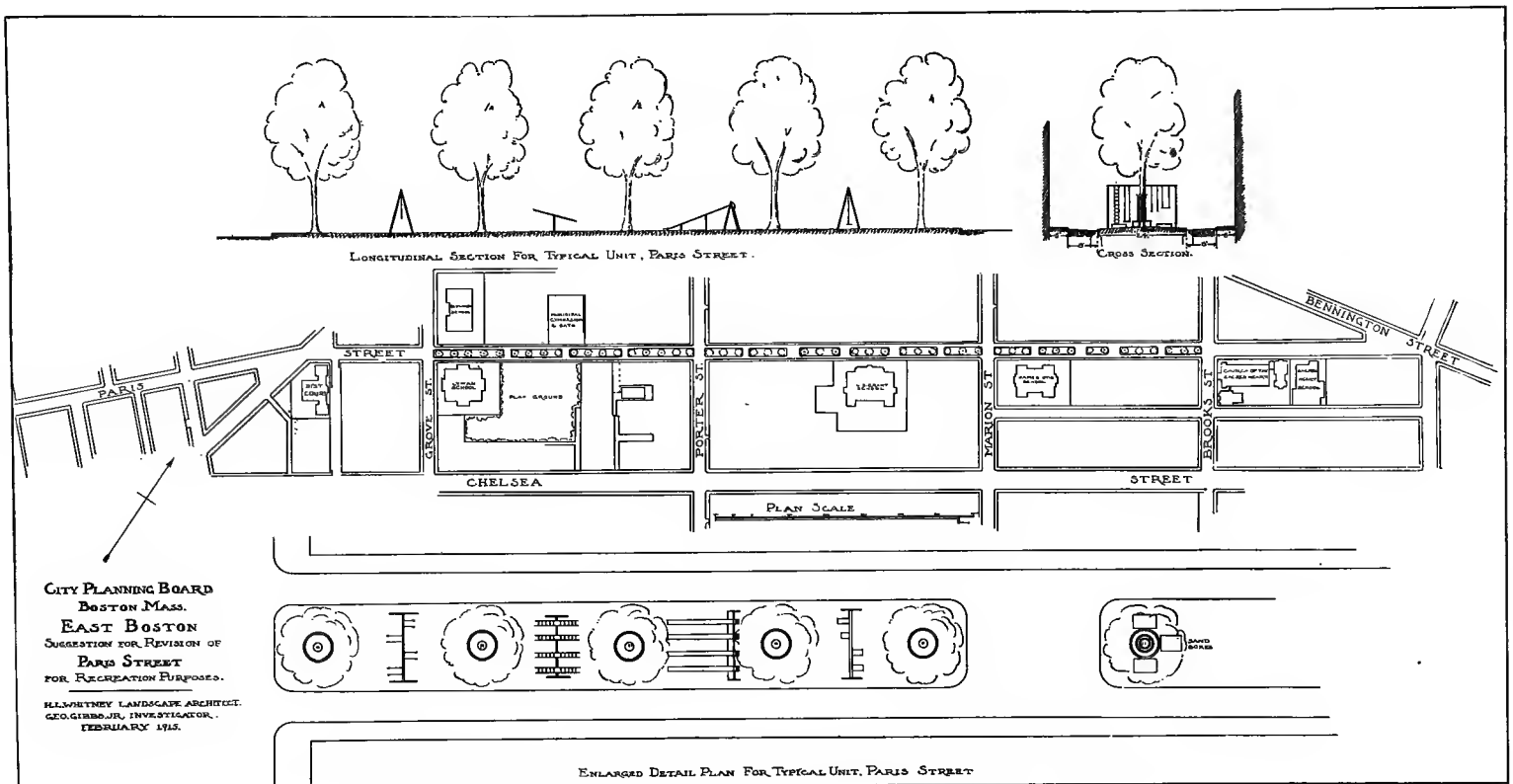

FIG. 40.— PLAN FOR RECONSTRUCTION OF PARIS STREET FOR RECREATION.

to allow only for such teaming as is essential to the buildings along the street. A suggestion for such a change will doubtless meet with serious opposition by the property owners on the street, but if the advantage of such a change to the community is made sufficiently evident, the objection of abutters to the proposed improvement can doubtless be largely overcome.

