

The New Brunswick Plan

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NEW BRUNSWICK, N. J.



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City of New Brunswick

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1. Why New Brunswick Should Be Planned

Rapidity of New Brunswick's Growth

New Brunswick is growing. From 1900 to 1920 her population increased from 20,006 to 32,779. She is now the commercial and residential center of more than 41,000 people. The 1930 census is likely to find the city and its suburbs with a population of 50,000. By 1940 this is likely to be 57,000; by 1950 over 67,000.

Increased Population Necessitates a City Plan

This growth from a small to a large city necessitates many changes in a city plan; new school houses must be built; additional parks and playgrounds must be provided; many street improvements must be made to adapt our streets to increasing traffic requirements. To care for this growing population some five million dollars a year on the average will probably be spent during the next twenty-five years upon new houses, new stores, new factories, new schoolhouses, new fire stations, new pavements, new sewers, and other kinds of construction in and around New Brunswick. That this money should be spent toward the permanent upbuilding of New Brunswick goes without saying. And yet if there is no comprehensive city plan to guide development,—a well thought out program to co-ordinate private and public activities with reference to all the requirements of the community,—we won't become the city we might be. And we shall have to spend vastly more money in the end.

Building a City According to Blue Print

A city plan does the same thing for a city that a blue print does for a house,—it

lays down a plan to guide construction. When we build a house we prepare a plan of it before we start to build. We find that a plan enables us to build not only a better house but a more economical house than we could ever hope to build without a plan. This is so true that nobody would ever dream of building a house without a plan. Indeed, it is true not only of a house but of all kinds of buildings—stores, factories, offices, churches, schools. It is also true of almost everything else, whether a watch, a machine, an airplane, a ship or a railroad. Only in the case of cities do we build first and make the blue print afterwards. City planning merely implies recognition of the fact that what is true of everything else is also true of cities; that as a matter of course, the planned city is healthier, more convenient, more efficient, more economical and more attractive than the unplanned city.

Planning Means Greater Economy in City Building

City planning does not mean that more money should be spent upon the development of New Brunswick than would be spent upon it in the absence of a plan. A city plan merely lays down a program of development to guide the growth of the city as, and when, it requires the carrying out of different improvements, so that each improvement may be co-ordinated with other needed improvements,—so that each improvement upon its completion will contribute to the permanent upbuilding of the city by fitting into and rounding out a comprehensive plan of community development. Without a plan the city builds only for to-day,—there is no attempt to foresee and provide

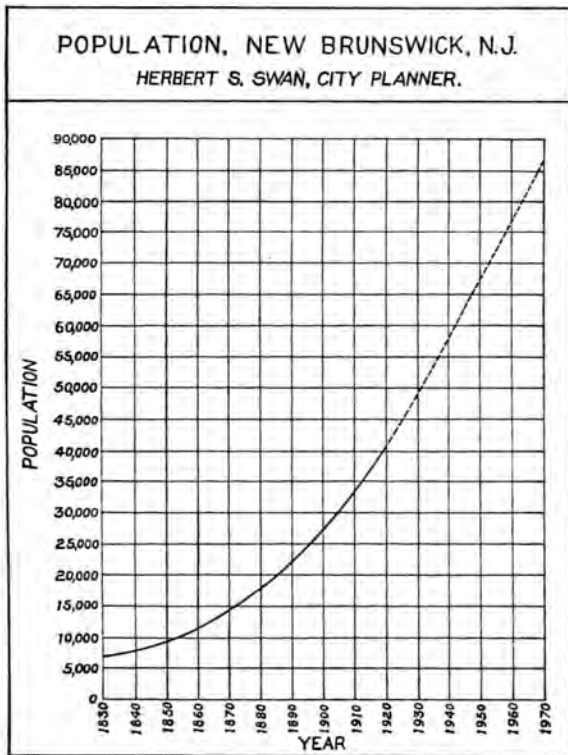


Diagram I

New Brunswick with her suburbs is rapidly growing from a small town into a big city.

for the needs of tomorrow. The usual result is that a city does not carry out an improvement until long after it is due, until its lack has already resulted in great loss and inconvenience to the public. And then when the need for the improvement has actually demonstrated itself, the cost of carrying it out in the way it should be carried out is so great that the city, in order to finance it at all, must carry out the improvement in a fourth or fifth class manner.

Although it is more often lost sight of than kept in mind, it is nevertheless a fact that a direct relationship exists between the proper planning of a community and such considerations as the extent of its municipal indebtedness, the amount of its tax rate, the volume of new capital seeking investment in the community, the increase of population and the range of property values.

The lack of a city plan invariably

means extravagance and waste. Urgent improvements are either ignored or unduly postponed. Ill-advised improvements follow one another in rapid succession. Such improvements as are undertaken are generally unco-ordinated with one another—at times they are even antagonistic to each other. There is little or no balance in the development of the city,—one section is overbuilt, another underbuilt. That part of the city which is best organized and the most vociferous in demanding consideration carries off as a prize a disproportionate share of the parks, playgrounds, fine schoolhouses and public buildings.

It may not be far from the facts to assume that in the average city at least 25 per cent. of all money borrowed for public improvements and buildings is wasted because of present and past indifference to proper planning.

There are many planning problems which we have shirked in the past that are still with us, problems that we have tried to dodge, problems that we have refused to recognize, problems that we have done everything we could to evade but which still confront us.

Cost of Traffic Congestion

Did you ever stop to think how much street congestion costs New Brunswick?



McCombs Hall, Rutgers College. This beautiful building, over 100 years old, was designed by the same architect who designed the City Hall, New York.

Only a few years ago there was no such thing as a traffic "cop." To-day, the patrolmen engaged in regulating traffic constitute a large part of the police force in many cities.

How can we make streets laid out in pre-automobile days care for from five to ten, and even fifteen thousand vehicles each day at a single street intersection? That is a very real traffic problem confronting New Brunswick. The volume of traffic has doubled, quadrupled,—it has even increased ten-fold. To-day it is increasing more rapidly than ever. It was worse last year than the year before. This year it is worse than last year. Each month the traffic problem becomes more intricate.

The Parking Problem

And what of our parking problem? How often does one have to cruise for blocks and blocks to find a place to park? So much time is now lost in finding one that the situation retards the development of our downtown business section.

Land Subdivisions

Are the large vacant areas that must be subdivided to provide home sites for the future thousands who are to live in New Brunswick to be subdivided in the same manner as the present residence areas? Are subdividers to be allowed to lay out streets in any way they choose in these areas? As long as we refrain from taking the initiative in shaping the general character of our street plan, just so long can we expect to find narrow streets where we should have wide ones; offsets where there should be through streets; streets of prohibitive grades where streets of easy grades might be laid out; long blocks where shorter ones would serve the needs of the community better—in short, a street plan designed exclusively to further the ends of the subdivider instead of those of the public. The corollary of allowing



The Highland Park Bank of the Raritan River.

each owner to lay out his own streets in any way he may choose is undue inconvenience to the public, street congestion, streets difficult and expensive to drain, unnecessary street accidents, and in all probability expensive widenings and extensions paid for by the public.

The prospective area that will be included within the future New Brunswick, the cost of developing it, the convenience of obtaining access to it, the density or sparsity of its population, and its land values are all matters that are now being determined for all time as this land is subdivided into building lots.

Transit Facilities

As New Brunswick grows, increased transit facilities must be provided to care for the increased population. New trolley lines and bus lines may come in ten years more or less, yet these street widths are being determined now without regard to improved transit facilities.

Schoolhouses, Playgrounds, Parks

More population means more schoolhouses, more playgrounds, and more parks. Are these to be co-ordinated and developed in harmony with one another? Are they to be distributed with reference to the greatest benefit to the greatest number or is their provision going to be left to chance?



The Pennsylvania Railroad Bridge, substantial and artistic, one of the art treasures of New Brunswick.



The Albany Street Bridge over the Raritan River carries all of the Lincoln Highway traffic.

Zoning

Before the adoption of its zoning ordinance, an apartment house, store, factory or garage might be built anywhere in New Brunswick, whether alongside a home, a church, a hospital or a school. No lot was too good for any use, and no use too bad for any lot. A builder might in building his home, leave a space between his house and the lot line, but he didn't have to, and, if he did, it might be of any width, six inches being equally as good as six feet in the eyes of the law. Such conditions, obviously, dampened the home owning ardor of every citizen. How could real estate values ever be stabilized under such conditions?

Its zoning ordinance, which has been adopted as the first step in its comprehensive plan will solve many of these problems for New Brunswick. Hit-or-miss haphazard growth must give way under it to intelligent direction and plan. The ceaseless construction, demolition and reconstruction of buildings that occur in the absence of zoning, the erection of buildings inappropriate to the locality, which not only depreciate the value of neighboring buildings, but which, in turn, will have their own value depreciated by other buildings harmful to them—this is replaced by system, law order; in brief, by a comprehensive city-wide building plan in which each building is not only

given its proper place, but is protected against all future buildings improperly placed.

Need For Planning New Brunswick Now

New Brunswick is one of the best industrial communities in the New Jersey area, but had we paid more attention to her development she would be a much better community. New Brunswick is a good city to live in and to do business in, but had we exercised more discrimination in her building she would be a much better city. The past is past, but our hope lies in the fact that the sooner we begin to plan, the fewer will be the mistakes committed hereafter; our inspiration in the thought that the earlier we begin to retrieve past mistakes by conscientiously studying our needs, the sooner shall we be free from some of our most troublesome and perplexing problems.

The time has come when New Brunswick can no longer afford to do without a city plan. The day was when though we did nothing, we were no worse off than other cities, because they, too, did nothing. But now this has all been changed. Other cities on all sides of us are ambitiously planning for the future.

The New Brunswick of tomorrow waits upon New Brunswick's vision of to-day!

II. The Civic Center

New Brunswick is exceedingly fortunate—indeed, far more fortunate than most cities—in having the potential beginning of an attractive civic center. The county court house, the county clerk's offices, and the city hall, afford the nucleus for the development of a civic center of considerable practical and artistic value. It is quite certain that within the next few years additional public buildings must be erected. The present city hall is entirely inadequate. The county clerk's office is generally conceded as being now too small. With increasing population it is to be expected that the court house, too, will in time be too small for the county's requirements.

The present situation, therefore, is one that raises the question clearly whether the new buildings, as they are erected, shall be arranged in conjunction with the existing city and county buildings to round out a well-developed civic center, with the present buildings as a basis for this development, or whether the new buildings are to be erected in some other locality and a new civic center developed.

The investment in existing public buildings is so large that unless the new city and county buildings are erected in conjunction with the existing ones, New Brunswick will probably never have a civic center. If the new buildings are not grouped with reference to the existing county buildings, their erection will simply dissipate the possibility of ever achieving a civic center for New Brunswick.

Fortunately for New Brunswick, it is entirely feasible to construct the new buildings in the same neighborhood as the present ones. Financially, it is going to cost neither the city nor the county any more to enlarge the present group of

civic buildings by erecting the new buildings as a part of this group than it would to acquire some other eligible site for the purpose. The city has already committed itself to erect the new city hall opposite the court house. The city showed excellent judgment in deciding to choose this location for its city hall. It is hard to conceive of a more fortunate location.

Although the general location of the city hall can hardly be improved upon, the city should acquire more land than it at present owns, so that it may erect as large a city hall as it will demand for its future needs.

The difficulty with the present building site is two-fold: First, it does not permit of a proper setting for a civic building, and, secondly, it is not large enough to take care of the possible extensions or enlargements which the future may demand.

If additional land is not acquired the new city hall will be flanked on three sides by private buildings. On only one side will it front upon a street. A building so situated will fill only a niche in the façade of a row of commonplace stores.

A new city hall is necessitated, not only by the dilapidated appearance of the present building, but also by its inadequate size. In erecting a new city hall, the city should, therefore, anticipate its future requirements so that the new building could be readily enlarged, should there be any occasion for larger quarters. The present site would not admit of any such enlargement.

The estimated cost of the additional property required for the new city hall is \$150,000.00.

Careful consideration shows it to be most economical to develop the civic center on Bayard Street, between Kirk-

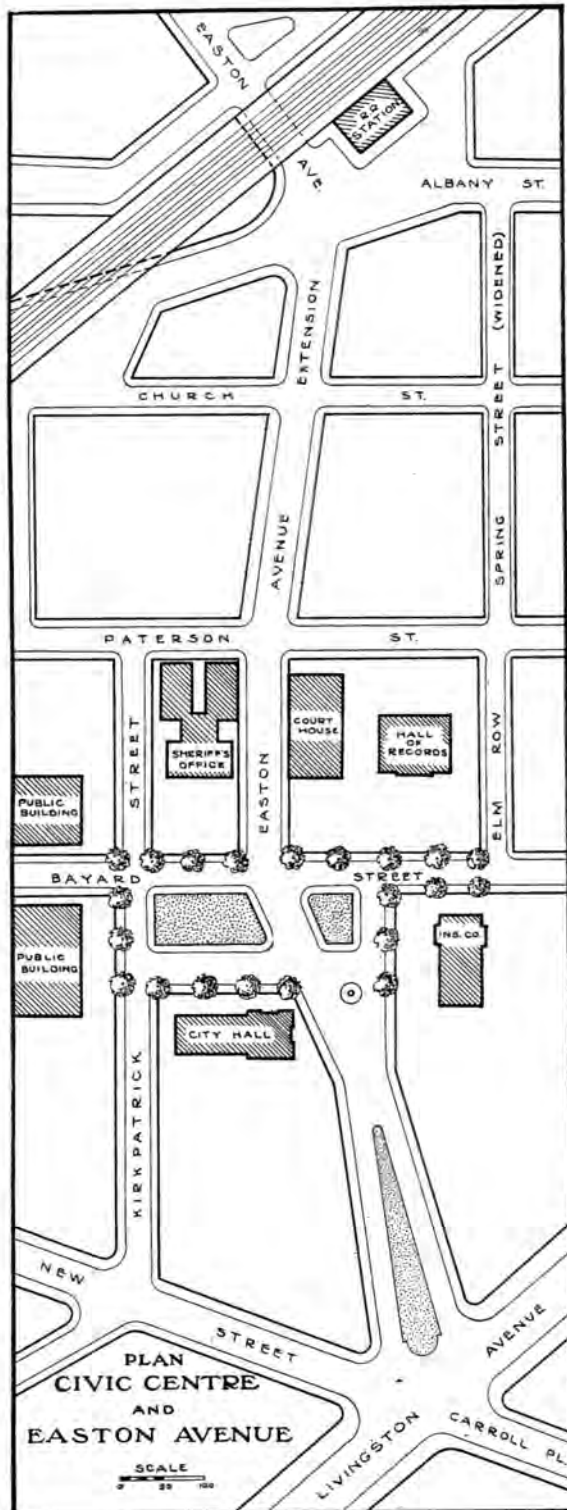


Diagram II

New Brunswick needs both a city hall and an additional cross-town street. Both problems can be worked out together.

patrick Street and Elm Row, using as a nucleus the existing public buildings. The new thoroughfare, linking Easton Avenue with Livingston Avenue, and the civic center should be treated as an entity, so that it may relate the public buildings organically with the business center of the city.

The essence of the design we recommend is an open rectangle, 170 feet wide by 330 feet long. A single row of trees has been introduced, not only to give definition to the area, but because the trees will furnish relief and refreshment in an area which promises to be central to highly concentrated business activities.

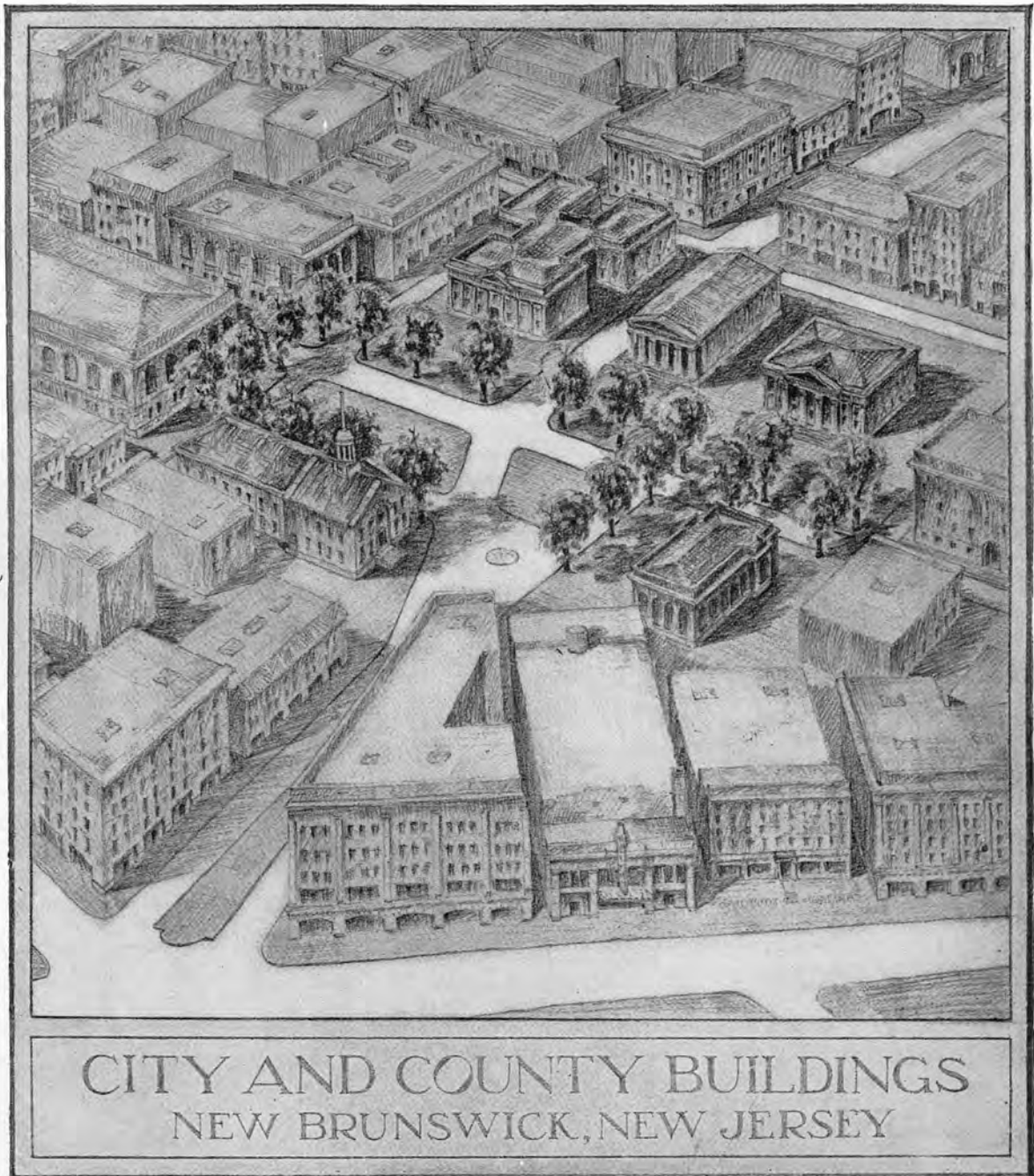
The public buildings, existing and proposed, are grouped with reference to this rectangle. The proposed street has a two-fold function in its relation to the civic center. It makes these buildings readily accessible from the heart of the business district and railroad station, and it affords a desirable axial relationship between the street and the buildings in the group without interfering with the value of the street as a traffic thoroughfare.

Between Bayard Street and Livingston Avenue the proposed crosstown street would be splayed to separate the northbound and southbound traffic with a wedge-shaped grass panel. The expansive treatment of the street at this point affords a dignified approach and desirable adjunct to the treatment of the civic center. It acts as a vestibule to the whole group of buildings.

New Brunswick must have a new city hall. She must in the near future also have a new county building.

The present approach to the city hall and county buildings from the railway station, through Spring Alley, is a disgrace. No matter where the new city or county buildings are located, New Brunswick will want satisfactory approaches to them.

The traffic problem is as acute—in the minds of many people far more acute



CITY AND COUNTY BUILDINGS
NEW BRUNSWICK, NEW JERSEY

Diagram III

The new City Hall should not only be an attractive building in itself, it should also enhance the attractiveness of the whole group of city and county buildings.

than the problem of new public buildings.

The congestion on George Street cannot be solved any more satisfactorily without a new parallel street than can the congestion on Albany Street bridge be solved, without the construction of a

new bridge over the Raritan River.

The proposed civic center and cross-town street affords an opportunity to solve satisfactorily two of the most difficult problems confronting New Brunswick.

III. Proposed Extension of Easton Avenue

One of the chief causes of street congestion in New Brunswick is due to the fact that George Street is the only cross-town street in the downtown section. To remedy this situation New Brunswick must have an additional crosstown thoroughfare.

After the most thorough and exhaustive study of street conditions in New Brunswick, the City Planning Commission has come to the conclusion that, next to a bridge across the Raritan River, nothing will round out the traffic requirements of the downtown district more completely than an extension of Easton Avenue to Livingston Avenue, at its intersection with New Street.

Until the city has another street parallel to George Street, anything done to improve crosstown traffic conditions

in the business section will prove only a temporary palliative.

If New Brunswick is to have more than one continuous crosstown street, bisecting the heart of the business district from north to south, that street must be an extension of Easton Avenue. No other street opens up such great possibilities; no other street is so favorably located.

The extension of Easton Avenue will act as a parallel street to George Street, relieving congestion in that street; it will shorten the distance between Livingston Avenue and the Pennsylvania Railroad station; it will take the Easton Avenue traffic, that desires to cross the city, directly to its destination without obliging it to use the intersection of Albany and George Streets. It will tie up the civic center organically with all parts of the city.



The present City Hall is an old altered dwelling house.



Spring Alley, the approach from the railroad station to the present civic center.



Hall of Records. Its lack of impressiveness is due to inadequate setting.



Buildings to be incorporated into an enlarged civic center.

Would Relieve Traffic Conditions

The intersection of Albany and George Streets is the neck of New Brunswick's traffic bottle. All of the city's thoroughfares lead into this intersection; all of the city's through traffic courses through this intersection. Whether one goes from New York to Philadelphia, from Plainfield to Long Branch, from Bound Brook to Perth Amboy, from Highland Park to Milltown—one must pass through this intersection.

What is true of through traffic is also true of local traffic. Whether one goes from the east side of town to the west side of town, from the south end of town to the north end of town, from work or to work, the chances are that he must go via the intersection of Albany and George Streets.

As a consequence, this intersection is by far the most congested point in New Brunswick. From 12,000 to 20,000 vehicles, according to the time of the year, pass through it during the 24 hours of each day. Three-fourths of these vehicles pass through the intersection during the 12 hours between 9:00 A. M. and 9:00 P. M. Sometimes during the maximum traffic hour vehicles pass through the intersection at the rate of one every two seconds.

Under present conditions, this traffic

density cannot be far from the saturation point, if, indeed, the saturation point has not already been reached.

It is not only the tremendous number of vehicles using the intersection which makes the congestion at Albany and George Streets so bad. Even if all these vehicles were merely to pass through the intersection, the congestion would be bad enough, but 50 per cent. of the vehicles enter the intersection, turn in it, and then pass out again. Only 35 per cent. of the total traffic is through traffic on Albany Street—65 per cent. of the traffic either crosses Albany Street or turns onto or off Albany Street from or onto George Street.

Nearly one-fourth of all the vehicles entering the intersection make left-hand turns in it. The proposed crosstown street would, through a more proper routing of vehicles, eliminate one-third of the present right- and left-hand turns made in the intersection. The proposed street would have as great an effect upon eliminating turns in and out of the intersection of Albany and George Streets as would the proposed new bridge over the Raritan River.

Would Fit into Development of Civic Center

Our studies indicate that this thorough-

A SINGLE INTERSECTION DISTRIBUTES A CITY'S TRAFFIC

GEORGE AND ALBANY STREETS, NEW BRUNSWICK, N.J.

HERBERT S. SWAN, CITY PLANNER
15 PARK ROW, NEW YORK

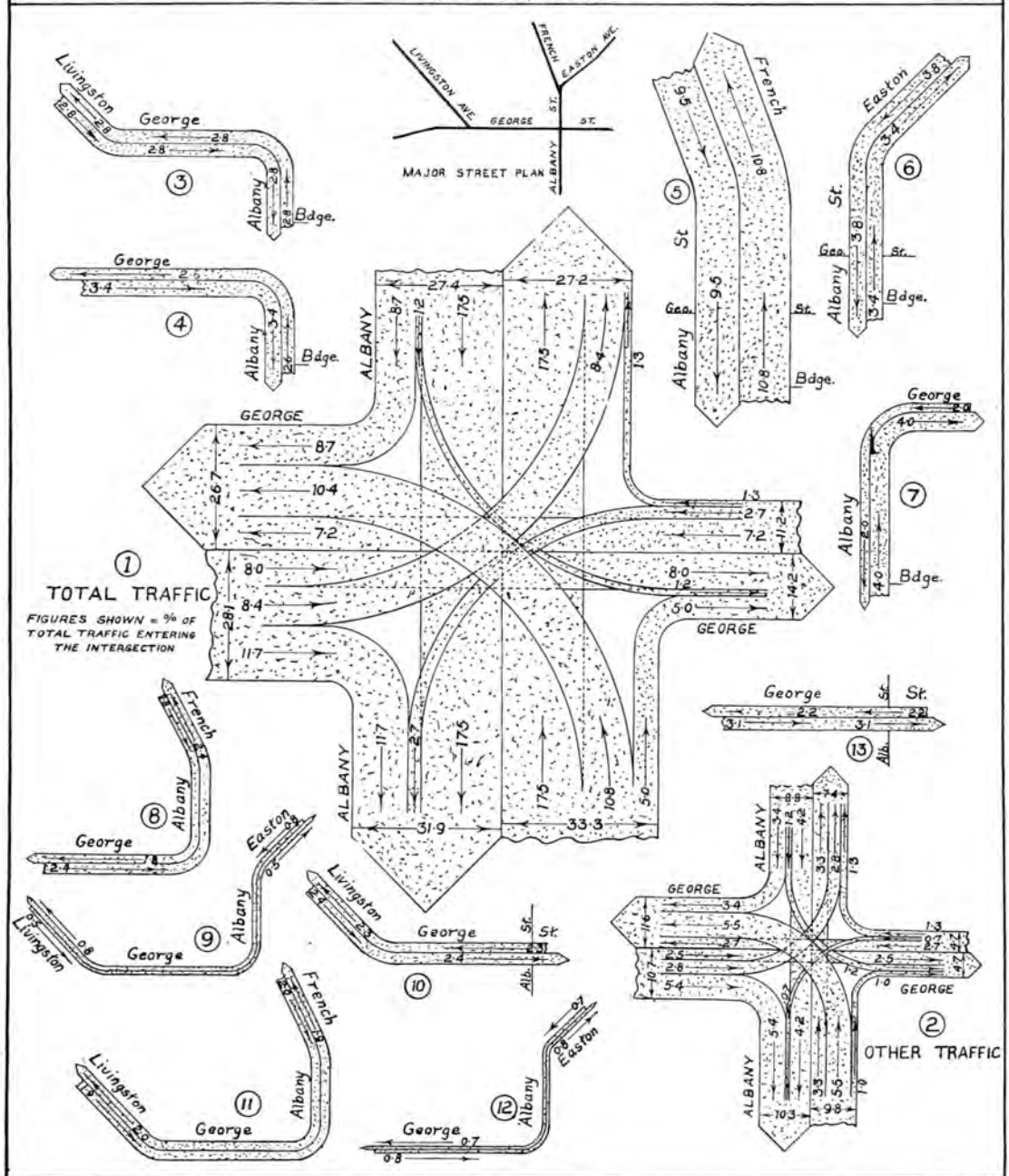


Diagram IV

The traffic problem on George Street cannot be solved except through the provision of an additional crosstown street. The new City Hall affords an exceptional opportunity for the extension of Easton Avenue.

fare, in order to serve the needs of the community best, should be located in a manner to connect Easton Avenue and Livingston Avenue. Fortunately, there is room enough between the sheriff's offices and the court house to admit of the street—consequently, there need be no disturbance to any of the existing county buildings.

We are equally fortunate in that the street can be laid out in a manner to fit admirably into the requirements of the whole group of existing and proposed public buildings connected with the civic center. The street approaching Livingston Avenue would have its vista closed by the city hall. Approaching Easton Avenue, the street would have its vista closed by the court house. Although this thoroughfare would have its axis on the city hall, looking south, and its axis on the court house, looking north, it can be arranged so as to have no offsets. Although certain deviations will be necessary from a straight course, these can, in every instance, be taken care of through easy curves located within the blocks. There need be no slowing up of traffic at any point through the route of the proposed street.

Will Enhance Property Values

The extension of Easton Avenue will enhance adjoining property values far



The extension of Easton Avenue would afford an additional approach to the railroad station from the south side of the city.



The new City Hall should not be surrounded on three sides by store buildings; its setting should complement that of the County buildings.

more than the land embraced within its limits will cost. At the present time, the land which this street would occupy is improved with old dwellings of comparatively small value. With the opening of the street this land would front upon one of the principal downtown thoroughfares. Its value, instead of being measured in terms of residential property, would immediately be measured in terms of downtown business property available for shops and offices.

Cost of the Improvement

The cost of the street, when improved, but without the additional land required for the new city hall, is estimated at \$250,000.00.

The street will add some 2360 lineal feet of new street frontage to the shopping district. If this frontage has its value enhanced at the rate of only \$100.00 per front foot, it would fully pay for the whole improvement. Who would say that the Easton Avenue Extension would not increase the value of abutting and neighboring property many times this amount?

Suppose the city financed the cost of the improvement by the issuance of 50-year bonds. What then would be the annual cost to the city at large for extending Easton Avenue? The sinking

fund charges on this amount would equal \$1473.74 per annum. The interest charges at $4\frac{1}{2}$ per cent. would equal \$10,125.00 per annum. The total carrying charges, including sinking fund and interest charges, would, therefore, total \$11,598.74. This figure, of course, absolutely ignores the increased revenue derived from taxation of increased property valuation.

The taxes on the increased property value resulting from the improvement, it is estimated, would immediately upon its completion more than suffice to defray all carrying and amortization charges contracted for its execution.

Dennis Street-John Street Connection

Dennis Street and John Street, if properly connected and extended, would also afford an additional crosstown street to relieve traffic conditions in the downtown district of New Brunswick. At the present time these streets are so disconnected with the major thoroughfares of the city that they carry a negligible amount of traffic. The property fronting upon these streets, moreover, does not possess nearly the value that it might possess for business purposes, were the streets joined with one another and connected with the principal downtown streets.

The City Planning Commission suggests that Dennis Street be extended from Church Street to Albany Street, and between Richmond Street and New Street, and that John Street be extended from its southerly terminus at Commercial Avenue in a diagonal direction to Burnet Street. These improvements when carried out would afford another crosstown street parallel to George Street and linking up with Burnet Street all the way from Bishop Street to Albany Street. It is suggested that the new connections be made 50 feet in width—

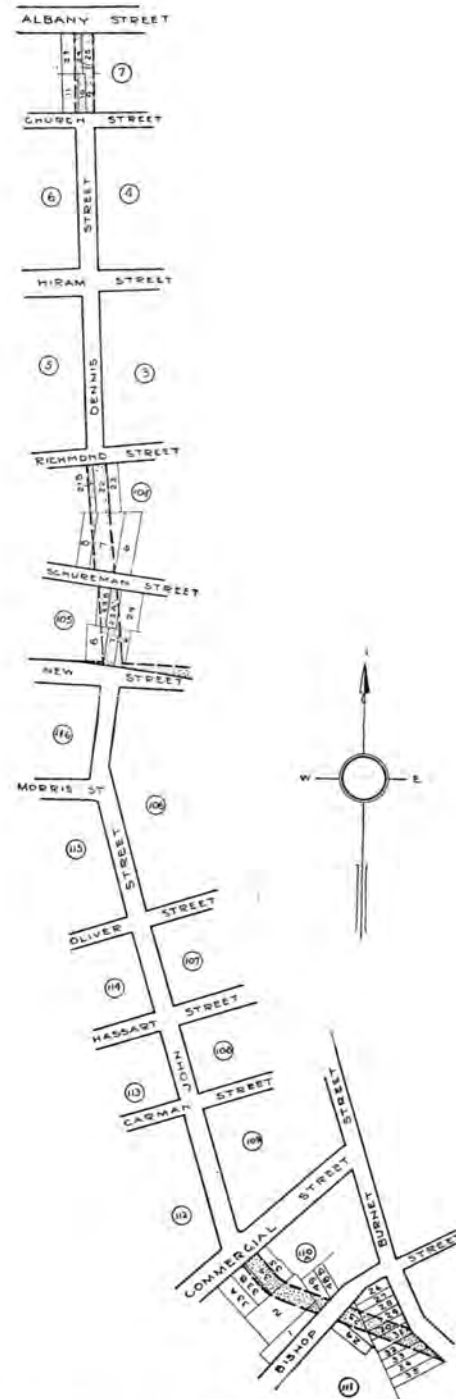


Diagram V

Dennis Street and John Street, if connected, will afford an additional traffic thoroughfare.

the same width as the maximum width of Dennis and John Streets.

The Spring Street Widening

The City Planning Commission is deeply appreciative of the fine public spirit that controlled the Elks Building Corporation in deferring to the city in regard to the widening of Spring Street. For the Elks Building Corporation to hold up its building progress until the city should have time to perfect plans for the widening of this street, demonstrates such regard for the interests of the city that the City Planning Commission wishes to take this opportunity of publicly commending them for their civic patriotism. It might not be amiss to suggest that if other property owners were possessed of a similar regard for the superiority of the public interest, the task of planning a better and finer New Brunswick would be very much simplified. That the Elks Building Corporation should waive aside all thought of profit in the taking of part of their property for street purposes is especially commendable. This spirit might well serve as an example to other property owners in order to facilitate the different street improvements projected by the city.

Relative to the suggestion of improving the width of Spring Street, the position

of the City Planning Commission is briefly this: The Commission feels that the new cross-town thoroughfare, consisting of an extension of Easton Avenue to Livingston Avenue, is a project of major importance and should, by all means, be carried through. The Spring Street improvement can in no way be considered as a substitute for this street.

The ideal thing, in the opinion of the City Planning Commission, would be to carry out both of these improvements at the same time. Certainly, the extension of Easton Avenue is going to effect a considerable increase in neighboring property values. The execution of the Spring Street improvement will be more expensive if deferred until after the Easton Avenue extension is carried out. Consequently it would be true economy for the city to carry out both improvements at the same time.

Substantial buildings cannot be expected to be erected on a street as narrow as Spring Street. Spring Street today is merely an alley. Its mean width retards its development. It is our belief that widening Spring Street will galvanize new life into a blighted locality by opening it up to intensive business development. Such an improvement cannot fail to affect real estate values favorably.

The City Planning Commission recommends making Spring Street the same



Any new thoroughfare parallel to George Street should, of course, extend across the railroad. Its railroad bridge is an additional argument for the extension of Easton Avenue.



Easton Avenue stops at Albany Street. Its extension would relieve both Albany and George Street congestion.

width as the present width of Elm Row. Elm Row is at present 40 feet wide. Spring Street in the block between Church and Paterson Streets varies in width from 26 to 27 feet; in the block between Albany and Church Streets it varies in width from 20 to 21 feet. The plan submitted by the City Planning Commission, therefore, contemplates the widening of Spring Street between 13 and 20 feet. Between Albany and Church streets, the widening would be altogether on the east side; between Church and Paterson Streets, altogether on the west side. The reason for widening the street on different sides in the two blocks is accounted for in the offset at Church Street.

Elm Row and Spring Street are always destined to be streets of minor importance. Having no through connections, the traffic in these streets will always be of a local character. The principal purpose of this street is to furnish ingress and egress to and from property bordering on the street, and not to provide through facilities for traffic. The city is therefore not warranted, in the opinion of the City Planning Commission, in giving Spring Street a greater width than 40 feet.

For a crosstown street to relieve traffic congestion on George Street, the city must, in our opinion, look to Easton Avenue extension.

Necessity for Immediate Opening of Easton Avenue Extension

One thing, however, is sure, and that is, if New Brunswick is ever to get the Easton Avenue Extension and the land for the proposed city hall, it must be NOW. Delay may result in improvements being undertaken that will cost the city many thousands of dollars.

Every building erected, either within the proposed street, or in the vicinity of the proposed street, makes its extension just that much more expensive, and, therefore, that much less likely of realization.

It probably is no exaggeration to say that if the street is not actually carried out within the near future, it will be so expensive that it can never be carried out. And if the extension of Easton Avenue is not carried out, there is no other street which can be carried out that will take its place.

The position of New Brunswick seems to be simply this:—The Easton Avenue Extension is the only hope the city has of really and permanently improving crosstown traffic conditions in the business district. Other alternative routes, in themselves perhaps nearly as desirable as the proposed route, have, one by one, through the erection of costly and permanent improvements been allowed to pass into the group of "might have beens." Today they are practically impossible. If this opportunity is allowed to pass, there will be no second opportunity. The only chance New Brunswick has of permanently improving traffic conditions on George Street will have forever gone.

New Brunswick is going to pay for the Easton Avenue Extension whether it carries it out or not. It is even now paying for the Easton Avenue Extension. Traffic congestion, decreased business, increased cost of doing business, wasted time—the city is paying for all of these now, and all of them are what they are, to a large extent, because the city has not got a very much needed street parallel to George Street.

The question really is—since New Brunswick is already paying for the Easton Avenue Extension—why should she not have it?

IV. New Raritan River Bridge

Lack of Bridge Basic Cause of Congestion

The need for a new bridge over the Raritan River is the crux of the traffic problem in New Brunswick.

The large volume of bridge traffic through Albany Street is the principal and basic cause of local congestion. The city's traffic situation is tense today, but with increasing traffic, it will become still more tense.

There are seven different trunk highways radiating from the center of the city. Six of these thoroughfares, all of them situated on the west side of the river—George Street, George's Road, Livingston Avenue, Lincoln Highway, Hamilton Avenue, and Easton Avenue—spread out to the north, the west and the south of the city like the ribs of a fan. All of these thoroughfares merge ultimately into Albany Street, which furnishes the stem of the fan. Albany serves as the bridge street for all of the traffic over the Raritan River.

Volume of Bridge Traffic

How closely the traffic problem at New Brunswick is intertwined with the need for a new bridge is obvious to anybody who will analyze the amount of bridge traffic in the downtown streets.

Ten thousand vehicles per 24-hour day is the customary daily load of the Albany Street bridge throughout the greater part of the year. Quite often it carries 11,000 vehicles. On Sundays, holidays, and special occasions the number of vehicles reaches 12,000 to 13,000. During the two or three cold winter months, the number falls to 7,000 or 8,000. Taking the year by and large, the average daily

load of the bridge may fairly be taken as 10,000 vehicles.

Diagram VI shows the hourly variations in the traffic passing over the bridge for an entire week. The counts for this chart were made by the State Highway Commission.

Proportion of Turning Traffic on Albany Street

It is not only the tremendous number of vehicles using the bridge which makes congestion on Albany Street so bad. Even if all of these vehicles were to pass through the street, the congestion would be bad enough, but only 30 per cent. of the vehicles using the bridge pass through Albany Street in order to use the bridge.

When traffic is properly routed, it proceeds as nearly as possible in a straight line from its point of origin to its point of destination. The number of turns traffic must make in reaching its destination is, therefore, a proper gauge of its correct routing. The fewer turns it makes from point of origin to point of destination, the more properly it is routed; the greater number of turns it is obliged to make, the less properly it is routed. That 70 per cent. of the bridge traffic should turn on Albany Street is clear proof of the fact that a new bridge over the Raritan River is necessary to obtain a proper routing of vehicles through the city.

Bridge Traffic Congests Downtown Streets

Albany Street is, in places, almost exclusively a bridge street. Between the bridge and George Street this is particularly true. Each street as it intersects or intercepts Albany Street feeds into it

TRAFFIC, ALBANY STREET BRIDGE, NEW BRUNSWICK, N.J.

WEEK OF OCT. 3-10, 1923

HERBERT S. SWAN, CITY PLANNER
15 PARK ROW, NEW YORK CITY.

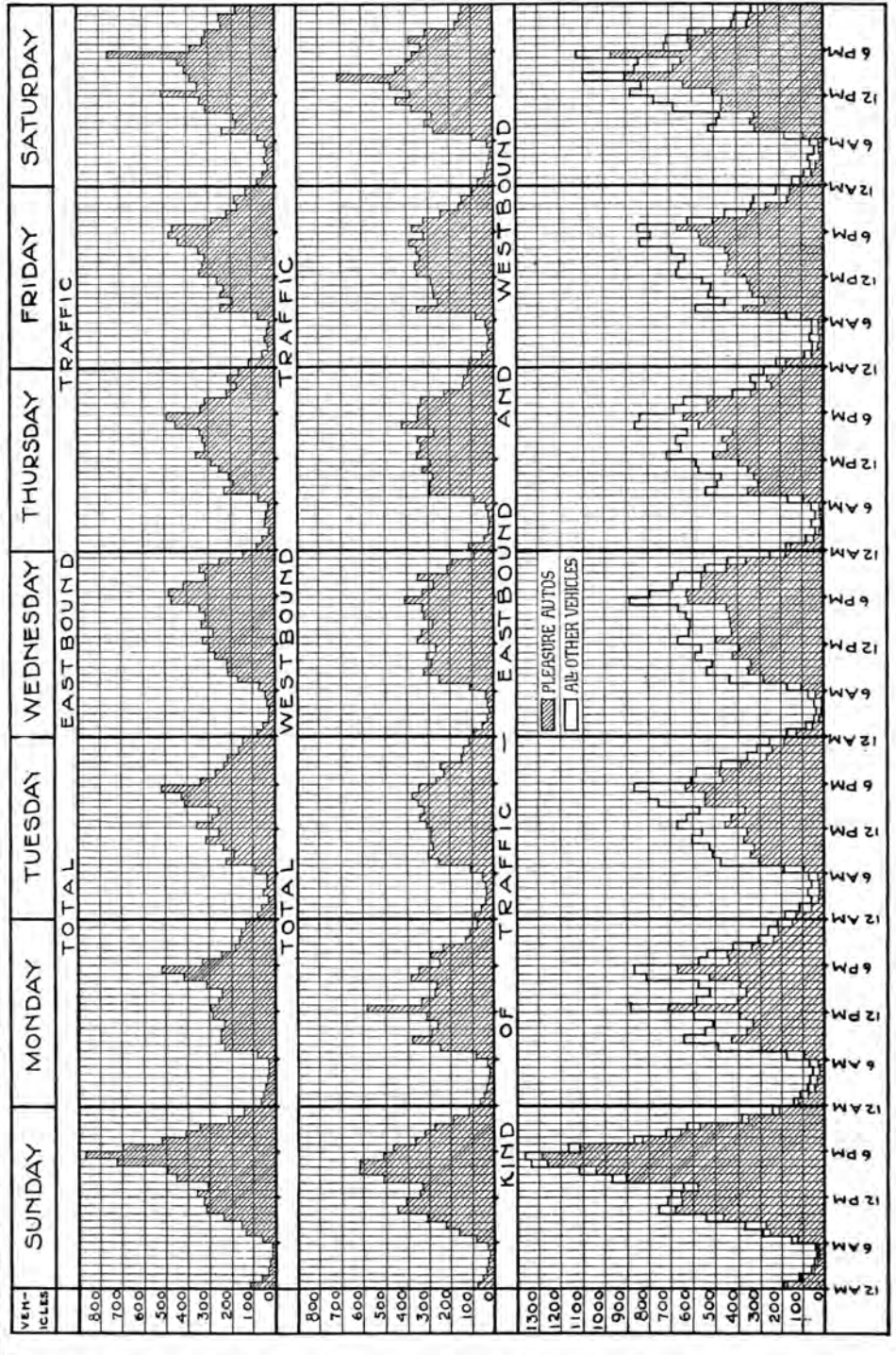


Diagram VI

The week-day rush hour traffic flow over the Albany Street bridge approximates fifteen vehicles per minute; on Sundays it sometimes exceeds twenty vehicles per minute.



Going to a football game. On special occasions the traffic load over the Albany Street bridge rivals the daily traffic of Fifth Avenue, New York.



As the principal gateway to the city, the approach to the Albany Street bridge should be made more attractive and inviting.

its respective quota of bridge traffic. It is only natural that the bridge traffic on Albany Street should increase as the distance to the bridge diminishes, and yet it is somewhat surprising to learn that the non-bridge traffic on portions of Albany Street is of no greater volume than the traffic on many secondary streets in the city.

Diagram VII, showing the flow of traffic on Albany and George Streets, presents most forcibly the relationship of the Albany Street bridge to downtown congestion.

Over a third of all the traffic on the streets crossing Albany Street is bridge traffic. This proportion will undoubtedly increase as traffic increases. In time it is not unreasonable to expect that the volume of bridge traffic on these streets will exceed the volume of purely local traffic. On Little Burnet Street this has already happened, but this street is an exceptional street, in that it is the nearest street to the bridge. The relative amount of bridge traffic on streets intersecting Albany Street is shown in the following table:

PROPORTION OF BRIDGE TRAFFIC TO TOTAL TRAFFIC ON DIFFERENT STREETS AT INTERSECTION WITH ALBANY STREET

Street	Traffic Approaching Intersection	Traffic Leaving Intersection	Total Traffic Approaching and Leaving Intersection
Water.....	40.0	37.5	38.5
Little Burnet.....	95.0	83.1	88.6
North Peace.....	25.0	0	20.0
South Peace.....	34.7	28.1	31.0
North Neilson.....	38.8	35.0	37.7
South Neilson.....	40.5	12.2	28.6
North George.....	18.2	28.2	33.0
South George.....	31.9	32.2	32.0
Spring Alley.....	0	13.2	13.2
Easton Avenue.....	35.0	41.5	37.8
French Street.....	41.5	48.0	44.7

FLOW OF TRAFFIC ALBANY, GEORGE, & INTERSECTING STREETS

8 A.M.-6 P.M. TYPICAL DAY, DECEMBER 1923

HERBERT S. SWAN - CITY PLANNER,
15 PARK ROW, NEW YORK CITY.

SCALE - RELATIVE NUMBER OF VEHICLES



NOTE: DIAGRAM SHOWS PROPORTIONATE NUMBER OF VEHICLES PASSING DIFFERENT POINTS ON THE BASIS OF 1000 PROCEEDING ON ALBANY STREET BETWEEN WATER STREET AND LITTLE BURNET. THE TOTAL TRAFFIC PASSING THIS POINT APPROXIMATES 11,000 VEHICLES PER 24 HOUR DAY.

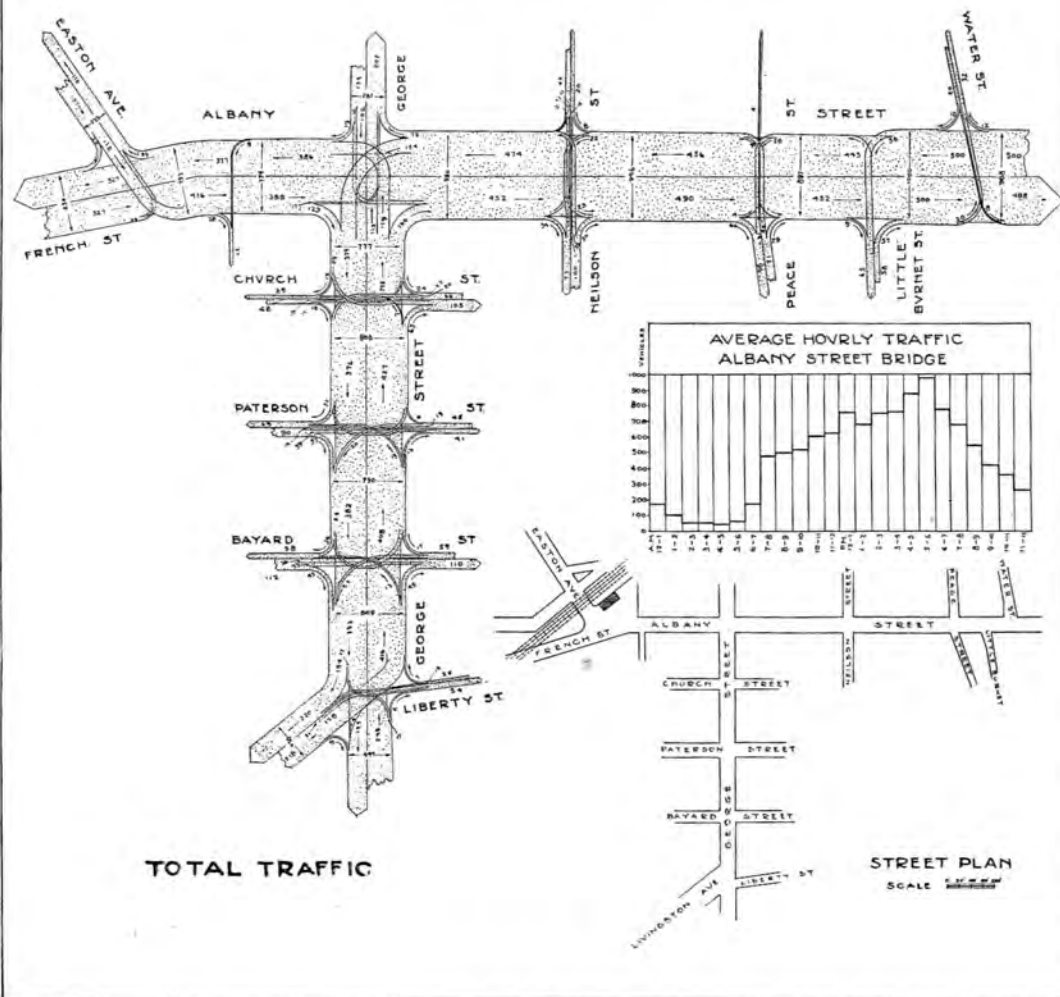


Diagram VII

The bridge traffic practically crowds all other traffic off lower Albany Street.



Albany Street looking east from the station.



The Delaware and Raritan Canal.

West of Spring Alley the bridge traffic and the non-bridge traffic on Albany Street balance one another—each is equal to 50 per cent. of the total traffic in the street. Between George and Neilson Streets, however, but 20 per cent. of the total traffic on Albany Street is non-bridge traffic—80 per cent. of the traffic passes over the bridge. Between Neilson and Peace Streets the bridge traffic on Albany Street increases to 85 per cent. of the total traffic. Between Peace and Little Burnet Streets the bridge traffic practically crowds all other traffic off the street, for here it amounts to 90 per cent. of the total traffic.

The proportion of bridge traffic to total traffic at different points on Albany Street is shown in the following table:

Distribution of Bridge Traffic

The origin and destination of the bridge traffic throws an interesting light upon the most desirable location for the new bridge. This data is shown graphically in Diagram VIII.

French Street is, of course, the origin or destination of more bridge traffic than any other one street. Thirty vehicles out of every hundred crossing the bridge either come from or go to some portion of French Street beyond Easton Avenue. South George Street comes next—25 per cent. of the bridge traffic is discharged on or received from this street. Only two other streets, Easton Avenue and Little Burnet Street, care for more than 10 per cent. of the bridge traffic. Easton Avenue

PROPORTION OF BRIDGE TRAFFIC TO TOTAL TRAFFIC AT DIFFERENT POINTS ON ALBANY STREET

Point on Albany Street	Westbound Traffic Per Cent.	Eastbound Traffic Per Cent.	Total Traffic Per Cent.
West of:—			
Bridge.....	100.0	100.0	100.0
Water.....	97.6	91.3	94.4
Little Burnet.....	97.6	94.5	96.0
Peace.....	89.0	82.1	85.5
Neilson.....	82.5	75.9	79.2
George.....	54.7	48.8	51.2
Spring Alley.....	53.7	45.6	49.6
Easton.....	48.0	41.5	44.7

DISTRIBUTION OF TRAFFIC, ALBANY STREET BRIDGE.

HERBERT S SWAN-CITY PLANNER.

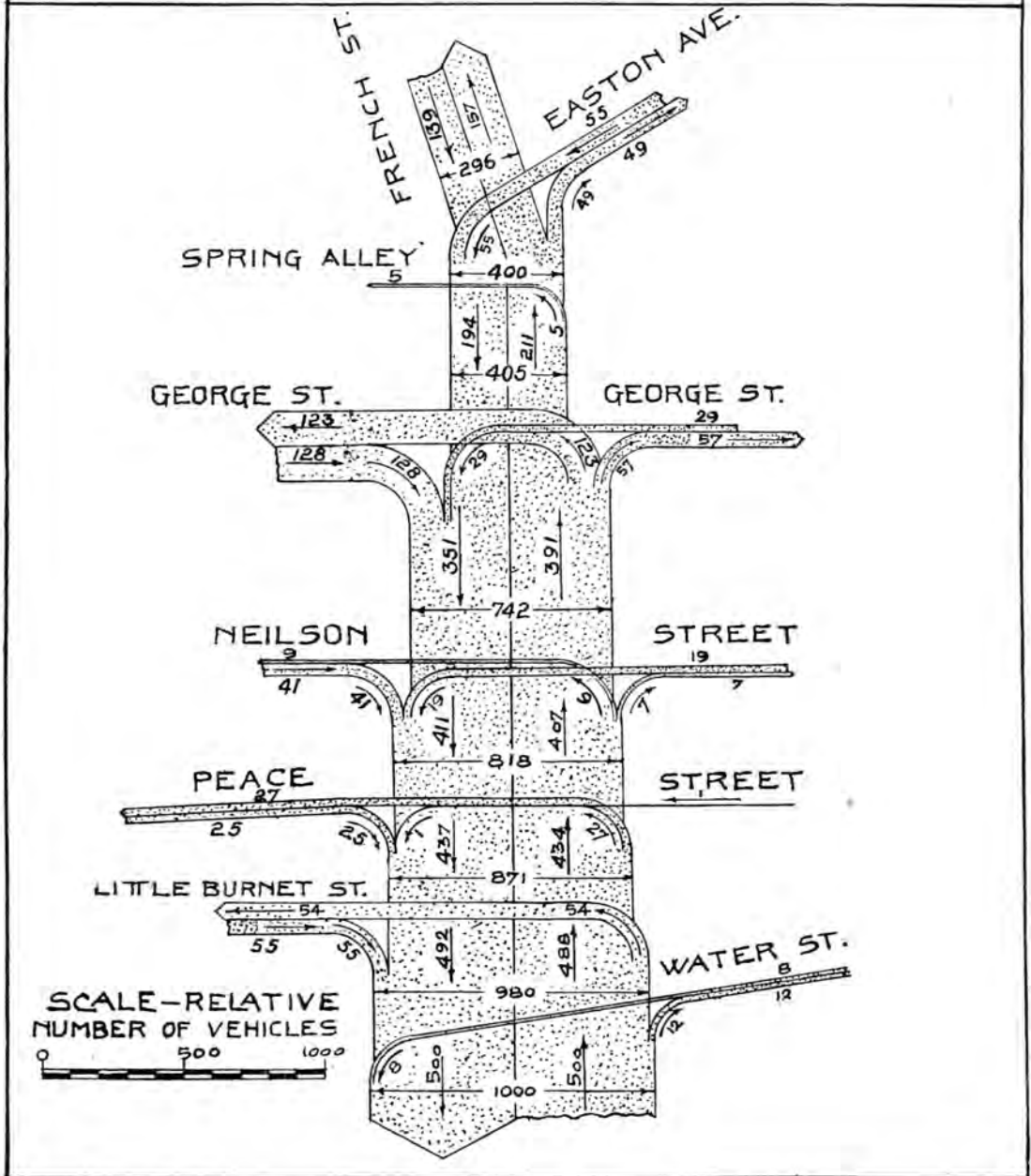


Diagram VIII

Forty vehicles out of every hundred using the Albany Street bridge either come from or go south of the bridge; thirty either come from or go north of the bridge; and thirty either come from or go west of the bridge along French Street.