Paris street is now 50 feet wide between buildings, and the building line is broken by a number of public and semi-public open spaces between Meridian and Bennington streets, and is in reality a long drawn out but disconnected civic center. It is parallel to and not far from Chelsea street, which serves for all through teaming. The city maintains costly schools and a gymnasium building upon the street, and has recently acquired a small space for a local playground. The playground is far from adequate to provide for the needs of the large number of mothers and children for rest, recreation and amusement, and additional space can be acquired only at a relatively great expense.

The center of Paris street could be rebuilt, as shown on the plan (Fig. 40) to provide space for a row of trees in the center with a number of units of playground apparatus, and a large number of seats also, and could still serve its street purposes with a narrow sidewalk and a narrow roadway at each side, with frequent cross roads. Such a design is practicable and the increased use of the valuable street space would doubtless more than repay the city for the cost of the change.

20.— MERIDIAN STREET WIDENING.

Meridian street is an important thoroughfare and will be more used in the future, even though a subway be constructed under it. It is now occupied largely by old buildings, some of which north of Central square are set back about 6 feet on each side. It is now fairly wide, but not wide enough to provide for greater future requirements.

Between Paris street and Central square it can best be widened on the west where a setback of 20 feet, or prefer-

ably 25 feet, should be established. Between Paris street and Maverick square there are now large costly bank buildings that are good for many years and should not be disturbed, and for that distance the street can probably best be widened on the east side, thus approaching the square on a better line also.

North of Central square Meridian street rises on a fairly steep grade, and heavy teaming is naturally diverted to

FIG. 41.— MERIDIAN STREET, NORTH FROM MAVERICK SQUARE.
Showing bank buildings on the left near center; subway outlet in foreground.

Border street, but Meridian street is and will continue to be the main approach to properties on the "hill," and is the natural approach to a high level bridge toward Chelsea that will doubtless be required eventually. A setback of 6 feet on each side could be made as far as White street. Beyond White street a setback of 6 feet on the east could be made without serious destruction of property, but to provide for a high bridge approach, a much greater width will be required and it is quite possible that it would cost the city less to take a strip 45 feet in width on that side

to provide 105 feet between buildings across the two blocks between White and Eagle streets. North of Condor street space will be available for ample widening if the city acquires the flats for a beach and playground as proposed in Section 11.

21.— BENNINGTON STREET WIDENING BETWEEN CENTRAL AND DAY SQUARES.

From Central square to Day square, Bennington street is an important thoroughfare. It is narrow and is now

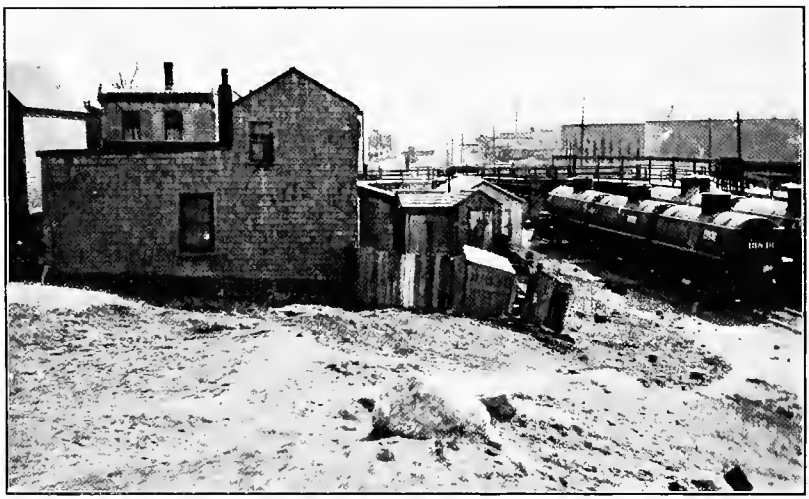

FIG. 42.— VIEW SOUTH FROM PROPOSED POPE STREET PLAYGROUND.