The district between George Street and the river. This whole area, though adjacent to the business district, is in a backward and under-developed condition because it lacks proper thoroughfare and bridge facilities.



Peace Street looking east from Albany Street. The Remsen Avenue Bridge would relieve such narrow streets of a large portion of their present bridge traffic.

absorbs 10.4 per cent., and Little Burnet cares for 10.9 per cent.

The streets south of Albany Street, i. e., Little Burnet, South Peace, South Neilson, South George, and Spring Alley, care for 47 per cent. of the total bridge traffic. In contrast to this, the streets north of Albany Street, i. e., Water, North Peace, North Neilson, North George and Easton Avenue, give rise to only 23 per cent. of

the bridge traffic. In other words, two vehicles use the bridge from that part of the city south of Albany Street to every vehicle from that part of the city north of Albany Street.

The origin and destination of the Albany Street bridge traffic on the basis of 1,000 vehicles using the bridge is shown in the following table:

ORIGIN AND DESTINATION OF ALBANY STREET BRIDGE TRAFFIC

Section of City	Inbound	Outbound	Total
1. West of Bridge:			
French.....	139	157	296
2. South of Bridge:			
Little Burnet.....	55	54	109
South Peace.....	25	27	52
South Neilson.....	41	9	50
South George.....	128	123	251
Spring Alley.....	0	5	5
	249	218	467
3. North of Bridge:			
Water.....	8	12	20
North Peace.....	1	0	1
North Neilson.....	19	7	26
North George.....	29	57	86
Easton.....	55	49	104
	112	125	237
4. GRAND TOTAL.....	500	500	1000

Local vs. Foreign Traffic

What proportion of the bridge traffic is local traffic, i. e., traffic having either its origin or its destination within the city, and what proportion of the bridge traffic is foreign traffic, i. e., traffic having both its origin and destination outside of the city, is a difficult question to answer.

The bridge traffic on North Peace and North Neilson Streets is certainly altogether local in character. Surely, not more than 10 per cent. of the bridge traffic on Water, South Peace and South Neilson Streets is foreign traffic. Perhaps 20 per cent. of the bridge traffic on North George and Little Burnet Streets has both its origin and destination outside the city. Thirty per cent. would seem to be a liberal estimate for the volume of foreign bridge traffic on South George Street and Easton Avenue. Possibly 60 per cent. of the bridge traffic on French Street originates or terminates beyond the city limits.

On this basis the foreign traffic constitutes 33 per cent. of the total bridge traffic, and the local traffic, 67 per cent. of the total traffic.

In other words, the Albany Street bridge conveniences two persons either living or doing business in the city to every person it conveniences who lives and does business outside the city. Put

in another way, the local bridge traffic is twice as important as the foreign bridge traffic.

Heavy Truck Traffic

That it is desirable to remove as much of the heavy traffic as possible from Albany Street can admit of no question, yet the new bridge must not be located with an eye solely to the convenience of motor truck traffic.

The proportion of heavy trucks to total traffic over the Albany Street bridge on week days varies between 6 and 10 per cent. of the total traffic. In other words, for every heavy motor truck using the Albany Street bridge, there are 10 to 16 other vehicles using the bridge. The new bridge, therefore, when it is constructed over the Raritan River, must be built principally with a view to conveniencing light traffic. Although it may be reasonable to expect heavy truck traffic to increase proportionately more rapidly during the next few years than automobile traffic, it is hardly likely that heavy trucks will, by themselves, require the exclusive use of the bridge.

The following table shows the number of heavy trucks as well as the total traffic using Albany Street bridge during the week of October 3-10, 1923:

PROPORTION OF HEAVY TRUCKS TO TOTAL TRAFFIC

—ALBANY STREET BRIDGE—

WEEK OF OCTOBER 3-10, 1923

	Heavy Trucks	Total Traffic	Per Cent.
Sunday.....	150	13,453	1.1
Monday.....	834	10,020	8.3
Tuesday.....	977	10,317	9.4
Wednesday.....	904	10,705	8.4
Thursday.....	953	10,322	9.2
Friday.....	1,037	10,439	9.9
Saturday.....	763	12,481	6.1
TOTAL.....	5,618	77,737	7.2



Remsen Avenue. The roadway of this street can readily be widened into a bridge approach carrying six vehicles abreast.



Oliver Street looking north towards the river. The proposed bridge would come out immediately east of Neilson Street.

Effect of the Delaware River Bridge Upon Traffic at New Brunswick

The idea seems to be generally entertained that completion of the Delaware River bridge between Philadelphia and Camden will enormously increase the amount of motor truck traffic at New Brunswick. Why the new bridge over the Delaware River should increase the truck traffic at New Brunswick is not quite clear. The route from Philadelphia, via Trenton, is just as direct as that via Camden and Trenton. The connections on the Pennsylvania side of the river between Trenton and Philadelphia are also satisfactory.

The construction of the new bridge at Camden may divert considerable traffic from the westerly side to the easterly side of the river, but this in itself will not cause any increase in the total volume of traffic. The Delaware River bridge does not have the same bearing on traffic conditions in New Brunswick as do the vehicular tunnels between Jersey City and New York. Between New York and Jersey City there is at present absolutely no connection other than that of the ferries. Every vehicle which crosses the river must cross via ferry. Although this is also true at present at Philadelphia and Camden, it is not necessary for the traffic between Philadelphia and New York to cross the Delaware River at Camden. It

may proceed, and it does proceed, along the westerly side of the Delaware River to Trenton, whence it crosses a bridge over the Delaware River.

Effect of Vehicular Tunnels Upon New Brunswick Traffic

The completion of the vehicular tunnels will undoubtedly have the effect of enormously increasing the amount of traffic which will cross the Hudson River. This increase, however, is likely to affect automobile traffic far more than truck traffic. The volume of motor truck traffic between Philadelphia, Trenton and New York is not determined particularly by the obstruction it meets at the Hudson River. Even though a truck may have to wait a half hour, an hour or more, to obtain ferry service over the river, the time thus spent bears a comparatively small percentage to the total time required for making the trip between these points. It is entirely different, however, with the light automobile traffic. People who use automobiles in order to expedite their movement between places cannot afford to spend an unknown amount of time waiting for ferry service. Rather than be confronted with indefinite delay, they utilize the railroads in going from one point to another.

Week-end traffic, too, over the Hudson River is very much reduced by the

ALTERNATIVE ROUTES NEW RARITAN RIVER BRIDGE, NEW BRUNSWICK, N.J.

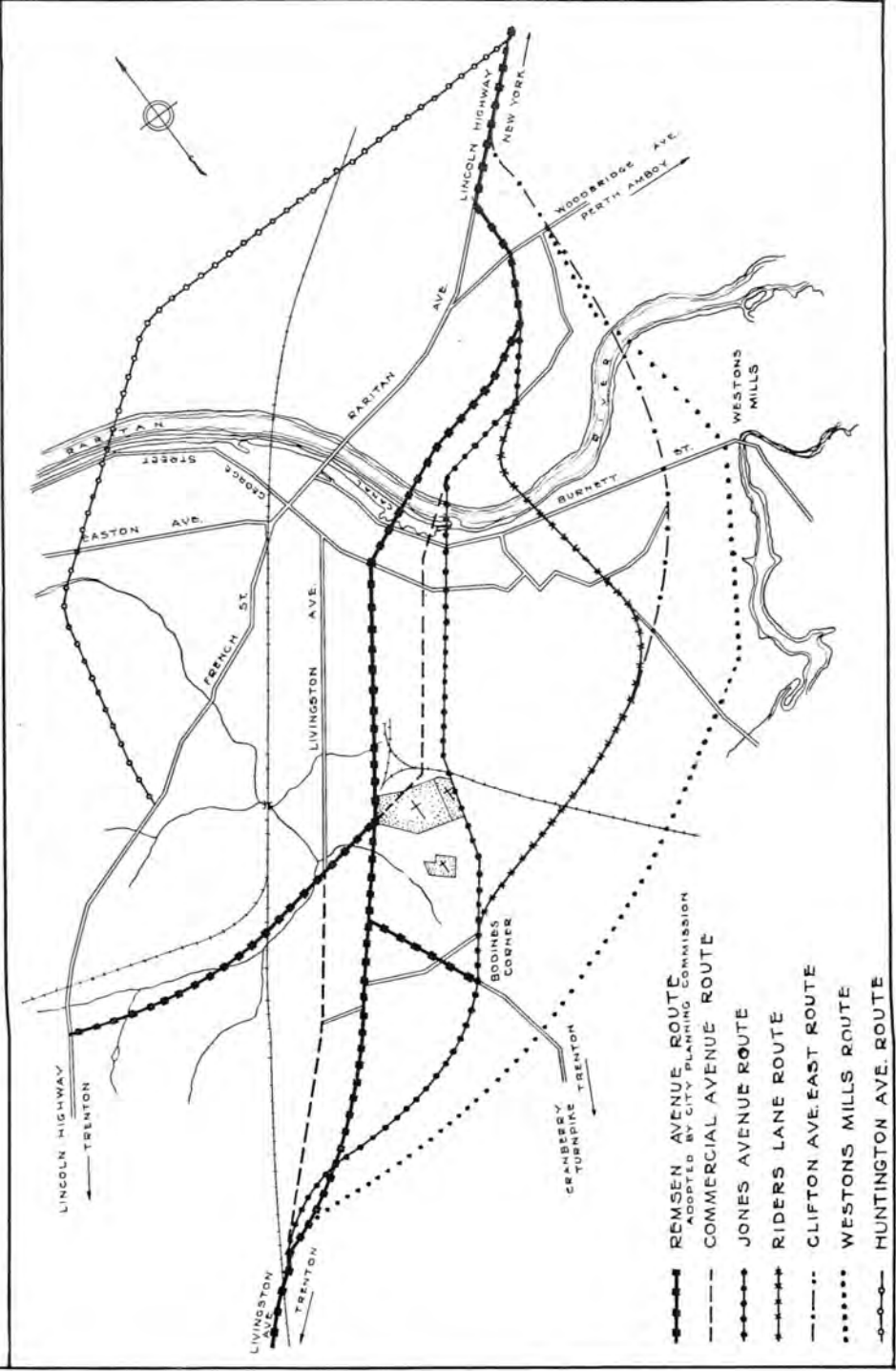


Diagram IX

No route exceeds the Remsen Avenue route in its relationship to either the state highways or the city thoroughfares.

delays at ferries. People who can enjoy only two or three hours in automobiles would rather spend their time in Long Island or Westchester than encounter the delays at the ferries. The opening of the vehicular tunnels, however, will give this traffic a direct outlet into New Jersey. Upon the completion of the tunnels, an automobile can, in five minutes, pass under the river from New York to Jersey City. When this is possible, there will undoubtedly be a tremendous increase in light automobile traffic between New York and New Jersey. People who now go to New Jersey over the week-end, frequently find that they have to wait for three, four, five, or six hours on the Jersey side of the river, in order to cross to New York. When this same trip can be made in five minutes, it is to be expected that New Jersey will serve as an outlet for the overly congested streets of Long Island and Westchester. Motorists who are now obliged to seek their recreation on the easterly side of the Hudson will seek it *en masse* on the westerly side of the Hudson River.

Comparative Volume of New York and Camden Traffic

Traffic forecasts made by the State Highway Commission clearly show that New York traffic is of tremendously more importance to New Brunswick than Camden traffic. This is not only true now, but it will be true 10, 12, and 15 years hence.

The maximum hourly traffic at Camden over Route 2, i. e., the thoroughfares leading out of Camden and over which all of the New Brunswick-Camden traffic has to pass was in 1923, 320 vehicles. For 1937 the maximum hourly traffic of this thoroughfare at Camden is estimated at 862 vehicles. Comparatively little of this traffic now reaches New Brunswick. It is very unlikely that a greater portion

of it will pass through New Brunswick in the future.

A large amount of the traffic over Route 2 is purely local traffic, having either its origin or destination in the communities on the Delaware River north of Camden,—such places as Riverton, Palmyra, Burlington and Bordentown. Another portion of this traffic proceeds to Trenton, Asbury Park, Long Branch, Freehold, Lakewood, Somerville, Bound Brook, and other communities throughout the state. The remaining portion of the traffic—just how much no one knows—passes through New Brunswick. Certainly, only a small portion of this traffic reaches New Brunswick.

In contrast with the Camden traffic, it is interesting to note the volume of New York traffic. In 1923 the maximum hourly ferry traffic was 2,362 vehicles; in 1937 the aggregate ferry and tunnel traffic for the maximum traffic hour is estimated at 6,132 vehicles. These figures show the ferry and tunnel traffic over all the highways converging at Jersey City. Only a portion of this traffic would use the Lincoln Highway and pass through New Brunswick. It is, however, not only the traffic crossing the Hudson River which utilizes the Lincoln Highway. There is also the tremendous volume of traffic from all parts of the metropolitan area within New Jersey itself that has to be taken care of. The maximum hourly traffic over the Lincoln Highway at Rahway was in 1923, 1,712 vehicles; for 1937 the maximum hourly traffic is estimated at 5,444 vehicles. The Lincoln Highway at Rahway, of course, takes care of the shore traffic as well as of the Philadelphia traffic. The volume of traffic in New Brunswick is, of course, not so great as that at Rahway.

The maximum hourly traffic over the Albany Street bridge at New Brunswick in 1923 was 1,371 vehicles. On the same basis as the other estimates, this traffic would be increased by 1937 to 3,072 vehicles per hour.



Looking across the Raritan River towards the Highland Park terminus of the proposed bridge. Note the high bank of the river as well as the undeveloped condition of the ground.

General Considerations Governing Location of the New Bridge

The geography and the street plan of New Brunswick are such that it is quite safe to predict that the bridge traffic to and from Easton Avenue, as well as to and from North George Street will always use the Albany Street bridge. At least, it will use the Albany Street bridge until better bridge and highway connections are inaugurated to the north of the present bridge. Such improvements will probably not be carried out for many years to come.

A new bridge to relieve the congestion on Albany Street, therefore, must be designed to absorb as much bridge traffic as possible from that part of the city lying south of the Pennsylvania Railroad and from the three arterial highways entering this portion of the city,—South George Street, the Cranbury Turnpike, and Livingston Avenue.

To best serve the convenience of its prospective traffic, it may be observed that the new bridge and its approaches should conform to the following general specifications:

1. The bridge should be constructed with a view to serving both foreign and local traffic, but of the two, local traffic is the more important, since its volume is twice that of the foreign traffic.
2. The bridge should be constructed with a view to taking adequate care of light traffic. Light traffic today contributes 90 per cent. of the total bridge traffic. Though this proportion may diminish, the volume of light traffic is always likely to exceed the volume of heavy traffic.
3. The bridge should be constructed south of Albany Street, near enough to the Albany Street bridge to supplement it in caring for local traffic, but not so near it as to intensify the congestion resulting from too great a concentration of bridge traffic in a small area.
4. The bridge should be located on a street which is an integral part of the city's street plan and which enjoys excellent accessibility to,—(a) all parts of the city; and to (b) the arterial highways leading out of the city, which it will be especially called upon to serve.
5. The approaches to the bridge should have a minimum width of at least 80 feet. Where conditions permit, this width should be increased to 100 feet.
6. The approaches to the bridge should not be inconvenienced by sharp turns. All curves should have easy radii so as not to obstruct traffic.
7. Intersections where traffic is likely to become particularly heavy should have their corners cut off. The two corners on the bridge side of cross-streets especially should be generously rounded in order to make adequate provision for traffic turning off or onto the bridge.
8. Maximum grades on the approaches to the bridge should be

limited to $3\frac{1}{2}$ per cent. The grades of 6 to 7 per cent. on the present Albany Street bridge are a serious inconvenience to traffic.

Advantages of Remsen Avenue as a Bridge Street

It is our belief, as a result of the survey we have made of traffic and thoroughfare conditions in New Brunswick that Remsen Avenue fills the requirements of the new bridge better than any other street. Its superior advantages as compared with other routes may be briefly summarized as follows:

1. Its directness as a connecting street between the Lincoln Highway and Livingston Avenue.

The comparative distances as traversed by the several proposed bridge routes measured from the point at which the longest route, the Weston Mills route, would diverge from the Lincoln Highway to its point of juncture with Livingston Avenue where Livingston Avenue crosses the Pennsylvania Railroad tracks, are as follows:

(1) Remsen Avenue Route	5.45 miles
(2) Jones Avenue Route	5.48 "
(3) Clifton Avenue West Route	5.55 "
(4) Commercial Avenue Route	5.64 "
(5) Clifton Avenue East Route	5.73 "
(6) Rider Avenue Route	5.91 "
(7) Weston Mills Route	6.02 "

Remsen Avenue consequently affords the shortest bridge route that can be selected to serve the convenience of the foreign traffic passing through the city. More foreign traffic should, for this reason, be attracted to a bridge located at Remsen Avenue than at any other point.



Where Remsen Avenue crosses George Street and continues as Oliver Street, a block from the outlet of the proposed bridge.

2. Its proximity to the business district of New Brunswick.

It is nearer than any of the other routes to the downtown business district. It will for that reason prove a more effective complement to the Albany Street bridge, thus relieving that bridge of a greater volume of traffic than would any other street mentioned as a possible bridge approach.

The new bridge, if located at Remsen Avenue, would relieve Albany Street not only of a considerable portion of through traffic, but also of a very considerable portion of local traffic. All of the traffic in the downtown business center desiring to cross the river would have two alternative routes open to it. Either of these routes would be utilized according to which bridge could, at the particular time, be most conveniently reached. Should the bridge be located a considerable distance from the business center, it would attract very little local traffic. Practically all of the traffic using it would be through traffic, and the local traffic in the downtown section would be subject to all of the inconvenience and congestion of the present Albany Street bridge.

3. Its stabilizing effect upon the business district.

The bridge should be located at a point to one side of the business district,



A vehicle every two seconds—that is the traffic load the intersection of Albany and George Streets frequently carries during the rush hour.

but not so far away from it that the business district will not some day grow up to the bridge. Should the bridge be located at a point considerably removed from the downtown district, it will not serve the convenience of New Brunswick nearly as well as a bridge more centrally located. It would, moreover, tend to shift the business development of the city and divide the city into two separate and distinct business centers. New business would tend to locate along the route of the new bridge, in the same manner that has already characterized development along the approach to the present bridge. The merchants of the present business district would profit very little or not at all from the traffic over the new bridge, if it should be located a considerable distance from Albany Street.

If the new bridge, on the other hand, should be located on the edge of the present business district, it would permanently stabilize the present business center. The new bridge would act as a magnet and draw business, as it developed, towards it, thus securing the development of the entire area between the two bridges as a business center.

4. Its width of 80 feet.

The width of Remsen Avenue, eighty feet, is the minimum street width that will serve as a competent bridge approach. None of the other routes suggested have

a greater width than 66 feet. All but one, have a width of only sixty feet. Remsen Avenue is, therefore, the only street that would not need to be widened throughout its entire length, if selected for the bridge.

No matter where a new bridge may be erected, every effort should be exerted to see that the approaches to the bridge at either end are made adequate to serve the bridge in an efficient manner. The difficulty with many a bridge lies, not in the small capacity of the bridge, but in the small capacity of the approaches. No bridge, of course, can carry more traffic than the approaches on either side are able to serve. A new bridge across the Raritan River should be served by approaches having a minimum width of at least 80 feet, and preferably, 100 feet. This width would permit of a 56-foot roadway and one 12-foot sidewalk on either side. A roadway of this width would conveniently take care of six lines of traffic, a line of parked vehicles at either curb, and four moving lines of vehicles in the center,—two in each direction. A roadway width of less than 56 feet would throttle the capacity of the approach down to four traffic lines. It can readily be seen that if parking is allowed at either curb, a roadway width of six traffic lines has double the capacity for moving traffic enjoyed by a roadway width of four traffic lines. In its vacant stretches Remsen Avenue should be widened to a width of 100 feet.

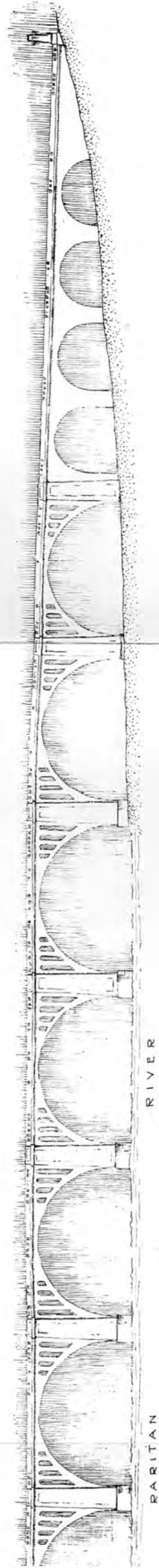
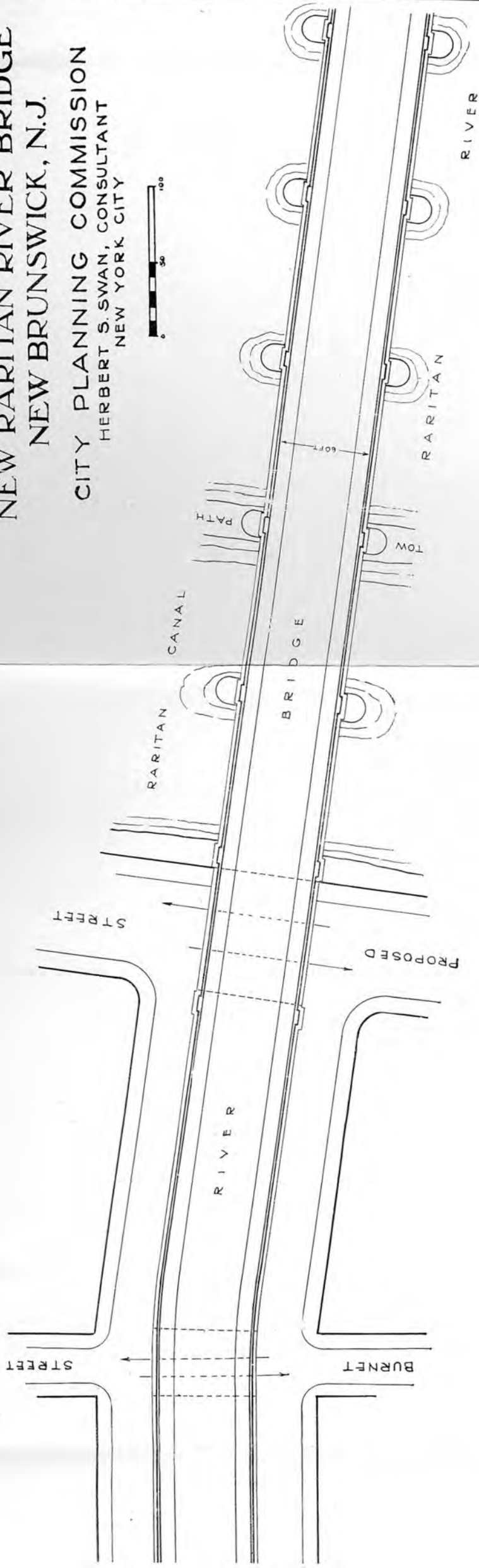
5. Freedom from railroad grade crossings.

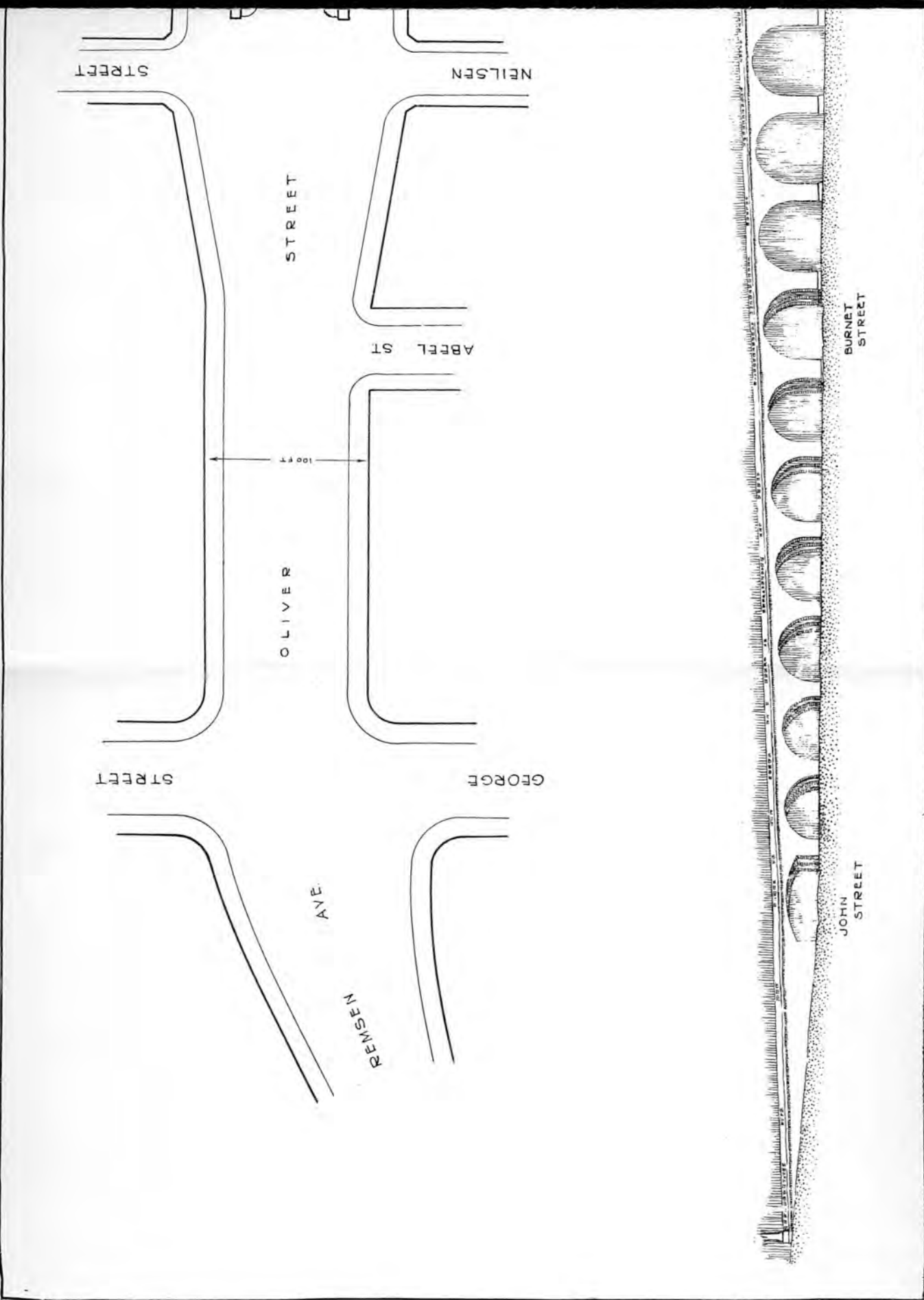
Remsen Avenue is the only thoroughfare suggested as a bridge route which would not involve a crossing over the Raritan River railroad tracks at grade.