occupied by a double line of car tracks. It is paralleled by and somewhat relieved by Saratoga street, into which much vehicular traffic is deflected, but it should be widened and could be widened better on the south side where there are now many old buildings and many open triangles at the intersection with diagonal streets. If a subway is built to Chelsea it is quite possible that travel would be better served if the local street cars should be taken off Bennington street and run through Saratoga street all the way from a turn in Central square at a subway portal. This would leave Bennington street to serve vehicular

travel all the way to Orient Heights as it now does east of Day square. Even if such a change in cars be made Bennington street should be widened between Day and Central squares, to be eventually not less than 70 or 80 feet wide, and if cars are not removed it should be made 85 feet in width.

22.— POPE STREET PLAYGROUND.

On Pope street, north of the Cheverus School, there is a vacant hillside that could well be taken by the city for

FIG. 43.— VIEW WEST FROM PROPOSED POPE STREET PLAYGROUND.

a local playground. It is not large and is undercut by the railroads and may be still further cut into if the Boston & Eastern Railway goes through, but it is the only available area in that section not yet built upon, and could be made useful as a small terraced playground.

23.— SUMMIT PARK AT ORIENT HEIGHTS.

On Breed's Hill at Orient Heights the East Boston Company has set aside a small triangle to be reserved for a park. On the next block the city owns a water tower. Around the water tower there are no buildings now and that block should be added to the triangle to make another

small local park space for the city. In connection with the tower the city could eventually provide an outlook platform to command fine views over the harbor and the entire surrounding country.

24.— ST. ANDREW ROAD, CORNER OF WASHBURN AVENUE.

At Shay's Hill a new extension of St. Andrew road has just been made with an offset that is very unfortunate. St. Andrew road may never go through toward Winthrop,

FIG. 44.— EAST END OF SARATOGA STREET, LOOKING TOWARD WINTHROP. Fifty feet in width, an important thoroughfare in which trees are needed, but have not been provided.

but it may, and if it does it will form an important relief street parallel to and near to East Saratoga street. The corners at the intersection with Washburn avenue should be cut back in a way to make an easy deflection at that point. This is a relatively small change, but it is an important one that should not be overlooked.

25.— EAST SARATOGA STREET WIDENING.

East Saratoga street is now the only approach to a large community in Winthrop. It is but 50 feet wide. It has no trees and is now hot and dusty in summer. It is a residential street that should be planted and made

more attractive. Many of the buildings now standing can be eventually pushed back. There is a slight setback on each side, but not enough to afford ample space for good development. The street could be widened to 90 feet across the vacant lands by a 40-foot taking on the north side, and in the built-up section a restriction should be placed against rebuilding, to provide for an equal widening there also. This street will be much relieved in the future if Washburn street is extended and widened as proposed, and if other streets are built across the flats,

FIG. 45.— AUSTIN AVENUE, NORTH FROM SARATOGA STREET.
Now blocked by the fence at the railroad, and graded to meet the railroad instead of to meet a future bridge.

but it will always be an important cross street and should be widened. The name should be changed to East Saratoga street, or preferably to Boardman street, of which it is a continuation, if Saratoga street should be extended as proposed in Section 14.

26.— AUSTIN AVENUE WIDENING AND EXTENSION.

Austin avenue as laid out is now cut in two by the railroad and is partially undeveloped. It is a very important through line that should be widened to not less than 90

feet, and should be extended southward to connect with the proposed port development. It should pass over the railroad on grades not steeper than 3 per cent to form an important connection through Bennington street to Revere.

27.— BAYSWATER STREET WIDENING AND EXTENSION.