6. Its ready accessibility to all parts of the city.

Diagram IX shows that no other street available as a bridge street is so well linked with the highway system of the state or the street plan of the city. Four of the bridge sites under consideration,—Rider Avenue, Clifton Avenue

NEW RARITAN RIVER BRIDGE
 NEW BRUNSWICK, N.J.
 CITY PLANNING COMMISSION
 HERBERT S. SWAN, CONSULTANT
 NEW YORK CITY





West, Clifton Avenue East, and Weston Mills—are entirely outside the city's street plan;—they bear no relation to it at all. Commercial Avenue and Jones Avenue, though an integral part of the city's street plan, are not so well related as Remsen Avenue is to either the Cranbury Turnpike or Livingston Avenue. Remsen Avenue enjoys not only all the advantages enjoyed by either Commercial Avenue or Jones Avenue as an integral link in the city's street system, but it enjoys superior advantages not enjoyed by either of these streets, in being excellently tied up with all of the arterial highways that would cross the bridge. Diagram X shows a profile of Remsen Avenue as well as its proposed connections with Livingston Avenue, the Cranbury Turnpike, and the Lincoln Highway.

Cost of Bridge

No matter where the bridge is erected it will cost, if it is a high level bridge, in excess of \$1,250,000. At some locations the structure itself will cost less; in other locations more, but there are compensating considerations, such as new highway construction, street widenings, grading, and filling, so that the cost of the bridge structure is only one item in the aggregate cost of providing a satisfactory bridge.

The difference in cost between a low level and a high level bridge is more apparent than real. Although a low level bridge could be built for some \$400,000 less than a high level bridge, this advantage entirely disappears when the annual cost of operating the draw is capitalized. The superiority of a high level bridge, both as to highway traffic and as to river craft, is so great that the desirability of such a bridge, especially when there will be no marked difference in cost of construction, admits of no debate.

The Jones Avenue, Rider Avenue and Clifton Avenue routes are all more advantageously situated, so far as the lay of the ground is concerned, for the con-

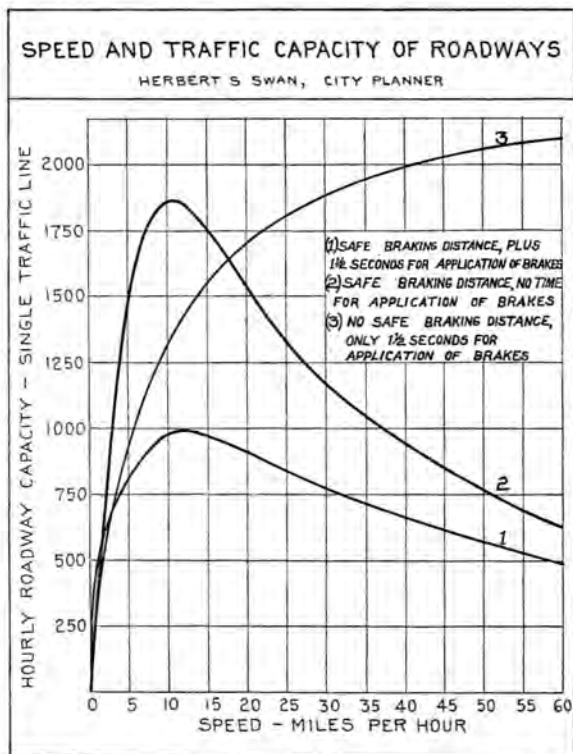


Lazy parkers—Machines parked three feet from the curb kill two traffic lines to moving vehicles.

struction of a high level bridge than is Remsen Avenue. The high banks on these thoroughfares would make for economy in the construction of both the bridge and its approaches, and yet these economies would probably be wholly offset by the much larger outlay that would be required for highway construction and for widening the approaches to the bridge to a minimum width of at least 80 feet, and, where conditions would permit, to a minimum width of 100 feet.

A bridge at Remsen Avenue would not be more expensive than one at either Jones Avenue or Commercial Avenue. In fact, a bridge at either of these locations when considered in connection with necessary street widenings and new highways to be constructed would cost a couple of hundred thousand dollars more than one at Remsen Avenue. And, as between Remsen Avenue, Rider Avenue, Clifton Avenue East, and Clifton Avenue West, the estimates show very little difference in aggregate cost for a bridge complete with approaches of adequate width. A bridge at Remsen Avenue would cost very little, if any more than a bridge at any of these streets.

But the selection of a bridge site cannot be made on the basis of mere comparative cost. Cost is, of course, an element, but in this instance the difference in cost as between the several sites is inappreciable as compared with the superior traffic



The capacity of a traffic line diminishes with increased speed when proper allowance is made for safe braking.

advantages that would accrue to certain sites and not to others.

Width of Bridge

Although a 56-foot roadway width is desirable for the bridge approaches, so great a width is not needed for the roadway on the bridge itself.

There will be no parking of vehicles on the bridge. There will be no turning in and out of vehicles at the curb on the bridge. There will be no intersection of cross-streets on the bridge. All of these considerations will admit of a narrower roadway width for the bridge than for the approaches. Diagram XI shows the elevation and plan of the proposed bridge at Remsen Avenue.

A roadway width of 38 feet will prove ample for the bridge. This width will permit of four traffic lines—two lines of light traffic with a width of 9 feet per

line, and two lines of heavy traffic with a width of 10 feet per line. Diagram XII shows the capacity of a traffic line under different speed limitations.

Free from trolley tracks and enjoying better ruling grades, a bridge of this width, although no wider than the Albany Street bridge, would have an estimated traffic capacity almost 50 per cent. greater. Since the proposed bridge could carry a load of approximately 3,000 vehicles per hour, the real limitations upon the capacity of the bridge would be found, not in the width of the bridge, but in the ability of the bridge approaches to feed this volume of traffic to the bridge.

Treatment of Intersections

Special consideration should, therefore, be accorded the design of the intersections formed by the bridge approaches with the principal crosstown streets. Since a large volume of traffic would come off and onto the bridge approaches at these points, every effort should be made to secure an uninterrupted flow of traffic.

The two corners on Townsend Street as well as the two corners on Sanford Street on Remsen Avenue nearest the bridge, merit attention in this respect. These corners should be cut off a generous amount to afford increased room for turning traffic. Each of these corners should be cut off at least 25 feet.

The intersection of Remsen Avenue and George Street is bound to attract an enormous volume of turning traffic. At this intersection, it is suggested that the two corners furthest from the bridge be set back 25 feet. On the side of George Street nearest the bridge, it is suggested that in lieu of cutting off the corners, the block on Oliver Street between George and Neilson Streets be given a minimum width of 100 feet. The greater width will prove more effective in taking care of traffic conditions at this point than cut-off corners. The two blocks in Oliver Street between Neilson Street and Burnet

Street should be given a width of 140 feet. This width will provide for a 40-foot street on either side of the bridge, to maintain the present connections between these two streets.

Proportion of Traffic Absorbed by the New Bridge

What proportion of the bridge traffic over the Raritan River could the new bridge fairly be expected to attract? That depends upon where the new bridge is located.

If located at Remsen Avenue, the new bridge should attract all of the foreign traffic that now enters the Albany Street bridge via South George, South Neilson, South Peace, and Little Burnet Streets. This it is estimated, contributes 10.7 per cent. of the total traffic over the Albany Street bridge. It should also attract one-half of the purely local bridge traffic from these streets, which amounts to 18.0 per cent. In addition to this, it should absorb one-half of the foreign bridge traffic over French Street. This amounts to 8.8 per cent. of the traffic over the Albany Street bridge. If these estimates are correct, the new bridge should absorb 37.5 per cent. of the present Albany Street bridge traffic.

The superiority of the new bridge over the Albany Street bridge would in time attract a greater proportion of the cross-river traffic. The easier grades on the approaches, grades nowhere exceeding 3½ per cent., would make the bridge especially inviting to heavy traffic.

The effect of the new bridge, under the assumed conditions, upon congestion at the Albany Street bridge would, for different traffic loads, be approximately as follows:

Vehicles at present crossing Albany Street bridge.....	10,000	11,000	12,000	13,000	14,000
Vehicles absorbed by the new bridge.....	3,750	4,125	4,500	4,875	5,250
Vehicles retained by present Albany Street bridge.....	6,250	6,875	7,500	8,125	8,750

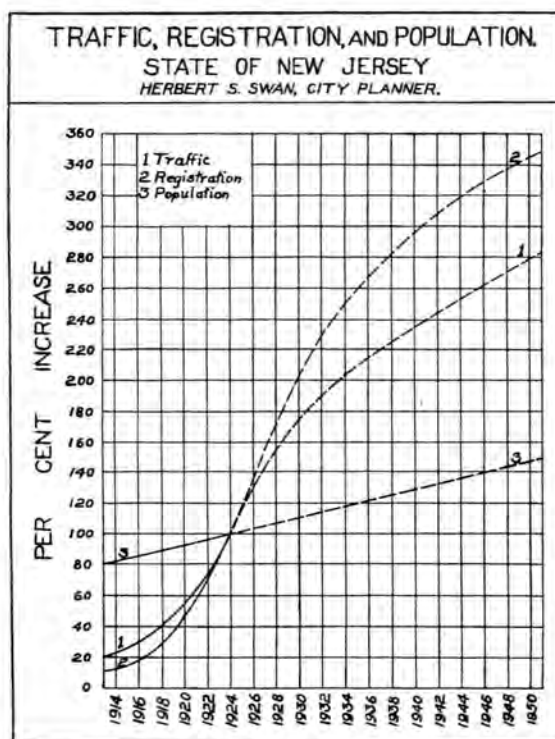


Diagram XIII

Traffic increases considerably faster than population. During the next twenty-five years the traffic of the state promises to increase more than five times faster than its population.

Should the traffic over the new bridge increase at the rate of 25 per cent. per year the new bridge would, if already completed, be carrying within four and a half years, the same volume of traffic as is carried at present by the Albany Street bridge. The Albany Street bridge would, within two years, again be carrying its present volume of traffic.

If traffic increases as it is estimated to increase, there will be within a few years, more traffic than can conveniently be handled by the two bridges. Diagram XIII shows the estimated annual per cent. increase in traffic in New Jersey in relation to registration and population up to 1950. The table below shows the

GROWTH OF TRAFFIC

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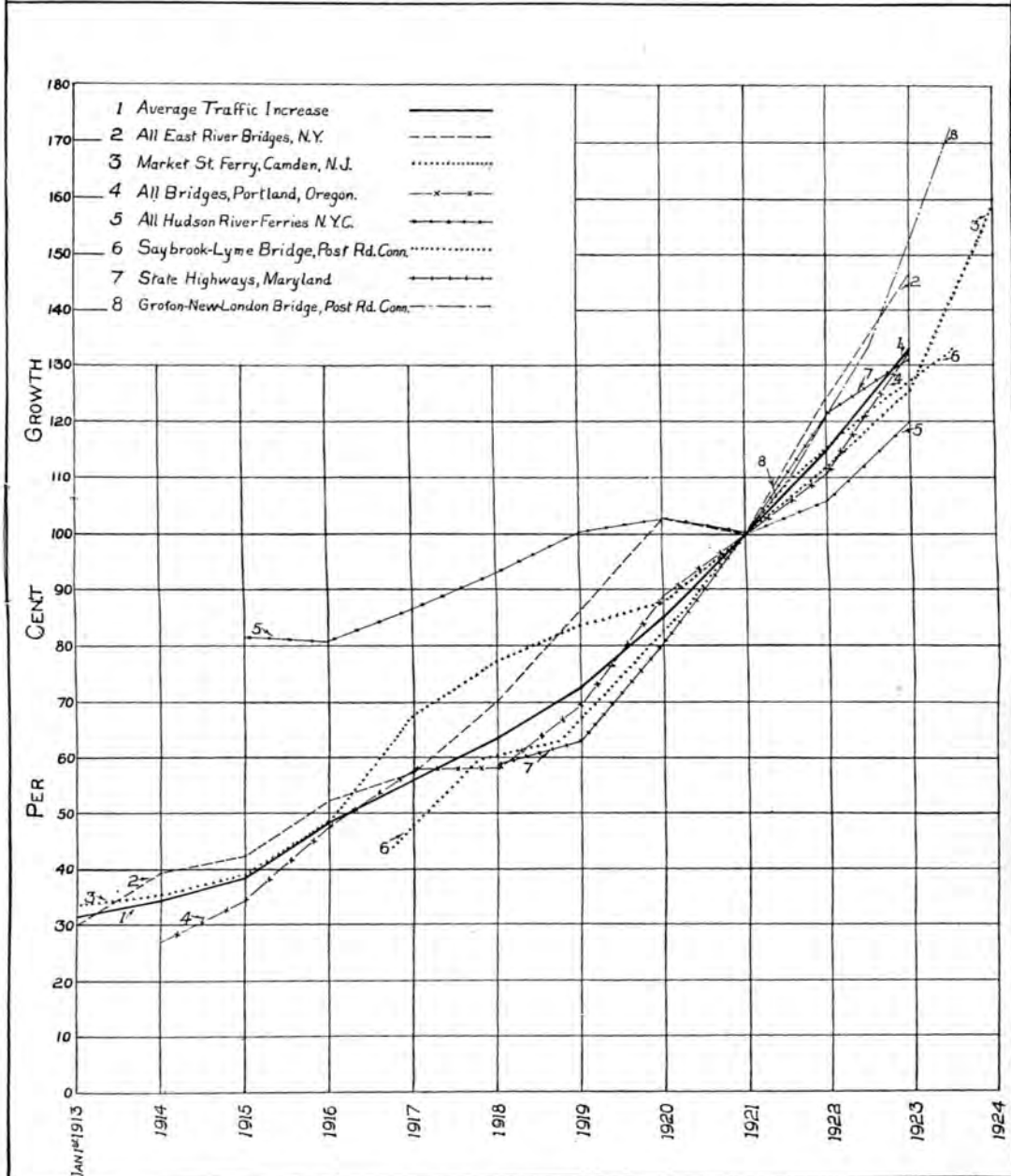


Diagram XIV

Traffic is not only increasing but its rate of increase in many places is also increasing.

application of this estimated per cent. increase to the maximum daily and hourly traffic over the Raritan River.

Immediate Necessity for Bridge

The vehicular tunnels under the Hudson River will be opened in 1926. Every attempt should be made to synchronize the completion of the new Raritan River bridge with the completion of the vehicular tunnels.

Every year that the construction of the bridge is deferred makes traffic conditions worse in New Brunswick. Temporary palliatives may be resorted to in rerouting traffic, in setting back curbs on certain streets, in rounding curb corners, in establishing more effective traffic regulations, but the abominable street plan in the downtown section of New Brunswick, coupled with the tremendous volume of local and foreign traffic today seeking a single outlet are enough to make one despair of the continued efficacy of such methods.

The rush-hour congestion of today will be the normal average traffic flow next year. The average hourly traffic flow eight years hence will be double what it is today. Diagram XIV showing the rate of traffic increase in various communities suggests that if the new bridge is not

built within four or five years, the normal every-day traffic on Albany Street will, throughout the greater part of the year, resemble those experienced every Sunday night by the home-coming crowds on the Shore road during the summer months.

New Brunswick needs the new bridge over the Raritan River as she needs nothing else to straighten out her tangled traffic jam.

To have automobiles and trucks backed up all the way to the railroad station on Albany Street and all the way to Livingston Avenue on George Street waiting to cross the Albany Street bridge,—who will say that this will not become a daily occurrence if the bridge is not built soon.

Until public sentiment in New Brunswick is substantially unanimous in its agreement upon the proposed bridge site, there is very little hope of obtaining a new bridge. What is needed to obtain a new bridge for New Brunswick is a healthy public sentiment, co-operating with and aiding the State Highway Commission in its efforts to erect a bridge.

So long as the citizens of New Brunswick disagree fundamentally with one another as to the best location for the bridge, it is unreasonable to expect the State to take a bold initiative in constructing one.

ESTIMATED INCREASE IN MAXIMUM DAILY AND HOURLY TRAFFIC OVER THE RARITAN RIVER

Year	Relative Volume of Traffic Per Cent.	Estimated Maximum	Estimated Maximum
		Daily Bridge Traffic 24 hours Vehicles	Hourly Bridge Traffic Vehicles
1924.....	100	13,453	1,371
1926.....	125	16,816	1,713
1928.....	150	20,180	2,056
1930.....	175	23,542	2,397
1932.....	195	26,233	2,673
1934.....	215	28,923	2,947
1936.....	230	31,041	3,153
1940.....	250	33,632	3,427
1950.....	285	38,340	3,905

V. Albany Street Roadway Widening

Different Methods of Relieving Traffic on Albany Street

There are but two ways of relieving traffic congestion on Albany Street;—one is to divert traffic from the street; the other is to increase the capacity of the street for carrying traffic.

The first method, which would necessarily involve the construction of a new bridge over the Raritan River, is the only effective way of permanently dealing with the basic cause of congestion in the downtown section of New Brunswick. An additional bridge is so intimately related to the speedy and convenient movement of traffic in the business area that it is safe to say that the problem of street congestion will never be solved satisfactorily until this bridge is built. Considered in comparison with the need for another bridge, all other methods of relieving the traffic situation in the central portion of New Brunswick fade into insignificance. The new bridge over the Raritan River is such a big problem and has so many ramifications that its consideration is reserved for separate treatment. This discussion will, therefore, be devoted solely to a consideration of the second method of relieving congestion on Albany Street, i. e., increasing its traffic capacity.

There are five possible ways, if not altogether practicable ways, of increasing the traffic capacity of Albany Street.

These are:—

1. Widen the roadway by setting back the curbs.
2. Install improved methods of controlling traffic.
3. Abolish parking.

4. Remove the trolleys.
5. Widen the street.

The abolition of parking, the removal of trolleys, and the widening of Albany Street are all, if not equally impracticable, at least so impracticable that no special consideration need be given them at this time.

Dismissing these three methods leaves but the first two to consider. As the installation of better methods of traffic control is considered elsewhere, this discussion will be limited to the desirability of setting back the curbs on Albany Street.

Need for Increasing Traffic Capacity of Albany Street

The State Highway Commission is at the present time spending a quarter of a million dollars in widening the Albany Street bridge from a roadway width of 24 feet to a roadway width of 38 feet.

This increased roadway width will more than double the traffic capacity of the bridge, but unless something is done to increase the traffic capacity of the approaches to the bridge, the bridge will not carry any more traffic after the completion of the widening than it does now. The widened bridge may carry its traffic more comfortably and conveniently than the present one, but it won't carry any more traffic, since the traffic carried by the present bridge has never been limited by its width, but by the capacity of the approaches to the bridge.

The roadway on Albany Street is wider than is necessary for four lines of vehicles, and yet not wide enough for six lines of vehicles. With parking at both curbs, the



Between George Street and the station the sidewalks on Albany Street are no wider than needed for pedestrian traffic.



Sidewalk obstructions on Albany Street in some instances appropriate one-half of the space intended for pedestrians.

effective width of Albany Street is reduced to two traffic lines. This means, in other words, that practically all traffic is confined to the trolley tracks.

The capacity of a vehicular traffic line confined to the trolley tracks is approximately but one-half that of a line not thus restricted. On this basis the capacity of the four traffic lines on the widened bridge will be equivalent to three unencumbered lines, while that of Albany Street, because of parking at either curb and of the double-track trolley in the center, is equivalent to only one traffic line. Put in another way,—the widened bridge will have a traffic capacity thrice that of Albany Street.

The prohibition of all parking on Albany Street would, at one stroke, make the traffic capacity of Albany Street equal to that of the widened bridge. The business establishments on Albany Street are, however, dependent to an exceptional degree, upon transient motor traffic. Although these establishments would be appreciably benefited by an ordinance limiting parking to an hour,—since it would make them more readily accessible to an increased number of customers—they would be seriously, if not irreparably harmed by an ordinance wholly abolishing parking in front of their premises.

The capacity of Albany Street must, therefore, be increased through widening the roadway to a sufficient amount to

care for six lines of vehicles. To effect this result, the roadway should be given a width of 50 feet 9 inches. Fortunately, the pedestrian traffic between George Street and the bridge is not so heavy as to require wider sidewalks than would remain after the roadway widening.

Sidewalks on Albany Street

Indeed, with the removal of the obstructions now encumbering them, the sidewalks would, except in two blocks, have a greater clear width after the widening than they have now. All sorts of encumbrances,—steps, windows, advertising clocks, curb stone pumps, etc.,—obstruct the sidewalks today. Several of these appropriate more than five feet of the sidewalk width. One obstruction, for instance, narrows the sidewalk width 5 feet; another 5 feet 2 inches; another 5 feet eight inches; and still another 6 feet 8 inches.

Widening the roadway a sufficient amount to care for six lines will, on the other hand, in no case appropriate more than 5 feet 2 inches of sidewalk width.

The widening of the roadway will, in one block, leave the clear width of the sidewalk 6 inches narrower, and in another block, 18 inches narrower than at present.

Albany Street is not as wide west of George Street as it is east of George Street.



Widening the roadway of Albany Street would give machines a chance to pass between parked cars and moving trolleys.

This portion of the street, connecting as it does, the railway station with the main business district, is also used by pedestrians far more than is the portion of the street between the bridge and George Street. Both of these reasons make it inexpedient to set back the curb on the block between the station and George Street. West of George Street there is, moreover, not the same need for widening the roadway of Albany Street as is the case east of George Street,—it is not used by as much traffic. The traffic on Albany Street west of George Street is only 70 to 75 per cent. as heavy as that east of George Street. On the portion of Albany Street between George Street and the railroad station, we recommend that all parking be wholly prohibited.

Water Street as a Detour Street

A considerable amount of traffic could be entirely eliminated from Albany Street if Water Street were adequately improved. Approximately 20 per cent. of the traffic crossing the bridge has either its origin or its destination on Easton Avenue, or on George Street, north of Albany Street. A large portion of the traffic could be routed over Water Street into Hamilton Avenue, and thence to its destination.

Water Street extends from Albany Street to Hamilton Avenue, along the

waterfront. It is 40 feet wide. It has a roadway width varying between 21 and 24 feet. Its narrow roadway width is greatly obstructed by vehicles parked at either curb.

To make Water Street an efficient detour for Albany Street, its roadway should be widened to 34 feet. This would leave 6 feet for sidewalk space, which would either be left in one walk of 6 feet, or be divided into two walks of 3 feet each. Although narrow, this sidewalk space would be ample for the pedestrians it would be called upon to serve.

The entrance into Water Street should also be improved by cutting back the northeast corner at least 15 feet. This can be done without damage to buildings. The curb should, of course, be set back a corresponding amount. The curb should also be set back to a radius of not less than 20 feet at the south west corner of Water Street and Hamilton Avenue.

Hamilton Avenue has a rough pavement. Its grade is also somewhat steep between George Street and Water Street. It should also be suitably repaved. The offset on the north side, opposite Neilson Street, should also be taken out.

With these improvements, traffic conditions will be relieved, not only on Albany Street but on Easton Avenue and George Street. They will help to make traffic conditions tolerable on Albany Street for the next two or three years. They will tend to ease the present tense situation, until the new bridge over the Raritan River can be built, provided its construction is not postponed too long. Measures like those proposed in this report, though they are effective so far as they go, and though they are in themselves exceedingly desirable, are, nevertheless, when considered as alternatives to the construction of the new bridge, only half-way measures. It is a new bridge, and only a new bridge, that offers hope of solving the traffic problem in New Brunswick along permanent lines.

VI. Major Thoroughfares and Transit

Waterfront Street

New Brunswick is sadly in need of all the crosstown streets she can secure in the downtown section parallel to George Street. At the present time there is but one street—Burnet Street—with through connections parallel to George Street, and this street is so narrow that it is most inadequate. Although Burnet Street might be improved by setting back the curbs and in this manner enabled to care for a considerably increased volume of traffic, it is not to be expected that any such palliative will sufficiently care for the increased traffic of the future. Burnet Street, moreover, is so solidly built up with buildings that it would be exceedingly expensive to widen.

The City Plan Commission feels that a street parallel to Burnet Street along the edge of the Canal and extending from Albany Street to Commercial Avenue would not cost as much as it would cost to widen Burnet Street. At the same time the new waterfront street would care for a much greater volume of traffic in a more satisfactory manner. This street as proposed by the City Plan Commission would involve the taking of no permanent improvements. The whole waterfront between Commercial Avenue and Albany Street in so far as it is improved is developed with old sheds and stables of comparatively small value. Indeed, it is a question whether the demolition of these buildings would not actually improve the whole district.

To avoid interference with the plant of the United States Rubber Company, it is suggested that the street at this point encroach upon the canal. This can readily be done, because the canal at Albany Street bridge is wider than is needed for boats using the draw. The

construction of the street would in no-wise narrow the space available for boats going through the draw. This is really the essential point in the use of the canal. Anything that would narrow the effective width of the draw, would, of course, be so injurious to the use of the canal as to be unthinkable. This street, however, would not in any way reduce the capacity of the canal for commercial purposes.

The Commission appreciates that a street commencing at the approach to the Albany Street bridge may not meet ideal standards of street planning, and yet it is at a loss to know how a much needed street at this point can be secured in any other way. It is felt that even in spite of this objection the street would afford a ready means for traffic using the Albany Street bridge entirely to avoid Albany Street. This street should be given a width of 80 feet and at appropriate points should, of course, be connected with the east-and-west streets of the city, such as Hiram, Richmond, New Street, Oliver Street and Commercial Avenue. At Commercial Avenue the proposed street would join Burnet Street. This street might in one sense be viewed as



The new waterfront street would join Burnet Street near this point. Note the high wooded banks of the Raritan.



The Pennsylvania Railroad arch over Neilson Street.

the downtown section of Burnet Street, as it would really constitute one continuous stretch of street with Burnet Street, either alongside or near the Raritan Canal and river.

Neilson Street

Neilson Street is the only through street north of Albany Street between George and Water Streets. North of Washington Street it is 60 feet wide and has a roadway width of 30 feet. At Albany Street, however, it is only 40 feet wide with a 23-foot roadway. Large trucks park at the curb, often preventing the free movement of traffic into and out of Albany Street. This narrow portion of Neilson Street extends north from Albany Street for a distance of about 260 feet. The west side of the street at this point is occupied by buildings of comparatively small value. The City Plan Commission recommends that this portion of Neilson Street be widened to 60 feet so as to give the street a roadway width of 36 feet. It is also suggested that the unused trolley track in the street be taken up and that a smooth pavement replace the present rough pavement.

The curb corners on Albany Street should, moreover, be turned with a radius of not less than 15 feet. The southwest corner of Neilson Street and Hamil-



French Street looking west under the Pennsylvania tracks.

ton Avenue should also be turned with a similar radius.

College Avenue Extension

College Avenue is one of the three streets in New Brunswick having a width of 100 feet. The usefulness of College Avenue as a link in the major thoroughfare plan of the city may not be fully appreciated, to-day, since the volume of traffic in the northerly portion of the city is still comparatively small. George Street and Easton Avenue at present make ample provision for all the traffic from this portion of the city, yet with the increasing growth of the city, it is to be expected that a greatly increased number of people will live in the vicinity of Buccleugh Park.



Obstruction caused by left hand turns at Albany and George Streets.

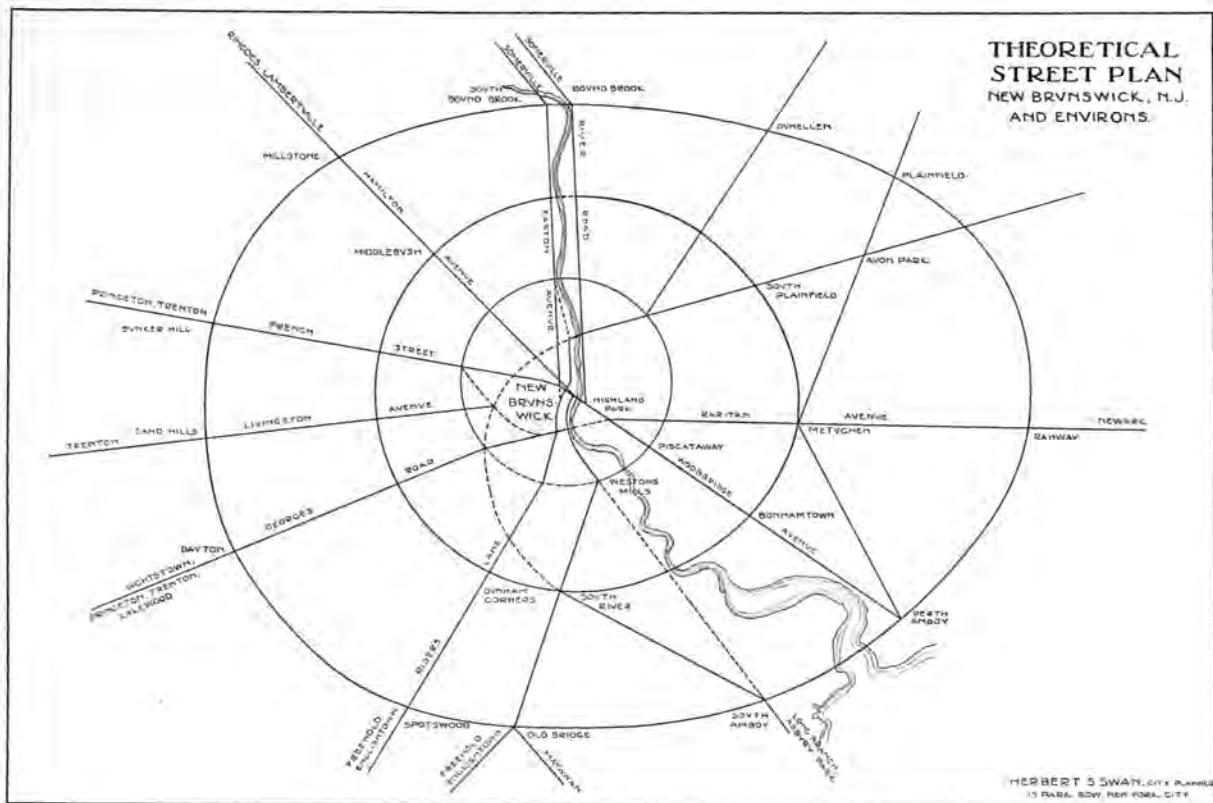


Diagram XV

The theoretical street plan shows graphically the city's fine system of radial thoroughfares. It also calls attention to the weakness of its circumferential streets.

When the easterly side of the Raritan River north of the Pennsylvania Railroad in Highland Park is developed with buildings, an additional bridge may be demanded in this locality. College Avenue would afford a fine approach to this bridge from the downtown district. If College Avenue, however, is to be of the greatest service to traffic in the city, it must be extended from Somerset Street into Easton Avenue. It is most unfortunate that during the past year one permanent building has been erected immediately in the path of College Avenue, if extended east of Somerset Street. This building is, however, to one side and it is still perfectly feasible to secure an 80-foot street. This width would be all that would be needed to make College Avenue what its position in the thoroughfare plan of the city pre-

icates. College Avenue extended into Easton Avenue thus would link up admirably with the proposed extension of Easton Avenue into Livingston Avenue.

Widening of Radial Streets

The radial streets of New Brunswick are, with the exception of French Street and Livingston Avenue, too narrow to serve the needs of so large a community as New Brunswick promises to become. Easton Avenue, Central Avenue, Somerset Street, George Street and Georges Road have a width of 60 feet. Burnet Street has a width generally of between 40 and 50 feet. Hamilton Avenue has a width of 66 feet. These streets should be given a width of at least 80 feet and building lines should be established to prevent future buildings being erected

up to the present property line. If new buildings, as they are erected, are kept back to the new line, New Brunswick will in time obtain radial streets of sufficient width to serve a steadily increasing volume of traffic.

A 60- or 66-foot street does not permit of the highway space necessary to care for both light and heavy traffic. With cars parked on either side, such a street will admit of only two moving lines of traffic, and in such instances, of course, slow moving traffic sets the speed for all traffic using the street. If these streets are made 80 feet wide, the roadway can be designed with sufficient width to care for six traffic lines. This would permit of the parking of cars at either curb and four moving lines of traffic—two in each direction. There being two lines of traffic moving in each direction, provision is made for separate lines of fast and slow moving vehicles. Slow moving vehicles may then occupy their own line without holding back fast moving vehicles.

The only way to prevent the speed on a highway being limited by the slowest moving vehicles is to provide sufficient

roadway room for fast vehicles to pass slowly moving vehicles. Where two-way traffic is permitted this necessitates room for four moving lines of vehicles. Widening these streets to a minimum width of 80 feet would not only take care of 4 lines of moving vehicles, but also of parked cars at both curbs.

Certain portions of these streets have already been improved to such an extent that it is not feasible to widen the street beyond its present width. This applies particularly to George Street north of Morris Street. It also applies to Hamilton Street east of George Street and to that portion of Burnet Street between Albany Street and Commercial Avenue. With the exception of these stretches of street, it is suggested that all of these radial thoroughfares be given a minimum width of at least 80 feet.

Circumferential Streets

Circumferential streets are absolutely indispensable in a growing community. Without them a premium is placed upon street congestion, because all traffic which crosses the city has to enter the center



Diagram XVI

Narrow streets prevail in the downtown section where the need for wide streets is the greatest.

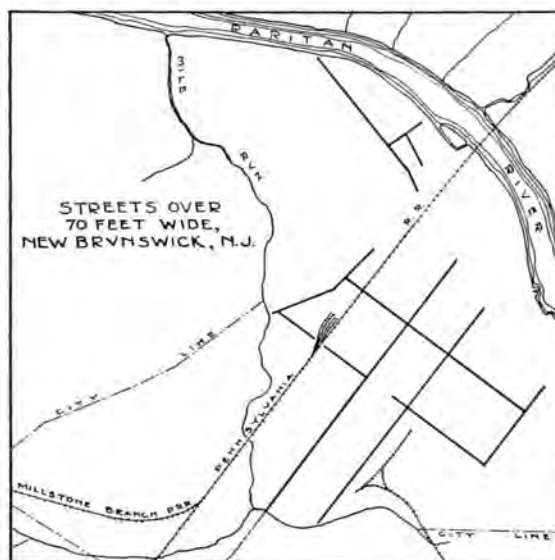


Diagram XVII

There is no system of wide streets in New Brunswick. Such wide streets as exist must be connected to be fully utilized.

of the city in order to reach the opposite side of the community. New Brunswick, fortunately, is in a position to-day to round out her circumferential thoroughfare plan along rational lines.

Townsend Street, although at present little used, can be made into a very valuable crosstown street by extending it from its present terminus at Nichol Avenue to Riders Lane. This can be done without interference to the buildings of the New Jersey State Agricultural College. It is suggested that this street be given a width of 80 feet, so that it can be linked with Suydam Street, which already enjoys this width. Suydam Street would be the logical street to extend in this manner were it not for the fact that its path is blocked by the Agricultural College buildings.

Sanford Street also has fine possibilities as a crosstown street. Its location is favorable for the construction of an underpass across the Pennsylvania Railroad. Sanford Street can be extended from its present terminus at Nichol Avenue to Riders Lane, in the same manner as Townsend Street. Both Sanford Street and Townsend Street if extended thus would relieve future congestion of traffic in the downtown section.

Sanford Street, moreover, can be extended north of French Street and, with new connections through Front Street and Laurel Place, developed into a first class circumferential thoroughfare connecting all the radial streets,—George Street, College Avenue, Central Avenue, Hamilton Street, Somerset Street, French Street, Jersey Avenue, Livingston Avenue, Remsen Avenue and Riders Lane.

New Railroad Underpasses

The railroad grade crossings within the city on the Pennsylvania Railroad were eliminated some years ago. This elimination resulted, however, in the closing of quite a number of streets at the rail-



Fortunately, when the Sheriff's Office was built, sufficient space was left between it and the Court House for the extension of Easton Avenue.

road so that traffic from one side of the city to the other is concentrated on those streets which continue across the railroad. These Streets are: Water Street, Neilson Street, George Street, Easton Avenue, French Street, Paterson Street, Bayard Street, Townsend Street, Suydam Street and Handy Street.

As the City of New Brunswick grows and traffic increases, more streets will have to be continued under the Pennsylvania Railroad. The greatest need for these underpasses will be at New Street, Sanford Street, Juliet Street, and Ninth Street. Without these new connections traffic will be obliged to go out of its course. It is, moreover, absolutely essential to unite the two sides of the city with frequent crossings under the railroad.

Setting Back of Curbs

Quite a number of the downtown streets in New Brunswick would have their traffic capacity enormously increased by having their curbs set back. In most instances the roadway could be widened at the expense of the sidewalks, without great injury to pedestrian traffic. On such streets as Bayard and Paterson, for instance, the roadway is so narrow as hardly to permit two lines of vehicles moving in opposite directions to pass one another when cars are parked at the



Sidewalk obstructions occupy on some streets more space than the unobstructed passage-way reserved for pedestrians.

curbs. These streets should certainly be given a roadway width of 34 feet when they are repaved.

Burnet Street from its bifurcation into Peace Street and Little Burnet Street north of Albany Street is 40 feet wide and generally has a roadway width of about 22 feet. When trucks are parked at the curb, traffic has great difficulty in getting through this narrow roadway. A roadway width of 28 feet would still leave 6 feet for sidewalks. This is sufficient for the little pedestrian traffic using this street. The large telephone poles blocking nearly three feet of sidewalk space on both sides of the street should be removed. They can at least be replaced by poles taking less room on one side of the street.

Peace Street is capable of little improvement, but Little Burnet Street—the other outlet to Burnet Street—should have its roadway widened from its present minimum width of 16 feet, to 28 feet. A generous turn, moreover, should be made at the southeast corner of Albany and Little Burnet Streets so that traffic can readily turn in and out from Albany Street. This curb corner should be turned with a radius of at least 25 feet. The turn from Burnet Street into Little Burnet Street should be made as easy as practicable, by cutting off the easterly sidewalk corner. The usefulness of Bur-

net Street is largely impaired by the present steep grade on the hill between Clifton Avenue and Bishop Streets. This grade could be eased several per cent. by widening Burnet Street south of Clifton Avenue and dividing the roadway into two branches—the branch going into Burnet Street being lowered for a short distance below that of the branch turning into George Street.

Burnet Street offers such a direct course for traffic over the Albany Street bridge to Long Branch and Asbury Park that every effort should be made to increase its usefulness in these different ways.

Transit Needs

The passenger station located at the intersection of Easton Avenue and Albany Street is close to the focal point of the street system and only a short distance northwest from the center of population. Thoroughfares radiate from the station in all directions. The seven street car lines all pass in front of the railroad station. The bus lines which are quite as numerous as the trolley lines also center in front of the station. The railroad station is therefore very conveniently reached by both bus and trolley, more conveniently than is possible at any other point in the city. Such a concentration, however, has its drawbacks, particularly when there is a large amount of through traffic passing the station.

The grounds tributary to the station should be considerably enlarged towards the east when the station is rebuilt. A co-ordinated union terminal for railroad, trolleys and buses may be an interesting possibility of the future, but that is too remote and problematical to receive much consideration at this time. The station, however, causes so much congestion in the streets in the vicinity that no time should be lost in affording all possible relief. The improvement particularly designed to afford this relief is the Easton Avenue extension.



Buildings that would be taken in cutting Dennis Street through to Albany Street.



Dennis Street looking north. This street is now only a broken piece of a street.

The distance of New Brunswick from New York and the proportion of the population finding employment locally has an important influence on the development and growth of the city. The New Brunswick population is not attracted to Manhattan to the same degree as is that in the immediate suburbs of New York. Interest is centered to a much greater extent in local activities. This interest must be reflected in the street plan which should in great measure provide for a self-contained city.

Transit and highway connections to and from New York must be amply provided for since these routes will undoubtedly carry the heaviest traffic. Yet streets radiating from New Brunswick are essential to its independent progress. Connections to the surrounding towns of Metuchen, Bonhampton, Perth Amboy, South Amboy, Milltown, and Bound Brook should be direct and satisfactory. The same is true of the more distant cities of Rahway, Elizabeth, Newark, Plainfield, Princeton, and Trenton.

New Brunswick has street car connections with nearly all these towns and steam railroad connections with most of them. In addition to the unusual rail and trolley facilities local transit is in-

creased in capacity and flexibility by a number of bus lines which render service hardly less important than that furnished by the street car lines. The present tendency in transportation methods is for street car lines to operate only over lines which have a considerable amount of traffic, leaving the traffic of less intensity to the buses.

The bus system of transit has many advantages for a city like New Brunswick since service can readily be expanded or modified, as the need arises, at small cost. It is estimated that to support a street car line a population of 1500 per mile of track is necessary. A motor bus can be operated on an hourly headway where the population is only one-sixth of this number. Hence the importance of the bus, —particularly in the development and growth of suburban areas. New bus lines can be started wherever there are well paved streets.

The principal transit requirement of New Brunswick is, therefore, the provision of ample and direct radial thoroughfares for such additional routes as may become necessary with increasing population. This has been one of the important objectives in the design of the street plan.

VII. Downtown Parking

Present Situation Relative to Parking

On an ordinary winter's day in January or February, it is not at all uncommon to find some 600 vehicles parked in the downtown section of New Brunswick at one time. During the summer season it is not unreasonable to expect that this number is increased to seven or eight hundred vehicles. Most of these machines are concentrated in the busiest part of the business district, on such streets as George Street, Albany Street, French Street, and in the block immediately west of George Street, on such streets as Bayard, Paterson, Church and Livingston Ave.

The great bulk of the machines park within a distance of 300 feet of George and Albany Streets. At a distance of some 300 feet removed from these two streets there is comparatively little demand for parking space. Everybody wants to park his car immediately in front of the place in which he is doing business. The parking center in New Brunswick is located approximately at the intersection of Paterson and George Streets.

At present there are practically no parking regulations in New Brunswick, either as to prohibited zones or time limits. Of course, cars are prohibited by state law in the vicinity of fire hydrants, trolley stops, bus stops, and within 10 feet of cross-walks at street intersections. The regulations contained in the state law are practically the only regulations controlling parking in New Brunswick, except on Elm Row where there is a fifteen minute time limit. With this exception there are absolutely no time limits governing parking, and the only prohibited parking zone in the downtown

district, in addition to those contained in the state law, relate to Spring Alley, and that portion of George Street immediately across the street from the fire station. Such parking regulations as exist are very inadequately enforced. Even where cars are prohibited from parking, it is no uncommon experience to find cars parking for hours.

Parking Close to the Curb

The chronic negligence of drivers to park their cars as close as possible to the curb is a source of annoyance to moving traffic. This is particularly bad in narrow streets. Cars that are parked 18 to 20 inches, and in some instances even further, from the curb, rob the roadway of sufficient space to halve its capacity for moving vehicles. Streets that have a roadway width amply wide for three lines of vehicles are, in some instances, so narrowed by parking at a distance from the curb, that they are even inadequate for a single line of moving vehicles. The same is also true of some streets that have a roadway width barely wide enough for four lines of vehicles. Where cars are parked in a manner to appropriate more of the roadway space than would be required by their own width, if parked close to the curb, a street instead of having a capacity of two moving lines of vehicles between the parked lines, has its capacity reduced to a single traffic line moving in the center of the roadway. This evil is so serious and embarrasses traffic to such an extent by congesting it and depriving it of the roadway space to which it is justly entitled, that no effort should be spared in insisting that people park their cars as close to the curb as possible.

There is absolutely no excuse for drivers to park their cars at a distance



Water Street.—narrow, dark and congested—the price paid for past neglect in proper street planning.

from the curb. The traffic regulations should insist that all cars hereafter be parked with both wheels within 6 inches of the curb line. If this regulation were enforced through the imposition of adequate penalties, it would soon be found that many of the downtown streets would have their traffic capacity greatly increased, and at the same time the traffic would move more expeditiously through the streets without in any way depriving anybody of space now available for parking purposes.

Parking and One-Way Traffic

There can be no doubt of the fact that parking seriously interferes with the free movement of traffic. Roadways that are scarcely wide enough for two moving lines of vehicles are sometimes, as in the case of Little Burnet Street, almost blocked to moving traffic by having cars parked on both sides of the street. The same thing is true of Peace Street and Church Street. In all of these cases, cars are parked on both sides of the street.

This results in a situation where a moving vehicle has to wind its way in and out among the parked cars going first from one side of the roadway to the other, in order to pass the cars parked at the curb. As all of these streets are two-way streets, it frequently happens that a mov-

ing vehicle has to pull up to the curb behind a parked car, in order to let a vehicle moving in the opposite direction pass. The consequence, of course, is that although these streets are nominally two-way streets, traffic seldom moves in more than one direction at a given time anywhere along the street.

In effect, therefore, these streets are made less valuable for the purpose of moving traffic than if they were one-way streets. The space open to moving traffic is, generally speaking, limited to a single lane and this lane must take care of traffic moving in both directions. If the traffic were moving in a single direction, the lane could be used to full capacity, but as it is used by traffic moving in opposite directions, its capacity is very much less than that of a normal traffic lane. Indeed, in many cases, the open lane has a traffic capacity of much less than one-half what it should usually enjoy.

A roadway width of 34 feet is normally required for 4 lines of light traffic. When cars park at both curbs on streets having a narrower roadway width than 34 feet, the distance between the parked cars is so narrow that it scarcely admits of two moving lines of vehicles in the center of the street. To permit parking on both sides of the street, the roadway should therefore be 34 feet or more wide wherever such width is practicable. Where this width cannot be effected, the roadway should usually be made at least 28 feet wide, and one-way traffic established.

Parking Near Cross-Walks

Parking, moreover, should be prohibited for a greater distance back of the building line, at all intersections. Cars parking near the cross-walks at street intersections obstruct the view of cars turning from one street into another, and are frequently the cause of accidents. They also greatly reduce the capacity of both intersecting streets. At

PARKED CARS DOWNTOWN NEW BRUNSWICK

1⁰⁰-3⁰⁰ P.M. JANUARY 16th 1924
HERBERT S. SWAN, CITY PLANNER,
15 PARK ROW, NEW YORK.

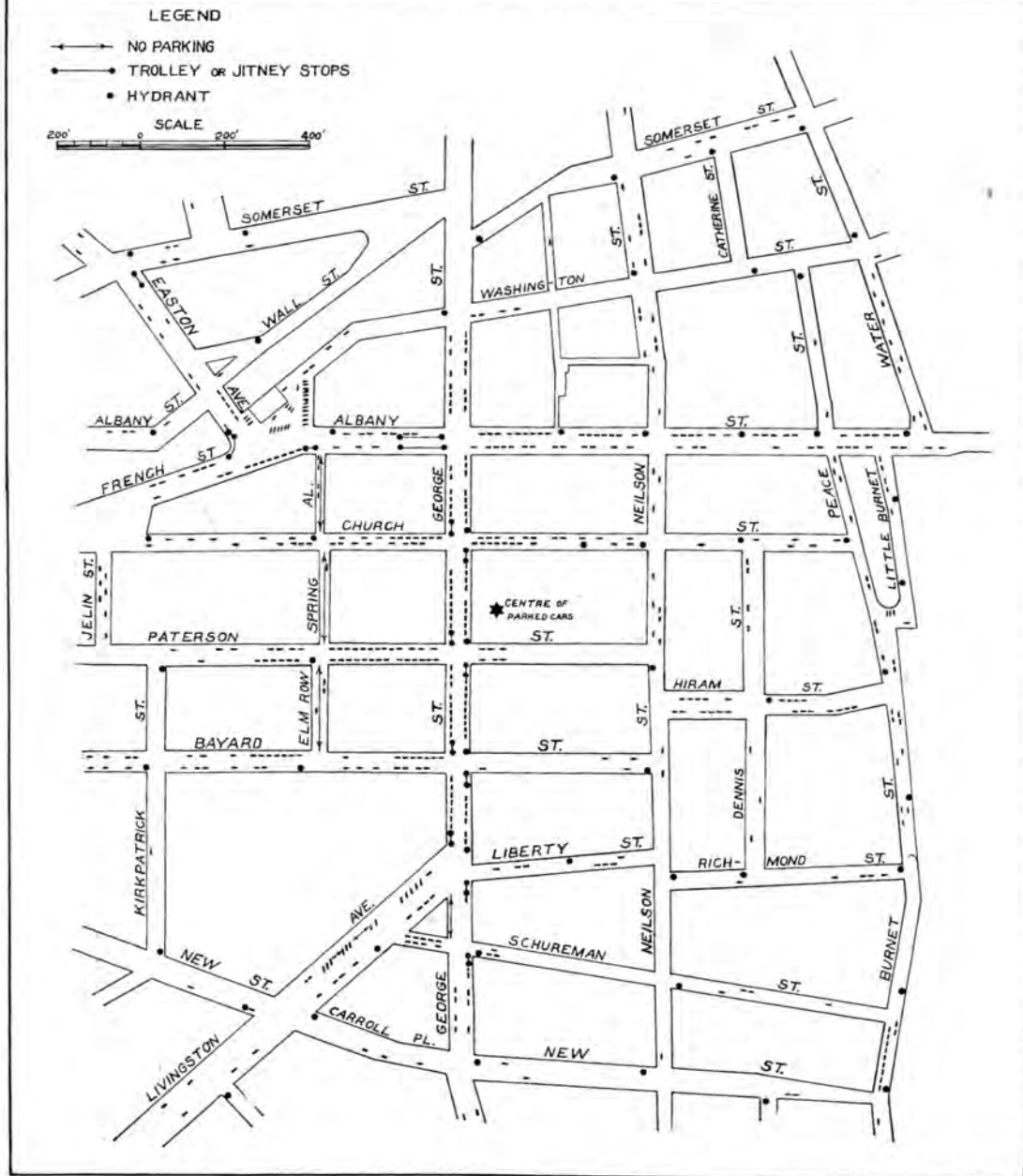


Diagram XVIII

Everybody wants to park in the heart of the city.

street intersections, both streets should be entirely clear of all standing vehicles, so that traffic waiting to cross the intersection may marshal itself on as broad a front as possible. This will enable traffic to cross intersecting streets more speedily. A given number of vehicles, if lined up two abreast, can clear an intersection in half the time consumed in crossing in single file.

Rights of Moving Vs. Standing Vehicles

The rights of moving vehicles in the streets are, of course, superior to the rights of standing vehicles. The primary function of a thoroughfare is to take care of both moving and standing traffic, and if a thoroughfare is not adequate to take care of both moving and standing traffic, there is no question as to which one of the two should give way to the other. Although it is important to take care of moving traffic above everything else, we cannot for that reason ignore the standing vehicle; both classes of vehicles must be taken care of.

Every moving vehicle is, for a large part of the time, a standing vehicle, and in the transaction of its business the time consumed in standing is probably as important as the time consumed in moving. In other words, people use cars in order to transact business. The transaction of any business takes a certain length of time, which might be divided into two parts,—first, to arrive at the point of business, and, secondly, to transact the business itself. It is the time that is consumed in completing the entire operation,—the time to arrive at the point of business as well as to transact the particular business—that really counts. Anything that increases the time period of either getting to the point of business, or, upon arriving there, in completing one's business, is equally objectionable, because time lost in either operation is equally valuable.



These buildings would be taken on Albany Street in extending Easton Avenue to Livingston Avenue.

Limited Vs. Prohibited Parking

It is becoming increasingly more evident that we cannot afford to ignore our parking problem. To impose strict time limits on parking, or absolutely to prohibit parking, does not solve the parking problem. Both of these remedies are negative remedies. They prevent certain evils, but their adoption only results in the development of other evils. We must, of course, take care of moving vehicles, and the moving vehicles on any major thoroughfare will, of course, enormously exceed the number of cars that can be parked along its route. Five, ten, or fifteen thousand vehicles may use a thoroughfare in a day, and yet the number of automobiles that can park in any given block will be only 25, 50, 100, or 200, according to the length of the block and whether or not parking is permitted on both sides of the street. The problem, stated in this way, admits of only one answer—that parking on such a thoroughfare can generally not be tolerated at all, if it is to inconvenience and seriously embarrass the movement of 99 per cent. of the traffic using the thoroughfare. And yet, there may be many business establishments located on such a thoroughfare that may be dependent either largely or entirely upon the business they obtain from motor traffic. To prohibit

parking in such a thoroughfare, without at the same time providing adequate and convenient parking space elsewhere, may prove simply ruinous to the business establishments on the street. Prohibition and regulation of parking, therefore, attack only one side of the problem. Prohibition and regulation may aid the movement of vehicles, but they do not take care of the other aspect of the problem, and that is, where are automobiles to be placed when they are not in motion.

Prohibition of all parking, if carried out over a sufficiently large area, would necessarily result in a situation where no one could drive his own car to business. He would either have to take a public conveyance, a taxicab, or have a chauffeur. The very maintenance of the private automobile as a means of conveyance between the business district and the various residence districts, as well as between different communities, depends upon the provision of proper parking facilities.

The provision of private garage space does not take the place of street parking. In the first place, of course, all private garages exist through charging a fee for their service. Very few persons can afford to pay 50 or 75 cents for every time they park their car, and even though many persons, especially those who drive their cars regularly every day to their business, could obtain monthly rates for the storage of their cars, the inconvenience, delay, and time consumed in putting their cars away in public garages would make it inexpedient for them to do so. Public garages located in downtown sections must, in order to make their business pay, utilize their floor space as intensively as possible. This means that cars must be stored in as small a space as possible. This involves much backing, and each one has to wait upon attendants to aid him, before he is allowed to put his car away. Sometimes this involves waiting for several other people to put their cars away. Frequently, the doors

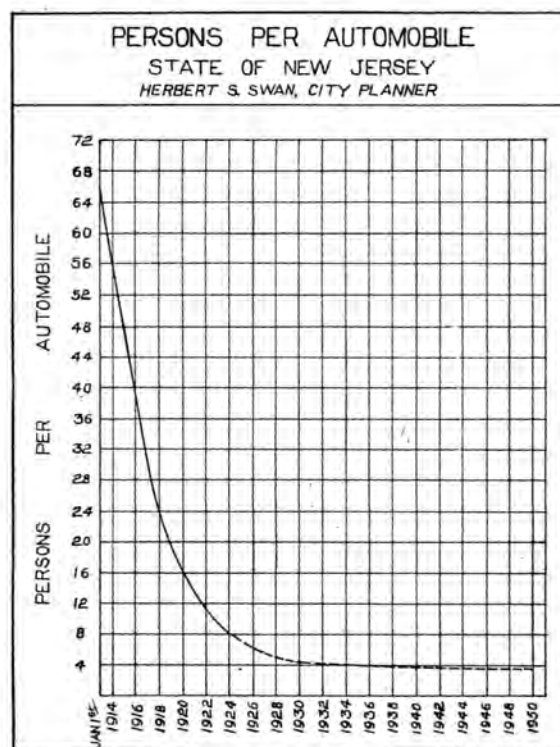


Diagram XIX

Automobiles are likely to increase in number till there is one machine to every family.

of the garage are locked. To stop the engine, get out of the car, open the doors of the garage, get back into the car, start the engine again before entering the garage,—all this takes time. Frequently 10 or 15 minutes are consumed in putting a car away in a public garage. A like time is consumed in calling for it. This loss of time must be charged against the use of a car. The increased speed of the car in moving between different points must be balanced with delays of this character, in order to compare accurately the relative advantages of an automobile over trains, trolleys, or buses, as a means of transportation.