Bayswater street, from the Saratoga Street Bridge, can be widened on the north side on practically open areas and

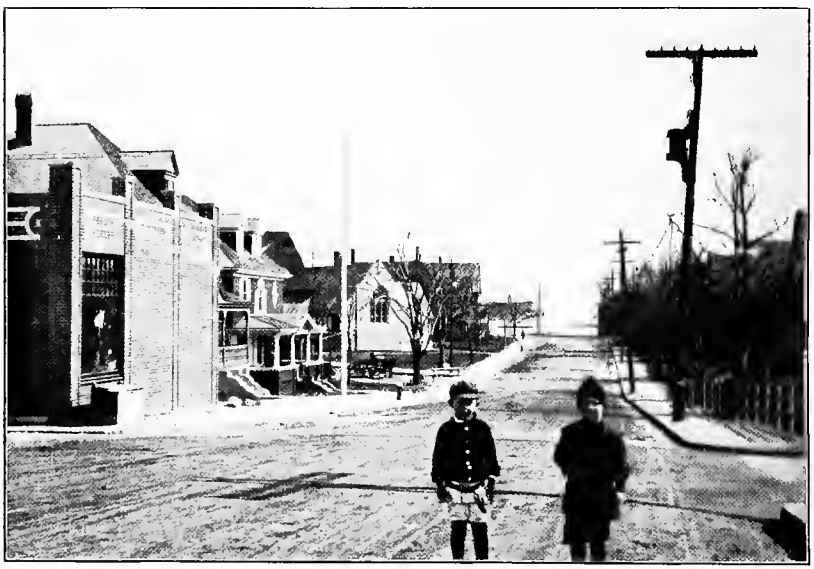

FIG. 46.— BAYSWATER STREET, FROM SARATOGA STREET BRIDGE.
Showing vacant spaces on the left in which the street can be widened. Winthrop in the distance.

should be extended across the flats to meet the proposed Jeffries street extension Section 38.

This will be a secondary street in any event and can be made 70 feet in width and still be planted if the roadway is made 38 feet wide and the sidewalks each 16 feet, with space for trees at the curb.

28.— CURTIS STREET EXTENSION.

Curtis street is an important cross street and will be much needed for teaming from the Chelsea Street Bridge

to the port. It is near the proposed railroad location and the space between the street and the railroad can well be used, at least for a part of the way, for commercial buildings to be served by the railroads at the rear. The street if so used need not be planted and can be made chiefly roadway, and for that a total width of 50 feet will probably serve. This will leave a small strip next to the cemetery that can well be planted with trees and eventually provided with seats to serve as a small resting place.

FIG. 47.— CURTIS STREET, FROM SARATOGA STREET.

Showing the present jog at the cemetery and the sign board and stable that now block a direct continuation. Wood Island Park in the distance.

29.— DIAGONAL STREET WEST OF WOOD ISLAND PARK AND POSSIBLE EXTENSION TO THE PORT.

From Eagle square and the Neptune Road Bridge toward the port it is proposed to extend Neptune road around the north side of the existing park, but another main road will be needed toward the Porter Street Circle and to a possible street across the park extension. This diagonal was suggested by the Metropolitan Improvements Commission in 1909. It will cross the open area now dedicated to residential purposes. It should be planted and should not be

less than 85 feet in width. From the existing railroad eastward this street can be extended across the proposed park area, and should pass under the park driveway; then bridge over the tidal pool, and rise to cross the Jeffries street extension and the railroad yards, to descend again to the port streets. It should be designed to interfere as little as possible with the park uses (Section 3).

30.— PORTER STREET WIDENING AND EXTENSION.

Porter street from Central square south is now an important street and will become far more so when the port is developed. It can be widened on the west side partially through old buildings that can be restricted to be set back when rebuilt, and partially through vacant lots. It should be widened to not less than 90 feet. At the existing railroad bridge and the one modern factory building on Orleans street, a restriction line should be established to guard the future, although no widening can well be made there for the present. It should be extended into and across the port lands.

31.— BOARDMAN STREET EXTENSION AND BRIDGE.

Eventually a new bridge to Chelsea will be needed from Breed's Island. A bridge could logically be put in on the line of Boardman street extended, with a branch also from Waldemar avenue. The bridge should be made high enough to clear ordinary boating, probably about 40 feet above the water.