Time limits on parking, unless followed up with the provision of certain zones or places of unlimited parking, operate along the same general lines as the total prohibition of parking, but only less drastically. Cities that have adopted time limits of half an hour or an hour, over

large areas, have had the experience that although the time limit may prevent long-time parking for a given car within the limited-time zone, as people will park a car for the permitted time, and, just before the expiration of the time-limit arrives, remove the car to another point within the limited-time zone where it may again park for the full time-limit before being obliged to move again. In this manner, cars are frequently stored in the downtown section a half-day or even an entire day. The only difference between limited and unlimited parking in such instances is that a car during the day, instead of parking at one place, parks at a half-dozen places. A time limit, when accompanied by such effects, instead of alleviating, merely increases congestion. If a car must be parked downtown all day, it is much better to have it stand still than to have it cruise about the business district a half-dozen times, in order to evade the parking time-limit.

Recommendations

It is considerations like these that move us to observe:—

1. That standing vehicles must be adequately taken care of through the provision of public parking spaces, either off or on the public streets;
2. That the prohibition of parking within the streets in any given area must be accompanied by the provision of adequate parking space as near to the prohibited zone as possible;
3. That the imposition of a time limit in any given area must be accompanied, if possible, by the provision of an area in the immediate vicinity where unlimited parking is permitted;
4. That the imposition of time limits upon parking is not only permissible, but desirable, in order that the greatest number of cars may

utilize the limited space for their business errands;

5. That the city should look sufficiently far ahead, in the provision of parking space, to take care of future traffic requirements. If the other streets within a convenient walking-time distance of the central business district are not adequate to take care of the expected increase in the number of parked cars, then the city should acquire public parking space to be put at the disposal of owners, free of charge.

The specific recommendations we make relative to parking and one-way streets are as follows:

1. Streets on which parking should be entirely prohibited:

Spring Alley from Albany to Patterson;
Little Burnet Street;
Neilson Street, north of Albany, half-way to Washington;
Wall Street, opposite Pennsylvania Station;

All streets in the business district intersecting either Albany or George Streets, to a point 50 feet back from the building line;

All street intersections in the business district other than those on Albany and George Streets, to a point 25 feet back from the building line;

Peace Street from Albany Street to Burnet Street;

Water Street from Albany to Hamilton Street;

George Street from Albany Street to Schureman Street;

Albany Street, between Easton Avenue and George Street.

2. Streets on which parking should be limited to one side:

Burnet Street, to the east side;
Neilson Street, to the west side;
Church Street, to the south side;

SUGGESTED PROVISION FOR FUTURE PARKING NEW BRUNSWICK, NEW JERSEY.

HERBERT S. SWAN, CITY PLANNER.

15 PARK ROW, NEW YORK.

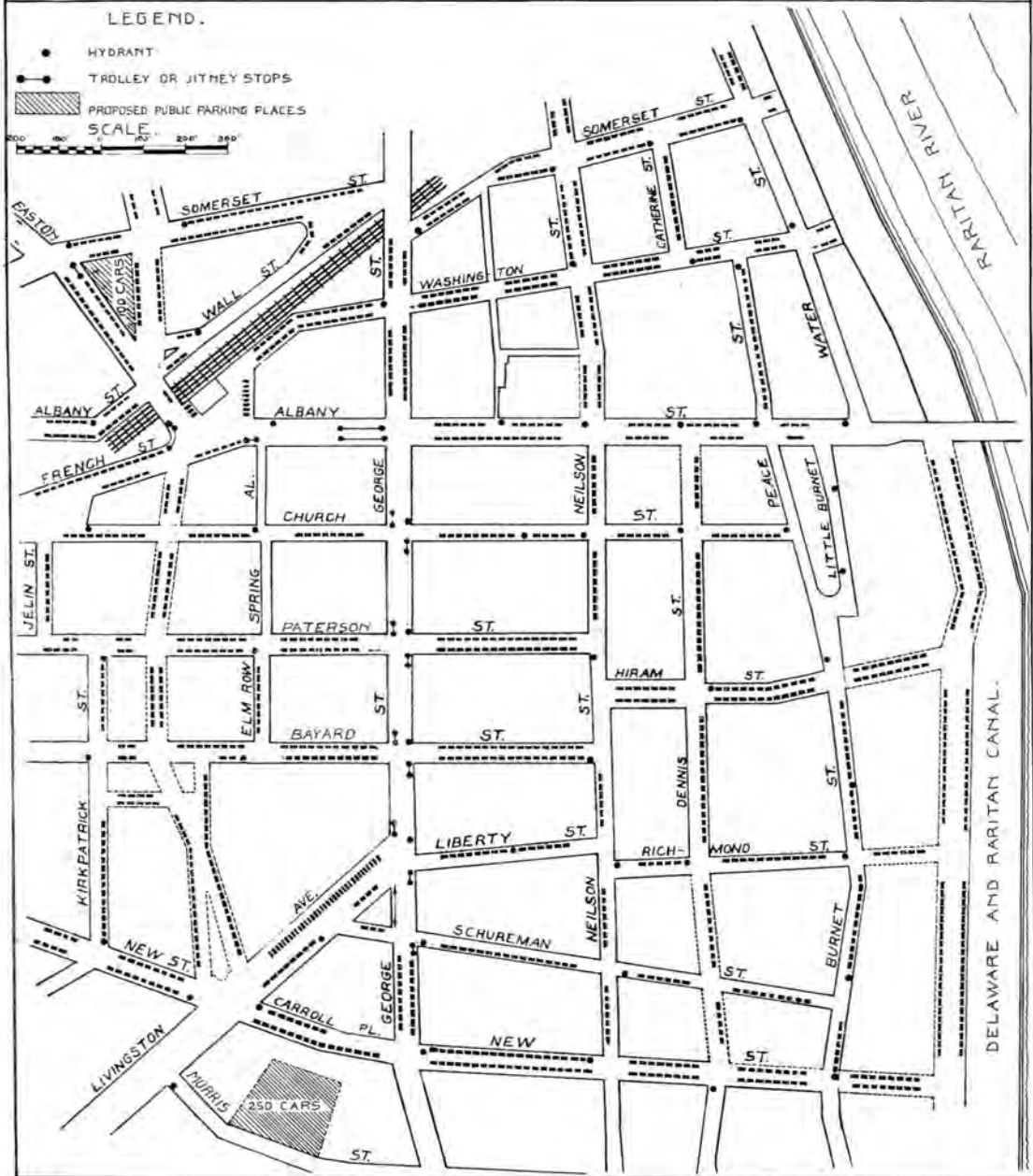


Diagram XX

Even though all the available space in the downtown streets is used for parking, there will still be a real need for public parking spaces off the streets to care for the demand.

Elm Row, between Bayard and Paterson Streets, to the west side;
 Catherine Street, to the east side;
 Schureman Street, to the south side;
 Kirkpatrick Street, to the east side;
 Jelin Street, to the east side.

3. Streets on which parking should be limited to one hour:

Albany Street, between George Street and the Raritan River.

4. Streets on which traffic should be limited to one direction:

Little Burnet, northbound;
 Peace, southbound;
 Richmond, westbound;
 Liberty, westbound;
 Schureman, eastbound;
 Church, eastbound;
 Elm Row, southbound;
 Spring Alley, southbound.

Future Demand for Parked Car Space

The proposed parking regulations will readily permit some 700 automobiles to be parked in the downtown business district. If cars park as closely to one another as possible, wasting absolutely no part of the linear street frontage, then space can be found for approximately 1400 parked cars, under the proposed regulations. It is hardly to be expected that cars will pull up behind each other as close as possible, or that every parking berth will be utilized, even during peak hours. There will always be some waste space between cars. Fifty per cent. of the potential number is a fair attainment. This would admit of the simultaneous parking of 700 cars in the downtown business district.

Since the present parking requirements in the downtown business district of New Brunswick already demand space for approximately this number of cars, it is seen that as the demand for parked car space increases, the city must provide for this increase outside of the present down-

town streets. By 1930, the demand for parking space in the downtown district will have increased approximately 80 per cent. over and above that on January 1, 1924. By 1940, it will have increased approximately 150 per cent. In other words, by 1930 some 1300 cars will demand parking space in the downtown district of New Brunswick. By 1940, this will be increased to 1800 cars. This is, in each case, the maximum demand for parked car space at any one time in the business district. Put in other words, these figures mean that space must be found outside of the present streets in the downtown business district by 1930, for the parking of some 600 cars. By 1940, this must be increased to 1100 cars.

**Demand and Supply of Parking Space
 —Maximum Hour—Downtown
 New Brunswick**

	1924
Demand	Supply
700 cars	Present streets after making provision for moving traffic 750 cars
	Present demand .. 700 "
	Surplus space available for increased future demand 350 cars
	1940
Demand	Supply
1800 cars	1. Present downtown streets 750 cars
	2. Additional streets brought into business district 250 cars
	3. New street, vicinity of civic center .. 50 cars
	4. New Marginal street along water front 200 cars
	5. Public parking space at railroad station 100 cars
	6. Public parking space on Morris street .. 150 cars
	7. Other parking spaces 300 cars
	Total 1800 cars



The public parking space in Freehold.

During its busiest week day hours, George Street at Albany Street, passes an average of 10.1 northbound vehicles per minute per effective traffic unit of roadway width. With a double-track trolley in the center, and parking permitted at both curbs, its effective width is equivalent to only one-half of its actual width of 40 feet. Its effective width is, therefore, only two traffic units, and these two units are the same as those occupied by the trolley tracks.

Every machine parked on the east side of George Street south of Albany Street during the maximum traffic hour, elbows 608 vehicles out of their alignment, but the annoyance suffered by traffic exceeds the embarrassment to the machines hourly thrown upon the trolley tracks by parked cars. One-half of the roadway width, and that the most effective half so far as ordinary vehicular traffic is concerned, is completely paralyzed, so that traffic requiring two roadway units for its free movement is forced into one where it must fall into an agonizing goose-step behind the trolleys, which, through a series of jerks and starts sometimes manages to cover only two or three miles an hour.

Prohibition of all parking on George Street between Albany and Schureman Streets is at present the only practicable

way of increasing the traffic capacity of George Street. The street cannot be physically widened: the land and buildings fronting upon it are entirely too expensive to permit that. And the sidewalks are none too wide to care for the pedestrian traffic. It is, therefore, impossible to widen the roadway at the expense of the sidewalks, in order to make room for an additional traffic unit on either side.

The daily traffic on Albany Street between George Street and the bridge is from twenty to thirty per cent. heavier than on George Street. This portion of Albany Street passes an average of 12.7 eastbound vehicles per minute per traffic unit of roadway width during the maximum week-day traffic hour. Here, too, the effective roadway width for moving vehicles is reduced by parked cars to the two center units occupied by trolley tracks.

Were it not for the possibility of widening the roadway width through setting back the curbs, this stretch of Albany Street would also have to be placed in the prohibited parking zone.

The sidewalks here will, after their narrowing, and when cleared of all obstructions, care for substantially as many pedestrians as now. In fact, the present obstructions encumbering the sidewalk are, in many instances, wider than the space required to widen Albany Street to make room for a parked car as well as a moving car, between the trolley and the curb.

Parking is something more than a traffic problem. It also has its economic and psychological aspects. The interests of the shop-keepers and merchants on a street must be considered as well as the habits and customs of car owners. It is only when all of these interests are considered that a rational plan promotive of the best interests of the whole community can be worked out.

VIII. Land Subdivisions

Chaotic Development in Suburbs

A matter to which New Brunswick can scarcely afford to remain indifferent is the manner in which farm lands on the outskirts of the city are being subdivided into blocks and streets. Large areas have within the past few years been platted by developers, with a view to disposing of the land to prospective home builders. These tracts have been divided solely with a view to the owner's interest. No regard has been paid to surrounding developments. Streets have been laid out having a width of only 30 or 40 feet. Continuous streets are the exception; offset streets are the rule. In many instances the community is even fortunate to obtain an offset street, since so many developers utilize blind alleys.

There has been little or no continuity of street widths. Indeed, it is quite common to find a street changing its width through each development. In one development a street, supposing it is continuous, may have a width of 50 feet. In the next block its width may be 40 feet. A little further along it may be 30 feet, only to widen out a little further along to 40 feet.

The same disregard that has controlled the laying out of streets has also controlled the manner of subdividing the lots. In the case of diagonal streets, the lot lines have quite commonly been laid out obliquely to the street lines. The result in such cases is a saw-tooth building line when the street is improved with buildings.

Very small lots, too, have been laid out; indeed, there are instances where lots as small as 14 x 40 feet have been platted and disposed of as home sites. The spirit actuating some of these developments may be suggested by relating that the

lots in one subdivision were given away to stimulate the sale of a book which the publishers wished to promote.

The utter disregard of subdividers for the interests of the city in the proper planning of vacant areas has had the effect of making large areas practically unmarketable. The street plan covering hundreds of acres of ground is so involved and complicated that it defies anyone to find his way through the network of streets criss-crossing the area.

Although some of these subdivisions have been laid out for years, they have enjoyed very little real development. Unsuspecting purchasers who have bought in these developments have been more circumspect in constructing homes upon their lots than they were in purchasing them. People will buy lots from high pressure salesmen or at auction without closely scrutinizing what improvements are provided in the way of sewers, water, gas and such other utilities as are necessary to serve the community. When they come to build a home on one of these lots, they are, however, face to face with a serious problem. They then



The offset intersection at Spring Alley and Church Street reduces the traffic capacity of the intersection; it also causes frequent collisions.



In a neighboring suburb—the results of no municipal control whatever, no supervision over subdivisions, no building code, no zoning.

find they have a lot they cannot use because it enjoys none of these facilities. The general consequence is that they refuse to improve the lot. In instances where these lots have been built upon, they have generally been improved with buildings of such flimsy construction that within four or five years of their construction they have been deserted by their occupants. To-day many of them serve as a blight to the entire community—vacant and falling into decay, with broken windows, leaking roofs, doors ajar, and generally in a most dilapidated condition.

Some of these developments have been purchased by out-of-town companies who have canvassed people in all parts of the country in order to dispose of their lots. Owners of these lots may be found in every state of the union. Some of them have taken a "flier" on a real estate purchase with the hope that the phenomenal rise in Manhattan land values might be duplicated all over again on the outskirts of New Brunswick. Of course, many of these purchasers have, after holding their lots for several years, allowed the community to come into possession of them by neglecting to pay their tax bills. In such cases the owners have probably taken the wisest possible action in getting rid of a bad bargain at as early a date as possible.

The laws of the State of New Jersey stipulate that no developer may file a map and sell lots off such a map unless the subdivision has first been approved by the governing body of the municipality in which the subdivision is located. This authority, it would seem, should in most instances be sufficient to prevent the worst features of these haphazard developments. The trouble probably lies less in the fact that the different municipalities haven't sufficient power to deal with the situation than that they persist in rubber-stamping developments perpetrated upon the community by irresponsible subdividers.

New Brunswick itself has been fairly successful in securing a more or less coordinated street plan. Certainly, its street system is not blemished with such horrible idiosyncrasies as blight North Brunswick, Franklin and Raritan. The explanation lies undoubtedly in the fact that the city of New Brunswick through its efficient engineering department has been able to prevent the worst features of piecemeal planning.

The plan of New Brunswick prepared by the City Plan Commission embraces a comprehensive plan of major thoroughfares. Certainly, no subdivision should hereafter be approved unless it fits into this plan of major thoroughfares for New Brunswick and its vicinity. This plan



A rear yard street. Lots running through from street to street make either or both streets alley streets.

CROSS SECTIONS OF STREETS

HERBERT S. SWAN, CITY PLANNER

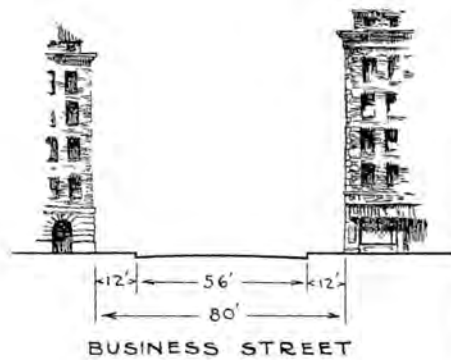
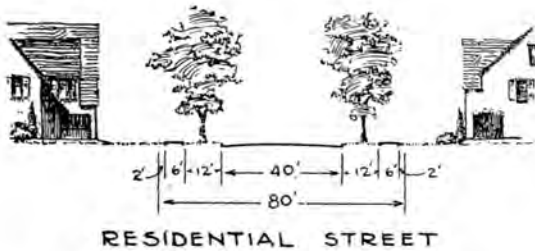
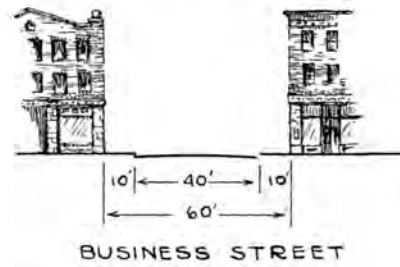
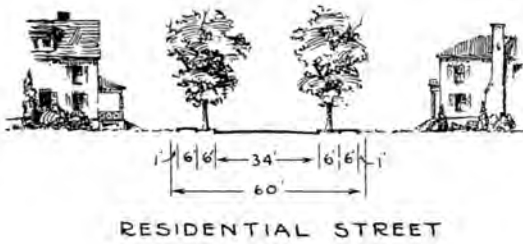
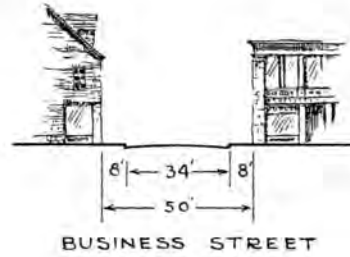
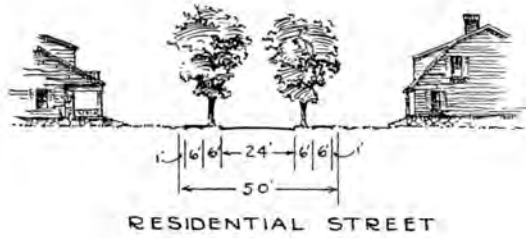


Diagram XXII

The design of a street should be adapted to the volume and character of its expected traffic.

of major thoroughfares supplemented by minor streets laid out in accordance with the following rules may be expected to result in the elimination of most of the present difficulties experienced in connection with subdivisions in the suburbs of New Brunswick.

1. Preliminary Plans:

A preliminary street plan shall be submitted to the council and be tentatively approved by it before the subdivider will be authorized to proceed.

The preliminary plan shall be on a scale of not less than 200 feet to an inch and shall show the boundary lines and ownership of the properties to be subdivided, contours at not greater than five foot intervals, water courses, adjacent streets and properties, as well as such other existing features as may be of assistance to the council in passing upon the subdivision. Profiles showing the present and proposed grades of all streets shall also be furnished to a scale, whenever practicable, of 40 feet horizontal and 6 feet vertical.

2. Rules for carrying out Plan:

- (1) Sidewalk and roadway widths shall be as indicated for that width and class of street, on accompanying diagram showing cross-sections of streets, unless the council in a specific case rules otherwise.
- (2) Grades shall, so far as practicable, not exceed five per cent. nor be less than one-half of one per cent. and shall not change more abruptly than by a vertical curve of 1,000 feet radius. A curve of not less than this radius should connect all grades. Adequate provision for draining all streets must be made and incorporated in the plans.
- (3) An easement of a minimum width of five feet shall be dedicated on the rear line of every lot for the use of public utilities, poles, pipes, conduits, etc. Wherever possible, these

easements shall be continuous to the streets at the end of the block to connect up with adjoining blocks in the shortest direct line.

- (4) Streets deflecting through an angle of 30 degrees and up to 60 degrees with greater curvature than by a 1000-foot radius shall be widened out on the inside of the curve throughout the central portion in excess of 15 degrees at each end, by that fraction of the street width, to the nearest foot, expressed by the formula:
$$\frac{(2.00 - .0015)}{R}$$
 multiplied by the total central angle of curve in degrees, where R is the radius of the inner side line of the street. This curve shall be connected into the end tangents by suitable circular arcs. Street curves with central angles greater than 60 degrees shall be widened to the same amount as curves with central angles of 60 degrees. The uniform central widening shall be increased in length, however, by the additional number of degrees. Streets deflecting by a succession of straight lines shall be widened on the inside by the same amount as required on an equivalent curve. No radius less than 350 feet shall be employed.
- (5) Street intersections shall be en-



Homes across the street front upon these back yards. Though these buildings are not in New Brunswick they illustrate conditions occurring under uncontrolled subdivisions.

ARRANGEMENT OF STREET INTERSECTIONS

HERBERT S. SWAN, CITY PLANNER

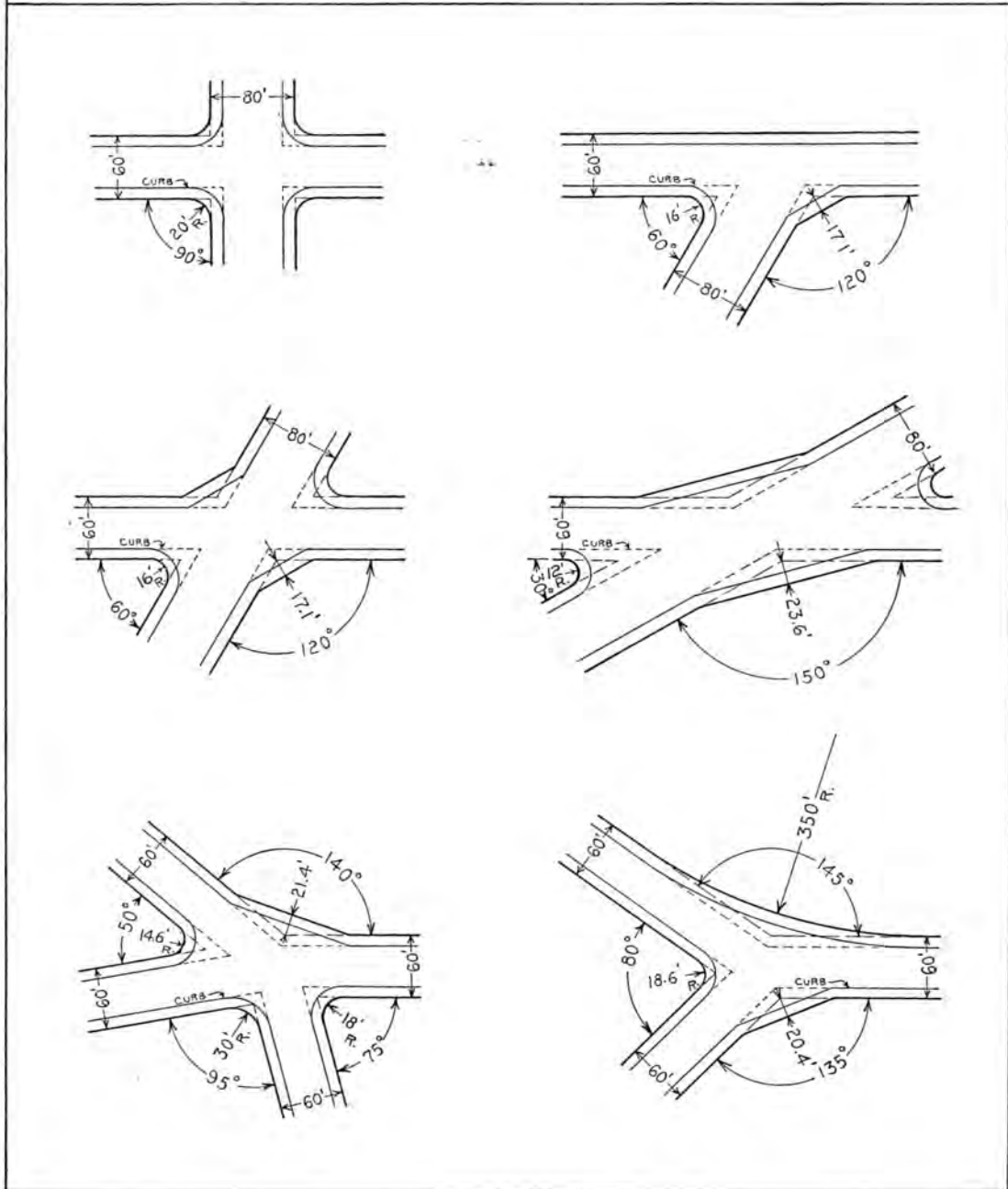


Diagram XXIII

The arrangement of an intersection has an intimate relationship to the ease, speed and safety of traffic.

**RULES FOR THE ENLARGEMENT
OF STREET INTERSECTIONS**
HERBERT S. SWAN, CITY PLANNER

INTERIOR BLOCK ANGLE AT STREET INTERSECTION								
ALL CORNERS					CORNERS AT STREETS CROSSING EACH OTHER	CORNERS AT STREETS MEETING BUT NOT CROSSING		
1	2	3	4	5	6	7	8	9
30° OR LESS	OVER 30° AND UNDER 90°	90°	OVER 90° AND UNDER 110°	110°	OVER 110° AND UNDER 140°	140° TO 180°	140° TO 170°	OVER 170°
ROUNDED WITH A RADIUS OF 12 FEET.	ROUNDED WITH A RADIUS INTERPOLATED BETWEEN THE RADII FOR 30° AND 90° RESPECTIVELY IN PROPORTION TO THE ANGLE.	ROUNDED WITH A RADIUS OF 20 FEET.	ROUNDED WITH A RADIUS INTERPOLATED BETWEEN THE RADII FOR 90° AND 110° RESPECTIVELY IN PROPORTION TO THE ANGLE.	ROUNDED WITH A RADIUS OF 60 FEET.	CUT OFF BY STRAIGHT LINES MAKING EQUAL ANGLES WITH THE ADJACENT SIDES OF THE CORNER. A DISTANCE IN FEET EQUAL TO HALF THE SQUARE ROOT OF THE INTERIOR BLOCK ANGLE EXCEEDS 110 DEGREES, + 15 FEET.	CUT OFF SAME AS IN COLUMN 6	ROUNDED WITH A RADIUS OF 350 FEET.	NEED NOT BE ROUNDED NOR CUT OFF.

Diagram XXIV

The application of these rules will facilitate the turning movements of traffic in intersections.

larged to not less than the amount given in "Rules for the enlargement of Street Intersections."

- (6) When a new subdivision adjoins unsubdivided land susceptible of being subdivided, then the new streets shall be carried to the boundaries of the tract proposed to be subdivided.
- (7) No subdivision showing reserve strips of land which will prove untaxable for special improvements will be approved, except when the control and disposal of the land comprising such strips are definitely placed within the city's jurisdiction subject to conditions approved by the city council.
- (8) All lots shall be forty feet or more in width and shall contain an area of at least 4,000 square feet.
- (9) All side lines of lots shall be either at right angles or radial to street lines.

- (10) Alleys or public rights-of-way may be laid out in the rear of lots fronting on adjoining streets when the depth of such lots does not exceed 120 feet. The minimum width of alleys shall not be less than 16 feet. The maximum width of alleys shall not exceed 20 feet.

3. Final Plans:

All final or record subdivisions shall be drawn to a scale of 50 feet to one inch and upon sheets 24 inches by 36 inches, provided that when more than one sheet is required, a plan shall also be filed showing the entire subdivision on one sheet with lot numbers and dimensions. The final or record subdivision shall contain complete data regarding the following facts:

- (1) The names of all adjoining subdivisions and the book and page where they are recorded shall be shown.
- (2) The length of all straight lines,



Allely homes, fortunately not in New Brunswick, but yet illustrative of the need for comprehensive municipal control over both subdivisions and buildings.

radii, arcs and central angles of all curves shall be given along the center line of each street or along a monument line at a given offset from one side of the street. Whenever these center lines or monument lines meet or intersect, the dimensions shall be given to the points of intersection. Angles at the points of intersection between such intersecting lines, or between radii of curves at point of intersection, when curves intersect, shall also be given.

- (3) All the dimensions along the side line of each street and around each lot shall be fully given in the same manner as in the case of center or monument lines of streets.
- (4) All dimensions, angles, etc., given on the map must be referred to at least two permanent monuments not less than 300 feet apart. These monuments must be plotted on the map.
- (5) The elevation of all streets at the center of each intersection and at each change of grade point, as well as the grades of all streets must be given. Change of grade points must be located by distance from nearest street intersection. All elevations must be referred to some permanent bench mark which must be described.
- (6) Major or traffic streets shall be not less than 80 feet in width. Minor or residence streets shall be 50 feet or more in width.
- (7) Intersecting streets shall be laid out at such intervals that block lengths are not more than 800 feet, except where existing conditions justify a variation from this requirement.
- (8) New streets shall, as far as it is practicable, be continuations of existing streets. The width of the new streets shall not be less than



Trees need room to live. The requirements of adequate planting strips should be considered in designing city streets.

that of the existing streets unless the council in a specific case rules otherwise.

- (9) Dead-end streets or offsets at street intersections will not be approved where the conditions are such that a through street can be laid out. A turn-around with a minimum radius of 30 feet must be provided at the closed end of all dead-end streets.
- (10) Walks or paths of a width of not less than 10 feet may be dedicated in place of cross-streets where such streets are unnecessary or impracticable in the judgment of the council. But center walks or paths shall not be used so as to relieve the necessity of providing cross-streets at intervals of at least 1500 feet.

IX. Parks and Playgrounds

For a city of her size, New Brunswick has less than one-half the park area prescribed by the best park practice. Experience has shown that there should be at least one acre of park area for every 150 people in a community. New Brunswick's population according to the 1920 census was 32,779. The present park area of the city is 89.4 acres. There is consequently only one acre of park land in New Brunswick to every 367 people. Had the park area of New Brunswick conformed to desirable standards, the city should, therefore, have had in 1920 at least 220 acres of land devoted to public recreation.

This shortage of parks is further complicated by the unequal distribution of the park areas within the city. Of the 89.4 acres of park land in the city, 70.4 acres are contained in Buccleugh Park. The remaining 11 acres are distributed among 10 different parcels, of which only three have an area exceeding an acre in extent. Of these three parks, one has an area of 5.28 acres, another of 2.54 acres, and the third an area of only 1.25 acres. Six of the remaining seven parcels have an area of less than one-quarter of an acre.

The lack of park facilities has not been as apparent up to date as it will probably soon be, because the public has been able to avail itself of large areas of unoccupied private land. But the city is growing; by 1950 New Brunswick can reasonably be expected to have 50,000 inhabitants. This growth predicates that land which is now vacant will soon be improved with buildings. New Brunswick will then be confronted with a serious problem,—an increasing population, accompanied with a relatively decreasing recreational area. The following table shows how much

park land the city must acquire to keep pace with the increase of population.

Year	Population	Approximate Park Acreage
1930	38,500	260
1940	44,500	300
1950	49,500	330

Let us review briefly the present situation as to public recreation in New Brunswick. The city has about five miles of waterfront along the Raritan River. At least two-thirds of this length is undeveloped. Long stretches of the riverfront are covered with fine tree growth. Yet New Brunswick has wholly ignored the park possibilities of its wonderful riverfront.

Buccleugh Park, the one large park in the city near the river, is, however, not on the river, as George Street intervenes between the river and the park. Buccleugh Park can, therefore, scarcely be considered as a waterfront park; it makes no provision for swimming, skating, boating or any other aquatic sport. Another example of neglect is the small creek. Instead of preserving and accentuating its natural beauty and charm, it has been allowed to become an economic liability and health menace. School-yards, where they do exist, are too small in almost every case to permit general participation in games and sports. There is practically no provision for play facilities for children below school age.

Where should New Brunswick acquire new park land; what kind of land should it be; to what recreational use should it be put,—are questions which naturally arise. The present street plan precludes a system of parks connected with boulevards and parkways. The physical ad-



Vicinity of Mile Run. Some of New Brunswick's most available park lands are now used for dumping.

vantage to be attained by carrying out such an ambitious scheme would be entirely incommensurate with the cost. Under present conditions it will be far more economical to treat the parks as separate entities.

Most of the land still available for parks in fair size tracts is located on the perimeter of the city. With the exception of small playgrounds, which must be of a local nature, most of the new park land should be acquired on the present outskirts of the city.

The proposed parks and reservations in New Brunswick will fall substantially into four groups:

1. **Playgrounds**—Developed with strict reference to local needs. These can be divided into two groups,—those for children below school age, and those for school children, developed in connection with the schools.

2. **Playfields**—Larger tracts, less local than playgrounds in character. These should be provided, where topography permits, with facilities for athletic sports.

3. **Creek and river banks**—The city should acquire such portions of desirable river and creek banks as recommend themselves particularly for park treatment.

4. **Large wooded reservations**—These would surround the city's water supply. These areas would be most popular for

picnic parties, as natural conditions would remain relatively unmolested.

Playgrounds

Accessibility is of primary importance in playgrounds for small children. Generally a child should not be required to walk more than a quarter of a mile to a playground. Small children must usually be accompanied to the playground by their parents. The size of these playgrounds depends upon the number of children expected to use them at one time. About twenty square feet should be allowed for each child present at one time, although no playground should be smaller than 2,000 square feet in size. The apparatus for this type of playground is of a very simple nature consisting of sandpiles, low swings, and slides.

The playgrounds for children under twelve years of age should be developed in relation to the schools. Boys and girls should have separate playgrounds. The effective radius of this kind of playground can be extended to half a mile, though this is a little greater than is desirable. Not less than 140 square feet per child actually present at one time should be allowed. Each playground should have a minimum area of at least 3,000 square feet. The equipment should make provision for volley ball, basket ball, hand ball, and various running games.

The playground should receive proper landscape treatment. Shade trees and hedges should, moreover, be planted to obscure the view from the street.

Playfields

Playfields for adult sports are effective up to a radius of three-quarters of a mile. Buecleugh Park, the only playfield in the city, is located near the northern extremity of New Brunswick. The south half of the city is, therefore, without any public recreational facilities. There is a public park 5.28 acres in size, bounded by

Hall, Throop, Commercial, and Hardy Streets, but this is really too small to satisfy so large an area. It will, therefore, be necessary sooner or later to acquire some additional land for a playground in the southerly part of the city.

Larger tracts, like Buccleugh Park, can receive more varied treatment than small playgrounds. This park is sufficiently large and admirably suited topographically for adult athletics. However, there still remains a large area in which the surface is too rugged for playfields. These areas should be treated in a naturalistic manner to afford pleasing vistas. The borders of the park should be well planted with trees and shrubs, the purpose of which is to create an internal atmosphere and exclude the sight of the city with its smoke and buildings. This principle seems to have been in mind when Buccleugh Park was designed, though only a part of the area suitable for field sports is developed at present. When a greater demand for increased play facilities manifests itself, the park can be equipped for more intensive use, by increased provision for baseball, football, soccer, and tennis. Adequate provision for this last sport is particularly desirable, since it is popular with both men and women.

Buccleugh Park should in the future prove increasingly more popular because of its accessibility. It is less than one

mile from the present center of population and is readily reached by foot, trolley, and auto. When the proposed thoroughfare improvements are carried out the park will be opened to a much larger area.

It is always desirable to surround parks with public thoroughfares. We therefore urgently recommend that Buccleugh Park be extended to Landing Lane on the north and that the boundary on the south be straightened in line with Lafayette Street.

Creek and River Banks

Some of the finest bits of potential park land lie along the Raritan River and its tributary creeks. This land would serve a different recreational function than those just discussed. Playgrounds for children and playfields for adults satisfy the desire for active physical recreation. But there is another kind of recreation of equal importance,—the enjoyment of beautiful scenery, such as river views, trees, water, and flowers. Heretofore there has, aside from Buccleugh Park, been no attempt in New Brunswick to set aside land of scenic value to satisfy this desire for contemplative recreation. Instead of preserving these fine wooded banks, a squalid, unkempt condition has been allowed to develop that is not only unfitting this land for private use, but is making it undesirable for future park



Mile Run in its original state, a naturally wooded wild park.



Mile Run in its present state where it has been developed with buildings,—a foul sewer menacing public health.

purposes. Furthermore, the very reasons that make this land undesirable for private development recommend it most strongly for public use.

Mile Run

Mile Run is a good example. This creek runs for the greater length of its course in a gully, the sides of which are in many places covered with fine trees. At present this stream is used as a receptacle for waste products of home and shop. In many places the banks are littered with refuse. The water is foul smelling and covered with scum. Mile Run has virtually been converted into an open sewer. If nothing is done to mitigate this condition, it will soon become a menace to public health.

Fortunately the deterioration of Mile Run is not yet extreme. Some immediate effort and a little time will restore the creek to its original beauty. The first step is to acquire the property bounded by the proposed thoroughfares indicated on the plan. The unsightly refuse piles which have been allowed to spring up could then be leveled and filled with soil. Time would then restore these devastated areas to their original verdure.

In the detailed treatment of the proposed park along Mile Run, spectacular effects should be avoided. Dirt, gravel, or cinder paths should be laid out to afford



To-day Mile Run with its putrifying garbage dumps is a wasted opportunity in the promotion of the city's health and recreation.

pleasing views. It is important that these paths be laid out with easy grades. Where grades would be too steep, rustic steps and seats may be introduced to relieve the monotony.

Mile Run, south of Somerset Street, runs through industrial territory. It is recommended that the park treatment be stopped at Somerset Street and that beyond this point the stream be run in a culvert.

Westons Mills Pond

Westons Mills Pond is the principal source of the city water supply. The planting and preservation of trees in the surrounding area is not only of aesthetic importance but essential from a utilitarian point of view. The banks of the reservoir should always be kept well planted to exclude dust and foreign matter. Evergreen trees and shrubs are preferable to the deciduous species, not only because of their attractiveness throughout the year, but because they obviate much trouble due to leaves accumulating in the reservoir.

In the near future, New Brunswick will have to increase the size of her reservoir and pumping facilities. When this is done some consideration should be given to their aesthetic development. A reservoir not only can be, but should be, a thing of beauty. The landscape treatment should be developed by a competent landscape architect, and the architectural features,—the gate-house, pumping station, and water tower—should be studied in relation to their surroundings. The whole development should be a pleasing composition and a scenic feature, surrounded by public roads to supply access to the park.

The landscape treatment would be similar to that outlined for Mile Run Park. Paths would traverse the area, sometimes approaching the edge of the reservoir, and then receding, always affording changing scenery and vistas. Signs would warn the public against



Weston Mills, the source of the city's water supply is one of the beauty spots of New Brunswick.

polluting the water. Bathing, boating, and fishing would, of course, be prohibited.

One of the natural features of Westons Mills Pond which makes it especially desirable as a large park is its wonderful woodland. In places, this tree growth is exceedingly dense, having the appearance of almost a virgin forest, especially along the creek bank itself. Not only are many of the trees nearly full grown, but there are numerous species of trees both evergreen and deciduous. It is safe to say that such tree growth as exists here could not be developed within a generation on barren land that might elsewhere be acquired for park purposes. Westons Mills Pond Park would include not only the pond and the creek feeding into the pond but enough upland to include the more desirable portions of this woodland. In one or two places some of this woodland is found on the College Farm. This fact, however, need not disturb the apparent continuity of the park, for there can be little doubt that the college authorities would permit the development of rustic paths and lanes crossing their property, linking up the opposite sides of the park, provided no harm were done to the property of the college itself. Indeed, such a reservation would be a distinct advantage to the

college authorities in preserving the woods outside of their own holdings.

Raritan River

More than half of the New Brunswick bank of the Raritan River still remains undeveloped with buildings. In many places the bank is sufficiently steep to discourage industrial development. In most cases these steep surfaces are covered with trees. Although it must be admitted that these slopes will not lend themselves very well to intensive recreational use, it is nevertheless desirable to have public control of these areas. If allowed to remain in private hands they will ultimately be used for dumping grounds with resultant depreciation of adjoining private property. On the other hand, landscape treatment can make them not only attractive but useful.

It is quite desirable for the city to take active steps to secure title to that portion of the Raritan River waterfront, beginning at a point south of the Women's College and east of Burnet Street to the outlet of Westons Mills Creek. The entire slope of the bank down to the water's edge should be reserved for park purposes. At the top of the bluff would be a winding road, approaching and receding from the river, conforming with the topography and the bends in the river itself. At the southerly end of the city this park would join and become an integral part of the Westons Mills reservation.

As the city grows, Buccleugh Park should be extended indefinitely to the north between Easton Avenue and the river. Where Easton Avenue is too far away from the river to make it expedient to give the park this width, the river bank should nevertheless be acquired for a width of several hundred feet to a point where it would be bounded by some street nearer than Easton Avenue.

In time, it may not be unreasonable to expect that the entire area from New



New Brunswick in her development has turned her back on the Raritan River.

Brunswick to Bound Brook will be developed as a part of the large urban area contiguous and tributary to the Port of New York. When this time arrives the entire bank of the Raritan River on both sides should be in public ownership.

A dam across the Raritan River, which has at various times been suggested, would afford many possibilities in the way of an aquatic park. One of the limitations restricting the use of the Raritan River for recreation is the fact that it is not only a shallow river but a tidal river; the water recedes at low tide, exposing the mud bottom on either side.

The communities above New Brunswick discharge their sewage directly into the river. New Brunswick also discharges sewage into the river. Much of this sewage is carried up the river at high tide.

Something more than a dam is, therefore, needed to make the Raritan River desirable as an aquatic park. The river must be freed of all discharges of sewage above the dam itself. This would necessitate the construction either of sewage disposal plants for the communities above New Brunswick or of an intercepting sewer down the Raritan Valley to a point below the dam. The cost of these projects is, of course, the real deterrent to their achievement. A dam, although scarcely justified at this time, may still



Harrisburg values the Susquehanna River as one of her chief assets.

be a very real possibility with increasing population and a more intensive demand for recreational facilities. New Brunswick is situated so far away from the New Jersey shore resorts that there is little question that real use would be made of an aquatic park. Such a park should prove very popular, since it would not only permit swimming, but all of the aquatic sports,—skating, boating and canoeing.

Need for Regional Co-operation

Much of this program is too ambitious for New Brunswick herself. Much of the land to be acquired for its achievement lies outside of the present boundaries of the city. Indeed, the land is distributed among numerous communities in two counties.

A satisfactory program of park development can be achieved in New Brunswick only through regional co-operation on the part of New Brunswick and her neighbors. New Brunswick is so constituted politically and geographically that she herself is helpless in developing a well-rounded park system. Brooks, rivers and hills know no political boundaries, yet these geographical features determine the suitability of land for park purposes.

To secure the development of a logical park system, rounded out by these natural

features, New Brunswick should secure the active co-operation of neighboring communities. The most practical way to secure this co-operation is probably through the establishment of a Middlesex County Park Commission.

Several counties, Hudson County, Essex County, and Union County have appointed such commissions, which have developed well-rounded systems of parks for their respective counties. There appears to be no reason why Middlesex County should not proceed in the same manner. Yet the urban development in Middlesex County is less intense than that of any of these three counties. The county will, therefore, probably be less responsive to the suggestion of a County Park Commission than has been the case in Essex, Hudson, and Union Counties. The appointment of a Middlesex County Park Commission will perhaps be deferred for a number of years. In the meantime, however, New Brunswick cannot afford to neglect her park development. The areas that are available for park development to-day may be built upon tomorrow. The time to acquire these areas is when they are still vacant.

No time should be lost in their acquisition. The most immediate need is undoubtedly the acquisition of a sufficient number of playgrounds to serve the child population of the city. Next comes the need for playfields to give the youth and adult population of the city an outlet for its recreational needs. These are the primary recreational needs of the community and should be attended to without delay.

Parks are not a luxury. Their purpose is fundamental. Physical and social maladjustments must be mitigated in part through public recreation. It is the duty of the city to supply those amenities which people are incapable of providing for themselves. At present there still remains in New Brunswick land suitable for playgrounds. There are still bits of fine scenery, which have not been quite ruined. But this condition is passing.

The individual in the city cannot provide a playground for his children. Nor can he provide an athletic field, or picnic ground for himself and his family. The city must assume this obligation. Failure to do so is to disregard the health and welfare of the people.

X. Schools

About 15 per cent. of the total population of New Brunswick attends the elementary public school; an additional 3 per cent. attends the high school. These figures do not include parochial school attendance. It is presumed that by 1950 the city will have a population of about 50,000. Assuming that the ratio of school children to population will remain constant, the city will have to provide at the end of 25 years schools for about 9,000 pupils. The present school enrollment is in the neighborhood of 6,300 pupils. In other words, there will on the average during the next 25 years be an

increase in the school enrollment of at least one hundred pupils each year. Since the school plant is even now utilized to capacity, all of this growth must be accommodated in new school buildings.

Lack of foresight has led in the past to many anomalies in the execution of the school program. In the future the observance of a few general rules can do much to mitigate or prevent such errors. In the first place, the city should not adopt a petty, niggardly policy in the acquisition of land for public schools. It is far better to err on the side of generosity. Whenever possible, the property

SCHOOL ENROLLMENT, NEW BRUNSWICK.

HERBERT S. SWAN, CITY PLANNER.

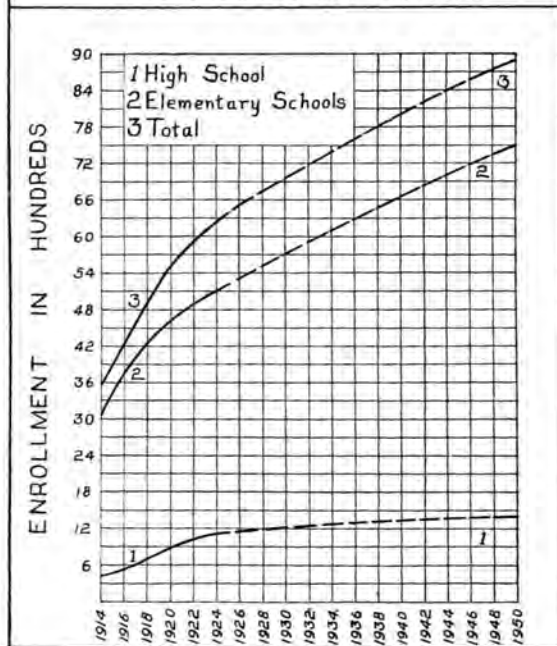


Diagram XXV

The school enrollment will increase proportionately to the population.

acquired should be surrounded on all sides by public thoroughfares. The plot should be ample, not only to provide sufficient playground space, but also to permit of the extension of the building itself should this prove necessary. Of course, the amount of land acquired should vary with the number of pupils expected to use the school. A minimum of 100 square feet per pupil, exclusive of area covered by the building, should, however, be provided. The ordinary block in the city averages about 200 by 500 feet, containing an area of less than $2\frac{1}{2}$ acres. The average block is therefore absolutely the smallest plot conforming with modern standards that can be used for a school. Yet there is not a single elementary school in New Brunswick that has more land than is just necessary to satisfy the sole requirements of the building. Not one school has been equipped with adequate space for its

playground requirements. In Gary, Indiana, plots as large as 25 acres have been acquired for schools.

Another consideration, quite aside from the size of the site, is the location of school sites. These should, in future, be located in those areas indicated as residential areas on the zoning map. It is bad policy on the part of the city to build expensive schools on land that is dedicated to industrial enterprises. An industrial neighborhood does not, as a rule, afford a satisfactory environment for a school.

Nor should a school, as a rule, be placed on a major thoroughfare. Many evils spring from such locations. First of all, there is the danger to the children from the street traffic. Then there is the din of traffic, which interferes with class-room activities. Of less importance is the inconvenience to traffic from schools located on main highways, since all traffic is required to proceed more slowly in school zones.

Neither should new schools be constructed on business streets or on streets likely to become business streets of high value. Business frontage depends a great deal on its continuity for high land values. A school building in a row of business establishments not only withdraws the property from the use to which it is most suited but it also reduces the value of abutting business property.

A very common mistake is to build schools only sufficiently large to take care of immediate needs. In a few years these schools become inadequate, and the plot on which they have been built is too small to permit of extension. Consequently, in an attempt to satisfy the needs of an increasing enrollment, a new school as inadequate as the first is built on the nearest available land. The extreme wastefulness and inefficiency of this method is seldom fully comprehended. The administrative and maintenance costs of school buildings vary little with the size of the school. The



Bayard School, built 1853.

annual administrative costs for two small schools are approximately double the cost for a single school having the same facilities. New Brunswick has been exceedingly fortunate in this respect,—she has avoided the small, inefficient school building far better than most cities. New Brunswick, unlike many cities, has not gone in for the two, three or four room school. In this she is to be congratulated.

Except in very small communities, schools with less than 24 class-rooms should not be built. Not a single elementary school in New Brunswick has 24 rooms. Although New Brunswick has avoided the very small school, she has not yet build any schools of the larger or more efficient type. In her future school program New Brunswick should build larger elementary schools than any she has as yet attempted.

The frequency of schools naturally depends to some degree upon the density

of population. As a general rule, however, children should not be required to walk more than half a mile to school. Four schools in New Brunswick,—Lord Sterling, Washington, Nathan Hale, and Bayard are included within a circle of less than half a mile radius. These schools are closer together than the best school policy would dictate.

The erection of a school is frequently accompanied by a decrease in the values of adjacent property. The noise and play of the children tends to make neighboring property undesirable. This is one of the strongest arguments in favor of securing more generous areas for schools. Certainly the school grounds should be large enough in themselves to care for all of the school activities. The adjacent streets and front yards should not be expected to serve as a playground.

With adequate land surrounding the school building on all sides, much of its bleak appearance can be mitigated by planting a double row of shade trees around the school grounds. This would screen the school yard from the street as well as furnish shade to the children.

Another aspect of the school which is gradually forcing itself upon public attention is the use of the public school building after the school hours. The building represents a large investment, upon which the public is paying interest. The building will deteriorate and become obsolete



Livingston School, built 1924.



Senior High School.



Junior High School.

whether it is standing idle eighteen hours a day or whether it is being used. The school building by virtue of its accessibility and equipment offers possibilities for more intensive use. Quite aside from its purely educational aspects, the school can be used evenings as a regular center for neighborhood activities. Experience has shown that the interference with school work is negligible. Another opportunity presents itself in the use of the gymnasium for neighborhood recreation.

An enlarged use of the school building does not add appreciably to its cost of operation. The additional expense due to heat, light, and janitor service may be defrayed by charging organizations a nominal sum for the building.

It is futile to lay down an arbitrary standard of schoolhouse design and construction to suit all communities. The planning and construction of schools depend somewhat upon the exigencies of the location. There is a rapid trend towards standardization in heating, ventilating, lighting and fire-proofing. In all

new buildings these should be in accordance with the best practice.

Just how much money a city is justified in spending for architectural adornment of schools is still a subject of dispute. There is very often an over-obvious attempt for effect and a resort to architectural frills to achieve the spectacular. This has been especially true in the case of high schools. The primary function of a school is utilitarian. Schools should, as a matter of course, have ample, safe, practical interiors. The exterior should be a simple expression of function. As a result of this simplicity they will assume more dignity and character than if artificially embellished.

If New Brunswick is to achieve a school program that is thoroughly co-ordinated with her city plan, it is essential that she visualize the problems and requirements of the community fifteen to twenty years in advance. A shortsighted policy can result only in a disjointed and inefficient school plant, incapable of efficiently satisfying her educational requirements.

XI. Zoning

The residential and industrial development of New Brunswick has in the past suffered more from lack of proper city planning than from any other one cause. The city has been permitted to grow without direction or plan. No incentive has been held out to people who may have wished to benefit and adorn the city with useful and serviceable improvements; no restraint has been exercised over those who planned to carry out projects harmful to their block, their neighborhood or the whole community.

Zoning Ordinance Part of City Plan

An efficient plan predicates zoning. The subdivision of land, the provision of transit, the selection of school sites, playgrounds and parks, the control of traffic,—all revolve around the manner in which the town is zoned.

In other words, a city cannot be planned properly without being zoned; no zoning ordinance will function satisfactorily until the city is also planned in a comprehensive manner.

Calling a locality a "residence" district or an "industrial" district, as the case may be, does not necessarily make it so, for the real character of a district is defined quite as much by its topography, by its accessibility to terminals, by its street approaches, by the manner of its subdivision into blocks and lots, and by other similar considerations, as by its zoning regulations.

New Brunswick is exceedingly fortunate to have possessed the foresight to work out her city planning and zoning problems simultaneously as different phases of a single problem.

A fiat of a city council may designate

what is by nature and environment fundamentally an industrial locality, as a residence district, or, vice versa, what is inherently best suited for a residence district, as an industrial zone. Zoning can be made to work both ways; it may be made a means of protecting a locality against invasion by inappropriate and injurious uses; it may also be made a means of encouraging and sometimes even forcing a locality to develop in an improper manner. An efficient zoning plan predicates an efficient and comprehensive city plan. To designate a section of a city as an industrial zone and then allow it to be subdivided into blocks and lots best suited for residential purposes, is not going to result in an efficient or satisfactory zoning plan. To place an area in an industrial classification and then allow it to be divided into streets and blocks in a manner to deprive it permanently of getting railway switches, is not going to stimulate its industrial development. In other words, there is such an intimate connection between city planning and zoning that neither can afford to ignore the other. Although a community can adopt a zoning plan without adopting a comprehensive city plan, its zoning plan will never function as efficiently as it might until the community is properly planned. Although a community may adopt a splendid plan controlling its thoroughfares, railroads, parks, playgrounds and public buildings, so long as it ignores zoning it loses a most valuable instrument in controlling its development.

An efficient zoning plan predicates an efficient comprehensive city plan. The most carefully thought out zoning plan is bound to have its efficiency appreciably diminished unless it is supplemented by



The front yards on a whole street ruined by a garage coming out to the sidewalk.

an adequate city plan. The same is also true of a city plan. A community can never have as efficient a plan as it might have until it supplements it with a comprehensive zoning ordinance.

In other words, city planning and zoning are as complementary to each other as the two blades of a scissors—neither can function to full advantage without the other.

The object of zoning is to promote the development of an efficient community. Although a community may promote its efficiency in adopting a zoning plan, it increases it still more if in addition to adopting a zoning plan it also adopts a comprehensive city plan. Zoning is only the first step in city planning. It is quite as important to make land more valuable for a specific use as to restrict it to that use. The mere adoption of a zoning ordinance does not make land valuable for any specific development. Before land can be utilized for any particular purpose, it must be provided with numerous facilities and conveniences,—thoroughfares, transit, transportation, water, sewers, schools, etc. As the character of these facilities varies for different uses of property, it is folly to expect that the mere adoption of a zoning ordinance is going to suffice to cover all of the city planning needs of a com-

munity. The one outstanding essential feature of an efficient zoning plan is a comprehensive city plan.

The zoning ordinance adopted by the Board of Commissioners marks the first step in the actual attainment of a comprehensive city plan for New Brunswick.

The New Brunswick zoning ordinance is a part of the New Brunswick plan. Its every feature has, so far as practicable, been worked out so as to dovetail into the requirements of a comprehensive city plan.