Boardman street is now an important cross street and should be made eventually 85 or 90 feet wide. It could be widened part way on the west side now, in advance of building, and restricted through the built-up section, to be widened gradually. It might logically be extended in name to include East Saratoga street, of which it is a practical continuation. (See Section 25.)

32.— WASHBURN STREET WIDENING AND EXTENSION BOTH WAYS.

Washburn street is now a shore road but will become an interior street when the flats are filled, and should be made a secondary diagonal not less than 70 feet in width, as an important approach to Winthrop from East Boston, and it should be extended west to Trumbull street.

33.— TRUMBULL STREET REVISION AND EXTENSION.

Trumbull street is now unimproved, but it is likely soon to be opened between Bennington and Saratoga streets. It should be extended diagonally across the edge of the playground to Boardman street, and across the flats to Jeffries street extension and should be made approximately 70 feet wide and planted.

34.— WORDSWORTH STREET WIDENING AND EXTENSION BOTH WAYS.

Wordsworth street does not now cross either railroad. It should eventually be extended across both to form a primary street from the Chelsea Street Bridge to Bennington street, and a secondary street from there out over the flats. This street is now devoid of trees, but is all built up west of Bennington street. (See illustration, Fig. 7.) It is 50 feet wide, but could be reasonably widened by pushing back the houses on one side, preferably on the south side. If it is extended to Chelsea Street Bridge it should be made 80 feet or 85 feet wide from Chelsea street to Bennington street, and 70 feet wide from there over the flats. (See, also, Section 35.)

35.— CHELSEA STREET BRIDGE REVISION.

Chelsea Street Bridge, like the Meridian Street Bridge, is now too near the water, and must be opened frequently. It should eventually go up to about 40 feet above the water, and a branch should be extended across the railroads to

Wordsworth street. This would serve also as an extension of Chelsea street toward Breed's Island (Section 47).

36.— MOORE STREET EXTENSION.

Moore street, though not a through street, is near the proposed trunk line railroad, and should be extended to serve as a terminal for the streets east of the railroad, and as a frontage for commercial buildings that may be located next the railroad. It should not be less than 70 feet wide south of Bennington street and should be planted.

37.— COLERIDGE STREET EXTENSION.

Through Harbor View, Coleridge street is now a marginal street, but with the filling in of the flats it will become an inland street, and between Lamson street extended and Austin avenue it will form an important thoroughfare parallel to but nearly a quarter of a mile from Bennington street. It should be made 85 feet in width.

38.— JEFFRIES STREET WIDENING AND EXTENSION.

Jeffries street as a part of the port development should be widened on the east side to not less than 90 feet south of Maverick street. North of this it should be extended between the railroad yard and the park extension to meet Curtis street and Neptune road extended. This extension will be a one-sided street and should have freight buildings or warehouses next the tracks. It need not be more than 70 feet wide as its burden of through traffic need never be very great; it might be less past the park where it can always be widened if need be.

39.— LAMSON STREET EXTENSION AND WIDENING.

Lamson street is now undeveloped and is largely occupied by the Revere Beach Railroad. It should be extended through from Maverick street to Porter street and should be widened from Porter street toward Bennington street to be 100 feet wide, including the railroad location as far north as Moore street (Section 36), if not all the way. The

railroad should eventually be put in a subway, or an open cut with fairly frequent crossings, to serve as a rapid transit line, and Lamson street should be made an important main thoroughfare.

At least one block of the property just west of Lamson street, between Porter and Prescott streets, now dedicated to manufacturing, ought logically to be devoted to residences to profit by the frontage on the park extension. So, too, the triangular block between Lamson, Maverick and Porter streets extended, now controlled by the state, should be devoted to residences overlooking the park and practically cut off from the port district by the railroads. Lamson street could for the present be laid out alongside the railroad to serve as a connecting thoroughfare to be reconstructed when the railroad location is revised and other crossings are needed.

40.— ASHLEY STREET PLAYGROUND.

The east end of Ashley street is to be closed if the plans of the East Boston Company are carried out, and a large area of the marshes is to be devoted to railroad and factory development. Inside that development there will be a residential district remote from other playgrounds, and a small area should be reserved by the city either as shown on the plan or on a similar location nearby.

41.— LAMSON STREET PLAYGROUND.

Somewhere near the north side of the Jewish Cemetery a space should be reserved for a playground, possibly along Lamson street, as shown on the plan.

42.— BELLE ISLE PARKWAY.

From the proposed park extension to the projected Short Beach parkway a new parkway connection should be made. This could probably best be located along the Winthrop shore of Belle Isle inlet. This is primarily a metropolitan problem as it lies outside the Boston city limits, but it is a much needed outlet connection that should be urged by the city.

Aside from crossing the railroad no serious obstacles are now in the way of such a project and the land-takings could well be made in advance of developments.

43.— COTTAGE HILL PARKWAY.

From the proposed new bridge to Winthrop across the Belle Isle channel, a parkway location should be made across Court Park, then through Cottage Park and along the harbor outside the railroad to the end of Winthrop shore reservation at Great Head.

A good connecting street is needed in Winthrop, parallel to and south of Pleasant street and Washington avenue, and this could be made as a parkway through Johnson avenue, widened and extended, as shown on the plan, and should be wide enough to form a satisfactory parkway location. This also is primarily a metropolitan problem as it is outside the city limits. It should be definitely laid out now in advance of further costly obstructions.

It is possible that a location on the flats entirely outside the built-up areas would prove more satisfactory than that proposed, but such a connection would not tap the existing streets, and unless extended to the ultimate harbor line would be behind areas that may later be occupied and yet would not be high enough to be attractive. The location proposed is near the edge of the high land where a few open spaces from the proposed parkway to the foot of the existing bluff should be acquired and kept open as a part of the parkway in order to protect the views over the harbor.

44.— NEW BRIDGE TO WINTHROP.

A new bridge to Winthrop from the park extension would also involve metropolitan affairs as it is proposed primarily as a link in the metropolitan system. The need for such a bridge will develop with the filling in of the flats, the building over of new areas and a gradual increase in urban conditions. The need for such a bridge will probably not warrant its construction for many years, but the need for providing reasonable approaches already exists

in Winthrop and should be met before building operations further interfere. Such a bridge as referred to in Section 3 should be high enough to clear ordinary boating, possibly 40 feet above the water, and would doubtless have to have a draw also, though the need for a draw is not now very great.

45.— A VIADUCT IN WOOD ISLAND PARK.

Much of the ultimate charm of the proposed park system will come from the existence of a suitable connection between its parts, free from railroad and highway crossings. A viaduct 600 feet long, 50 feet or so above Boston base level, in the center, would be a costly structure to build, but the need for it will become greater with city growth, and the chances that it may be warranted in the future should not be overlooked in the planning for more immediate construction.

If the proposed terminal railroad dips under the Revere Beach Railroad it should be kept low to pass under the proposed bridge at about elevation 12. That will allow for the several main thoroughfares that converge at this point to be carried over the railroad on a bridge at about elevation 32, above which the proposed viaduct could be built.

In case a viaduct cannot be made as a part of the initial park development the park drives can be built to meet the traffic streets at grade, and to cross on the proposed traffic bridge, but this should be made as a secondary connection to be supplemented eventually by a better one.

46.— PORTER STREET CIRCLE.

The Revere Beach Railroad should be depressed to go under the ground before crossing Porter street, especially if it can be diverted to the existing East Boston Tunnel as proposed. If that improvement is made a great circle should be laid out to care for the travel at the meeting point of the five proposed teaming roads and the two pleasure ways. A dignified circle large enough to include all the street intersections should be about 350 feet across,

or large enough to form an interesting central open space, and to prevent congestion of traffic in the various directions.

If the railroad is not to be lowered but must remain where it now is, the entire circle can still be made on a high level and the tracks can be decked over for that distance, although an elevated crossing would ultimately prove far less useful and far more costly to the city.

As a temporary expedient a bridge can be built over the tracks and the streets can be made to converge on the bridge, but land should be acquired for the circle and grades should be established with a definite plan either for lowering the railroad later or for producing long lines of relatively easy grades to an ultimate development on the higher level.

47.— CHELSEA STREET EXTENSION.

Chelsea street should be extended from the present bridge eastward to Breed's Island to connect with Boardman street, Waldemar avenue and the proposed bridge, and to form an important main thoroughfare one-fourth to three-fourths of a mile northwest of Bennington street. It might follow close to the line of the Boston & Maine Railroad tracks, or possibly the pierhead line as a part of a quay wharf development. For this extension a bridge over the Boston & Albany Railroad tracks, as proposed in connection with Wordsworth street extension and the revision of the Chelsea Street Bridge, would also serve. (See Section 35.)

48.— BOARDMAN BRIDGE PLAYGROUND.

At or near the west end of Breed's Island, a small shore space should be preserved for a playground and beach. This might be at or near the proposed Boardman Street Bridge (Section 31).

49.— GLENDON WHARF RECREATION PIER.

At or near Glendon Wharf a space should be acquired for a recreation pier to serve the local needs of the north end of Eagle Hill.

50.— GOVERNOR'S ISLAND.

Governor's Island is now owned by the United States but is loaned to the Boston Park and Recreation Department. It is barren and desolate, and of little use to the city in its present condition. If attached to East Boston as proposed in the port development, it can be made a fairly useful park, but as it is necessarily isolated and far removed from any possible residential district, it might well be made a national marine reservation, to be used in part by the United States in connection with marine interests, and in part as a *quasi* public park space. If a viaduct is constructed from Maverick street along the piers to the Island as proposed below (Section 51), the Island will be made more accessible and brought into closer connection with Wood Island Park.

51.— PIER FRONT VIADUCT.

Along the proposed pier front street of the new port a plan for separation of traffic to the piers and to Governor's Island will eventually be required. For this separation a viaduct for light vehicles at the second story level would serve, and the lower level can be used by heavy teams and railroad cars. This separation is a matter that should be included in the plans for the port development, and will be of great importance to the city if Governor's Island is to be developed for park uses.

52.— COTTAGE STREET PLAYGROUND.

If Wood Island Park and boulevard are developed as planned, Cottage Street Playground will be much reduced in area, but it will be largely supplemented by the new park. The remaining areas can be treated as small public open spaces.

53.— CONDOR STREET EXTENSION.

Condor street is a fairly important thoroughfare and will doubtless come to be still more used. The east end does not connect satisfactorily with the main thoroughfares

that converge at Eagle square, and eventually should be extended to make a more direct connection as was suggested in the report of the Metropolitan Improvements Commission in 1909.

54.— ORIENT HEIGHTS PLAYGROUND.

The playground at Orient Heights will be somewhat changed in outline if the proposed street plans are carried out. The playground should be extended westward to border on the proposed new line of Trumbull street (Section 33), and the entire area should be filled to a higher level.

55.— STATE HIGHWAY CONNECTIONS AT REVERE.

The State Highway Commission has planned a thoroughfare back of the Revere Beach Railroad, and has already improved Atlantic avenue in Revere in continuation of Bennington street. A better connection should be made, however, between Orient Heights and the state highway through Revere, either by widening Atlantic avenue and bridging over the railroad at Beachmont Station, or by widening and extending Walley street through to meet the line more directly beyond. This matter affects property outside the city also and should be determined by the Highway Commission, or by cooperation between Boston and Revere, but should be planned as an important thoroughfare, to be broad and direct when it is finally completed.

56.— POSSIBLE RESERVED CHANNEL.

In case the owners of property north of Wood Island Park prefer to retain access by water a reserved channel can be made. Such a channel will doubtless be necessary for some time in case the park areas are filled before the adjacent lands, and can best be made as shown on the plans.

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