The Zoning Commission spent the better part of a year in working out the details of the zoning ordinance. Naturally, certain changes were necessitated in these plans when they were placed before the property owners. Some owners placed in one zone wished to have their property placed in another zone. Some thought their zone classification too stringent, others too lax. Yet there were remarkably few changes demanded by property owners. As adopted, it is thought that the zoning ordinance presents in so far as it is obtainable, substantially the unanimous approval of the property owners of New Brunswick.

Classes of Zones

The ordinance establishes eight different classes of zones:

1. "A" residence zones.
2. "B" residence zones.
3. "C" residence zones.
4. "D" residence zones.
5. Business zones No. 1.
6. Business zones No. 2.
7. Light industrial zones.
8. Heavy industrial zones.

Each of the different classes of zones is supplied with its own independent set of height and bulk regulations.

The first four classes of zones are exclusive residence zones. All kinds of business and industry are strictly prohibited within them.

Both of the business zones are protected against manufacturing establishments. The light industrial zones are protected against offensive trades and industries.

The heavy industrial zones are open to any and all uses except those accompanied by noisome odors or exceptional danger to life and property, such as fertilizer plants, tanneries, explosive works, arsenals, etc.

In the "A" and "B" residence zones, buildings are limited to a height of thirty-five feet. This admits of the construction of two and one-half story buildings.

The "C" residence zones are designed for the typical four-story house, the height limit in these zones being fifty feet.

The "D" residence zones have a permissible height of seventy-five feet. This permits of six-story buildings.

The difference between business zones No. 1 and No. 2 lies in the height permitted in the two zones. The first, consisting primarily of outlying or neighborhood business localities have a height limit of fifty feet. Business zones No. 2, being the downtown business section, are permitted a maximum height of one hundred and ten feet. This permits buildings ten stories high.

The height limit in both the light and the heavy industrial zones is one hundred feet. This permits a seven or eight story mill.

Apartment houses are allowed in every zone. But in the "A" and "B" residence zones, the regulations are so drawn as to make their erection improbable, and, in any event, unobjectionable. The "A" residence zones are calculated to protect the one-family detached house on lots having a minimum width of fifty feet; the "B" residence zones, the two-family house on lots with a width of at least twenty-five feet; and the "C" residence zones, the small apartment. The "D" residence zones are for large apartments.

All kinds of residence buildings are permitted in the business and industrial zones.

Ordinance Not Retroactive

Sporadic stores and factories are not molested. Regulations, however, provide that when the existing use is discontinued, the new use taking its place shall not be more offensive than the one there to-day.

None of the provisions in the ordinance are retroactive. The ordinance is designed to guide the future growth of the city, to safeguard the city against a repetition of past mistakes. Out-of-place buildings are the penalty we pay for not having planned our city sooner.

Big Step Forward

With the adoption of a comprehensive zoning plan, better times should follow for both New Brunswick and all the real estate in New Brunswick—for zoning is both a positive and a negative factor in the development of a community—it encourages superior types of development; it discourages inferior types of development. Its mandatory provisions oblige things to be done which otherwise would not be done; its inhibitions prevent things from being done



Under its zoning ordinance this cannot happen in New Brunswick.

which would otherwise be done. It stimulates, checks, guides—all to the benefit and lasting good of both the individual property owner and the community. As time passes and the lines between different zones become more tightly drawn, the development of each zone being shaped by the regulations, the

benefits conferred by zoning will accumulate, increasing with the years, correcting past errors, revealing and realizing new opportunities, all the time operating for the betterment of the community and enabling it ultimately to become a community such as without zoning New Brunswick could never hope to become.

XII. Carrying Out the Plan

The first requisite for the attainment of the New Brunswick plan is an awakened citizenry, appreciative of the need for comprehensive planning in the solution of the physical problems relating to the development of the community. Without the active interest and support of the public, no city administration will be able to make permanent and substantial gains in directing the growth of the community along the most rational and well-balanced lines. The best way, therefore, to secure permanent progress in city planning is to educate the general public to take a keener interest in city planning.

Aggressive, yet patient and persevering leadership is hardly second to public education for the success of a comprehensive plan. In city planning, as in almost everything else, little or no progress can be achieved in the absence of proper leadership. What a community actually accomplishes in the way of concrete results reflects in a very real sense the strength and character, not to mention the public spirit, of her leaders. Big, strong, generous leaders are not satisfied with small, niggardly results.

The New Brunswick plan visualizes the city's development over a period of the next twenty-five years. Many things will happen to the city during this period. Nearly fifteen thousand people will be added to the population; the school enrollment will increase nearly fifty per cent.;

street traffic will increase almost one hundred and fifty per cent.

Such will be the growth within the immediate limits of the city. Development in the neighboring suburbs of the city will, however, outstrip that within the city itself. In them the aggregate population may reasonably be expected to increase from nine to eighteen thousand. This will involve an increase of one hundred per cent. in their school requirements. Their traffic will, according to estimates, increase approximately two-fold.

Such growth will necessitate many improvements,—hundreds of acres of farm lands will be subdivided into city lots; many miles of new streets must be laid out to afford access to these lots; additional sources of water supply must be developed; miles and miles of new pavements, curbs, and sidewalks must be built; additional sewers and water mains must be constructed; not only one but two or three new bridges must be stretched across the Raritan River; a new city hall must be reared to house municipal officials; new schools must be built to keep pace with the increasing child population; additional parks and playgrounds must be acquired; the present planless street plan of narrow streets and offsets must be straightened out through adequate widenings and extensions to afford a modicum of relief to increasing traffic congestion.



Christ Church with its quaint churchyard is an interesting inheritance from colonial days.

These are some of the things that must be done with sufficient intelligence, vision and foresight to provide for the needs of a growing community. The fact that these developments will entail a large outlay does not make them the less necessary. It is desirable that these improvements be carried out as economically as possible, but they must be carried out, whatever their cost, if the city is to grow. Only through careful planning can the cost be made bearable to the taxpayer; only through painstaking budgeting of municipal expenditures can the outlay be effected within the legal limitations restricting the finances of the city.

Though the increased growth of the city will involve the expenditure of millions upon new capital improvements, there is this compensation to the municipality,—the growth if properly planned

and if carried out according to the plan, should finance itself out of increased property values. During the next twenty-five years approximately \$135,000,000 in the aggregate should be spent in New Brunswick and its suburbs upon new improvements. Of this sum, \$90,000,000 will be spent in New Brunswick and \$45,000,000 in the suburbs. In other words, the wealth within the city should increase fifty per cent.; the wealth of the suburbs, at least one hundred per cent. The most effective use of this wealth demands adherence to a city plan; the increased earnings that will accrue on this wealth as a result of the plan will more than justify the plan.

The City Planning Schedule

A comprehensive city plan is something more than a collection of maps and plans of desirable improvements; even the best plan without some dynamic force back of it, systematically working for its attainment will be little more than a musty, unused document. A complete city plan predicates the charts and drawings necessary to a solution of the major community problems, as a matter of course, but it should also present a program for their execution. A plan can lay claim to neither completeness nor comprehensiveness in the absence of appropriate provision for the administrative and financial machinery essential to its realization. The method of achieving the plan is quite as important as the plan itself; without a practicable program and workable machinery the plan will be sterile of results.

The sequence with which improvements should be carried out during the next ten years is suggested by the following program:

1. Improvements to be undertaken and completed in 1925.

- (1) Lay down major thoroughfare plan on city map.

- (2) Make compliance with major thoroughfare plan primary condition precedent to approval of all future subdivisions.
- (3) Widen Albany Street roadway.
- (4) Adopt new traffic regulations.
- (5) Enact new parking rules.
- (6) Widen roadways of Burnet Street and Little Burnet Street.
- (7) Widen roadways in Bayard Street and Paterson Street.
- (8) Extend Remsen Avenue to Livingston Avenue and Pennsylvania Railroad.
- (9) Round curb corners at important intersections.

2. Improvements to be undertaken and completed 1926-1930.

- (1) Construct the New Raritan River Bridge at Remsen Avenue.
- (2) Extend Easton Avenue from Albany Street to Livingston Avenue.
- (3) Acquire enlarged site for City Hall.
- (4) Construct City Hall.
- (5) Acquire initial parking spaces.
- (6) Purchase Mile Run Park.
- (7) Enlarge school plant to provide for increased school growth.
- (8) Build street on waterfront between Albany Street and Commercial Avenue.
- (9) Carry out Dennis Street—John Street improvement.
- (10) Widen Neilson Street north of Albany Street to a uniform width of 60 feet.
- (11) Extend College Avenue into Easton Avenue.
- (12) Extend Townsend Street to Riders Lane.
- (13) Construct subway under the Pennsylvania Railroad at Sanford Street.
- (14) Extend Sanford Street south to Riders Lane.
- (15) Extend Sanford Street north from French Street to Easton Avenue.
- (16) Widen Spring Street.
- (17) Rebuild railroad station at Easton

Avenue and Albany Street along more modern and commodious lines.

3. Improvements to be undertaken and completed 1931-1935.

- (1) Construct new subway under Pennsylvania Railroad at New Street.
- (2) Construct new subways under Pennsylvania Railroad at Juliet Street, Reade Street and Ninth Street.
- (3) Extend Buccleugh Park in a northerly direction between Easton Avenue and the Raritan River.
- (4) Purchase slopes on Raritan River bank south of Women's College for park.
- (5) Acquire Westons Mills Park.
- (6) Rebuild Landing Bridge.
- (7) Secure appointment of a Middlesex County Park Commission.
- (8) Obtain legislative amendment of county lines to include Franklin Township within Middlesex County.
- (9) Enlarge municipal boundary lines by including within the City of New Brunswick those portions of Franklin and North Brunswick townships either developed or likely to be developed in an urban manner tributary to the city.
- (10) Enlarge the municipal boundary lines to embrace municipalities on the east side of the Raritan River and tributary to New Brunswick, particularly Highland Park, Raritan Township and certain portions of Piscataway Township.
- (11) Enlarge school plant to provide for increased school growth.

City Planning Machinery

The execution of any plan in New Brunswick is dependent upon the active co-operation and team work of many different agencies, both private and official. Among these, in addition to the city administration itself, are the following: The State Legislature, the State Highway Commission, the Board of Com-



Old Dutch Reformed Church.

merce and Navigation, the Port Authority, the North Jersey Transit Commission, the trustees of the New Jersey State College of Agriculture, the freeholders of Middlesex County, the borough council of Highland Park, the township committees of Franklin Township, North Brunswick Township, Raritan Township, Piscataway Township, the Pennsylvania Railroad Company and the Public Service Corporation. The good-will and help of all these bodies should be sought as far as possible in the realization of the plan. The actual responsibility for carrying out the plan is, however, lodged directly with the Board of Commissioners, and, in so far as they choose to share this responsibility, with the City Planning Commission.

Raritan River Bridge

The new Raritan River Bridge at Remsen Avenue, when it is built, must be built by the State Highway Commis-

sion. The Delaware River Bridge at Camden, the Hudson River Vehicular Tunnels at Jersey City, and the Raritan River Bridge at Perth Amboy, indeed, the Albany Street Bridge itself are ample precedents for the assumption of this project in its entirety by the state. The Remsen Avenue Bridge is an essential link in the system of state highways. If traffic between North Jersey and the shore resorts, as well as between North Jersey and South Jersey is not to be choked at the throat of the present Albany Street Bridge in New Brunswick, this new bridge must be built with the least possible delay. No time should be lost by the people of New Brunswick in persuading the State to undertake this project.

The Civic Center

The support of the freeholders of Middlesex County is absolutely essential to the realization of the proposed civic center. Without their consent the extension of Easton Avenue through the Court House Square to Livingston Avenue is impossible. Without this new street a satisfactory grouping of the present and proposed city and county buildings will not be possible. Without this street no new street parallel to and west of George Street is obtainable.

The civic center and the Easton Avenue extension are important to New Brunswick but they are also important to the county. Middlesex County should be just as much interested as the city in possessing a satisfactory arrangement and setting for her public buildings. The present approach to the county offices from the railroad station through Spring Alley is a disgrace to both city and county. In what other county with the wealth and population of Middlesex County is there such a mean, niggardly approach as Spring Alley to the county buildings? As the extension of Easton Avenue would remedy this situation, the freeholders of Middlesex County should feel that



Where Easton Avenue will enter Livingston Avenue when extended.

the civic center and Easton Avenue problem is as much their problem as the city's.

County Parks

Although New Brunswick is sadly lacking in her park facilities, having less than half the area required by standard park practice, the neighboring communities are still more deficient in this respect,—they have absolutely no parks whatever. And at present there is little indication of this situation being remedied in the near future.

Were the provision of parks strictly a local function, New Brunswick would not be especially interested in the parks owned by her neighbors. But with a rapidly growing population the establishment of parks has become more and more a matter of regional concern.

Witness the Bronx River Parkway, the Palisades Interstate Park, the Westchester County parks, the Hudson County parks, the Essex County parks, and the Union County parks. In the face of such developments, who can say that the time for the appointment of a Middlesex County park commission has not arrived, if, in fact, it is not overdue?

There are both large and small areas in Middlesex County splendidly adapted for park purposes, but which today because of the absence of any interested authority, are being allowed to be ruined

beyond repair by private developments. It should be the function of the county park commission to acquire these areas now while they are still unspoiled and sufficiently cheap to be afforded by the public. If action toward the appointment of such a commission is taken now there is no reason why Middlesex County should not have a system of parks and boulevards superior to any yet established by neighboring counties.

New Subdivisions

The Board of Commissioners already has the legal power to approve or disapprove proposed subdivisions. This power, if used discriminately, may be one of the most effective means of controlling the development of new areas. In according its approval to subdivisions, the board should take into account all factors which may reasonably be deemed to affect the desirability of a layout from the point of view of the community. These include such considerations as street grades, alignment of streets, width of streets, direction of lot lines and size of lots. Compliance with the major thoroughfare plan should be made a condition precedent to official approval of all new subdivisions by the City Commissioners.

The size of the lot is quite as germane to the public health, safety and general welfare as the size of rooms or the size of courts and yards. If lots are laid out of such size as to be too small for sanitary purposes, the matter is very much one of public concern and should be dealt with in a public manner. Lots 12, 15, 18 feet wide are, of course, so narrow that they cannot be improved singly with adequate open spaces about the building. Such lots place a premium upon the construction of long narrow houses, obtaining their light solely from either end with a series of dark and unhealthy rooms in between. As a city is limited in formulating adequate court and yard provisions

by the prevailing sizes of lots, the only effective way to secure wholesome conditions relative to open spaces is to go beyond the building regulations back to the time when the lot is laid out, so that sufficient size and width will be assured the lot to permit of the erection of a sanitary building when the time comes to improve the lot.

Sometimes one can go considerably beyond the mere authorization of the law in securing desirable results in the way of improved subdivisions. The application of the proposed subdivision rules to new subdivisions may not always prove effective in the case of obstinate individuals who have absolutely no regard for the wishes of the city. But in most instances when these rules are intelligently applied it will be found that much better results will be secured than has hitherto been the case. It may be found desirable to supplement these rules with certain additional requirements of a coercive character to force a recalcitrant individual to comply with the community's plan of development. For instance: Land subdivided without compliance with the major thoroughfare plan of the city might be permanently barred from being served by public utilities such as water, sewers, street lights and police, or from having its streets accepted and maintained by the city.

Of course, certain irresponsible subdividers would not even let this block them from carrying out their selfish designs. They would proceed to sell off the lots and leave their clients to seek their own redress with the community after the lots had been improved. Yet, refusal on the part of the city to serve subdivisions that had not received its sanction, with water, sewers, etc., would, in most instances, prove efficacious in securing a superior layout.

All municipalities in New Jersey are very much in need of additional legislation to strengthen their hands in dealing with proposed subdivisions. Where a developer

has subdivided his tract without regard to the city plan, it would seem only fair that the prospective buyers of the lots should have some notice of this fact. A perfectly legal approach to this problem would seem to be for the legislature to pass a law authorizing the city in the case of any property violating the city plan to spread on the records of the county clerk's or county register's office a minute to that effect, and that anyone buying a lot in such a subdivision would knowingly buy it with the understanding that the city would never serve him with either water or sewers, or accept the street in front of his premises,—in other words, that he would be quarantined in perpetual isolation from all of those enjoyments which come from having one's street publicly accepted by the municipality. This notice would be recorded as a lien or mortgage, so that anyone purchasing property would be apprised of the full facts as to the conformity of the property with the city plan when he searched the records for his title. If such a notice as to the conformity or non-conformity of plots to the official city plan were spread upon the records, shyster real estate development companies would practically be put out of business.

The difficulty in enforcing a city plan is usually the inadequate hold the city has upon the development company. When a company has developed a tract,



An offset street is a dangerous traffic trap.

it is now able to dispose of its lots to unsuspecting purchasers who firmly believe that they are buying a lot which they will be able to improve with all of the requisite facilities for urban use. If purchasers in buying lots had this notice, the probabilities are that they would buy only lots that conformed to the city plan.

Extra-Jurisdictional Control Over Subdivisions

In many states cities have obtained the legislative authority to control, the development of the satellite communities that are prone to spring up within three or four miles of the city limits. In New Jersey the cities do not enjoy this power. As a result, there is absolutely no harmony in the development of two municipalities on opposite sides of a boundary line,—each municipality is supreme within its own jurisdiction. This situation frequently leads to the most disheartening results, for autonomy in their own affairs is quite often construed by these towns and boroughs to mean the same thing as license in their development—an utter lack of building codes, no fire limits, no sanitary or health regulations, no restraint in the layout of streets or lots, in a word, no community control over matters of the most profound community interest.

In no respect does this shattering of administrative control, or rather, this abnegation of administrative control produce more dire consequences than in the sub-division of land into streets and building lots. Bryce spoke in his "American Commonwealth" over thirty years ago of our cities as the one conspicuous failure of our democracy. Although it is quite commonly believed that our cities have lived down this imputation during the three decades that have since elapsed, an examination of street plans in North Brunswick Township, Raritan Township, Franklin Township, as well as Highland Park is enough to make one pause and

reflect whether our municipal progress has been as great as we think.

New Brunswick may control parasitic subdivisions within her own limits and, as a rule, she has obtained fairly desirable results from this control. The communities neighboring New Brunswick may also, as a matter of law, control parasitic developments; their street maps, however, offer eloquent testimony of their default in the exercise of this control.

The development of a rational street plan is practically hopeless under divided control. The boroughs and townships neighboring the city cannot in the very nature of the case, exercise the scrutiny or the control necessary to secure a logical street plan for the whole New Brunswick area. These municipalities may disapprove of bad subdivisions, they may exercise a very desirable negative control over the worst developments, but it takes constructive action to obtain positive results in the way of a convenient and serviceable thoroughfare plan. This initiative must come from the parent community. It is this fact that justifies New Brunswick to ask for the necessary legislative authority to control developments within three miles of her borders.

Establishment of Street Lines

In carrying out a street plan the first step must of necessity be the establishment of the proposed street lines and their incorporation as a part of the city plan. Only through placing the projected widenings and extensions upon the official map of the city can owners develop their property in accordance with the city's program of improvement.

Mere mapping of the proposed improvements will injure no one. Nobody will be restrained from the free use and enjoyment of his property; every plot can be used in exactly the same manner as the owner would anyhow, whether or not the projected street lines were laid



A street outside of New Brunswick, lined by backyard conditions created by blocks too shallow for two back to back lots.

down upon the city map. But as the mapping of the proposed street places the owner under no legal obligation to observe the plan, neither is the city obliged to observe it. Mapping a street over private property is a quite different thing from taking private property and, until property is actually taken, there need be no compensation. If owners have the right to disregard the plan, so, too, has the city—it may change or modify the plan, or it may refrain from ever carrying out the improvement if it so elects.

If this is the law, wherein then, is the advantage of placing the proposed street widenings and extensions upon the city map? The chief outstanding advantage lies in the fact that it gives the city a constructive program of development, it focuses public attention upon a group of co-ordinated improvements which when executed will fit into a comprehensive scheme promoting the highest development of all parts of the community. If they are not placed upon the map, they will never be carried out, and if they are not placed upon the map until the city is ready to carry them out, their execution is going to be deferred for many years after the time of their execution would otherwise be possible.

The fact that these improvements have been placed upon the official map after

an exhaustive survey of the needs of the whole community will, moreover, tend to prevent the spending of public moneys upon relatively unimportant improvements.

All owners without exception are anxious to improve their property in a manner to increase its value. Until an official map is adopted, they are denied the privilege either of improving their property in a manner to give its value the maximum enhancement or of helping the community to attain a comprehensive plan.

Buildings Within Street Lines

Laying down a street upon the city map does not, it is true, prevent the erection of buildings within the proposed street lines. The owner of land within the proposed street has the legal right, if he chooses to exercise it, not only to alter and rebuild existing structures, but to put up new buildings. But experience has shown that in most cases he will not elect to exercise this legal right. Witness, for example, with what faithfulness property owners have co-operated in the carrying out of official street plans in Newark and Paterson. In the newer sections of these cities, it has been assumed, as a matter of course, that undeveloped land would, when platted, be subdivided in accordance with the city map. Yet there are always some owners who will insist upon their technical privilege to disregard the city plan, and unless some legal way is found to curb them they can do untold harm to the plan. Unfortunately, the law in New Jersey is not as ample as it is in Pennsylvania where an owner who erects a building within a mapped street after its incorporation in the city plan may legally be deprived of all damages for the buildings when the city opens the street.

Yet the local situation may be met in another way. Competent legal authorities hold that a state enactment pro-



New Brunswick pumping station.

hibiting the use of building permits on land within the bed of a mapped street, except with permission of a board of appeals having power to prescribe a kind of building that will be least obstructive when condemnation takes place is enforceable by the courts. This procedure would be self-operating. It would apply to every mapped street and would prevent structures as soon as a street is placed upon the official city map.

A state enactment empowering the city to take an easement preventing building within a mapped street pending condemnation for street purposes, is also enforceable by the courts. But this procedure would not be self-operating. A proceeding would have to be taken regarding each street after its placement upon the city map, before buildings could be prevented within its lines.

Legislation looking toward incorporation of both of these methods of controlling improvements within proposed street lines should be sought from the New Jersey Legislature without delay.

Acquisition of Unbuilt Land Within Proposed Streets

All vacant land within projected street lines should be immediately acquired by the city. Such land presumably will never be cheaper to acquire than now. So long as the city refrains from acquiring the

land within mapped streets, the owner has the right to use it as he chooses. The land is his until it is actually taken by the city and until that time he has not only a right to develop it and to erect buildings upon it, but a right to put up buildings with the single object of extracting larger damages from the city when his property is taken.

For the city to procrastinate in taking the land that is at present vacant within mapped streets, whether such streets be widenings or extensions, is in effect to give tacit approval to its development without reference to the official plan. If the map may be changed and the streets completely abandoned without any indemnity against loss being guaranteed the owner on account of compliance with the plan in the development of his property, certainly the owner cannot be blamed for taking his own counsel in improving his land and ignoring the mapped street.

Justice to the owner of vacant land within projected street lines who will suffer serious loss in observing the plan should the city alter its intention of ultimately taking his property, as well as justice to the taxpayer, who through the refusal of the municipality to take such lands immediately, would through rising land values and the erection of costly buildings be burdened with increased taxes, both demand that the land now unbuilt upon be purchased without delay.

The acquisition of such land is, moreover, the best pledge a city can give of its intention to carry out its program.

The appropriation of so much of the front portion of vacant lots, or of the forecourts of improved lots, as might be necessary to afford the increased width to the widened thoroughfare, would make the owners in front of the widened portions, distributed here and there as they would be throughout the length of the new street, the staunchest advocates urging the quickest possible completion

of the improvement. There would be no turning back from the plan because the city would stand irrevocably committed to it.

Setback of Building Fronts in Street Widenings

The acquisition of the vacant land within the projected lines of a street, of course, would still leave the built-on land to be acquired before the street is completed. Alterations in street lines are at best always difficult and expensive but in the case of improved properties, they are doubly difficult and expensive.

When it comes to the extension of a street, very little choice is left to the city—to get any benefit at all from the street, it must expropriate both the vacant and the improved lands at once. Unlike a street to be widened, there is in the case of a street extension, no existing street, not even a narrow one, to be used by traffic. The use of the thoroughfare cannot, therefore, go on hand in hand with its acquisition—all of it has to be acquired before any part of it can be used even to the slightest degree. Every consideration of prudence and expediency demands that an extension be carried out as an integral improvement without delay.

But in the case of street widening, economy demands—unless the increased width is required at once—that the widening be made as and when the existing buildings are demolished and reconstructed. At that time the new building can be made to recede to the new street lines, thus relieving the city of all damages for buildings.

This method of widening streets has been exercised on several different occasions in Philadelphia. The power to proceed in this manner is conferred upon the cities of New Jersey by Chapter 137, Laws of 1920.

It would be disastrous to the city to require that all the streets in need of widening should be widened in their entirety at once. By gradual widening as



Landing Lane Bridge.

and when old buildings are replaced by new ones, progress is made step by step towards a wider street without unduly straining either the city's or the property owner's finances.

Platting the new or widened street upon the city plan interferes with no one in the use and enjoyment of his property until he comes to rebuild. This may be in a year, ten years, or a hundred years. But when the property owner does rebuild, his building must recede to the new street line. It is then that he is injured, if he is injured at all; and it is then that his land is taken for public use, and he is entitled to have his damages assessed.

The instant an old building is torn down, the city takes that part of the plot within the widened street for public use. Existing buildings are not interfered with. Immediately upon the destruction of the old building, the city takes possession. Recession of buildings to the widened street line takes place when the fronts of the existing buildings are rebuilt or altered. The moment this rebuilding is commenced is therefore the moment of taking which gives the person whose land is taken the right to damages.

Municipal Centralization

A policy of extreme decentralization in the chartering of municipal corporations in this state has led to a situation



Draw-bridge across the Delaware and Raritan Canal at Landing Lane.

where what should be a single city has been chartered as several separate and distinct municipalities. In many instances it would be difficult to justify these different municipalities as separate wards; to justify them as wholly independent and autonomous cities and villages is simply ludicrous.

As a united urban unit these weak municipalities might constitute a strong city with sufficient wealth and credit to undertake a big, imaginative program of municipal development; as broken fragments of a city they will always remain impotent.

To be a well-rounded city it is every day becoming increasingly more clear that New Brunswick should embrace the entire urban area directly tributary to it. Thoroughfares, parks, sewers, water, fire, police and schools are scarcely political problems; their consideration cannot be satisfactorily limited to arbitrary political boundary lines. Yet with the present multiplicity of municipalities hemming in New Brunswick on all sides, that is the manner in which all of these problems must be studied. Both topography and geography are relegated to a secondary place in the planning of the New Brunswick area. Common sense would dictate that engineering problems be solved in an engineering way; that a community, which actually is to all intents and purposes an integral area, be planned as a unit and not as half a dozen broken units.

Neither New Brunswick nor her sister municipalities of Highland Park, North Brunswick, Franklin, Raritan or Piscata-

way will enjoy the prosperity that might be theirs until they join hands and work together with but a single aim and purpose. For each of these municipalities to have a separate and distinct governing body where there should be but one is to put a premium upon chaotic development. Anything that speeds the day when all of these municipalities, or as much of their area as is tributary to New Brunswick will be one big city will redound to the permanent benefit of all.

The Citizen and the City Plan

The biggest thing in New Brunswick is the City of New Brunswick and yet there is probably nothing in the city that receives less consideration from the average citizen than the city. Usually the property owner never comes down to the City Hall except to protest against some desirable improvement. If our cities, therefore, are no better than they are, there is nobody more to blame than the property owner himself.

One cannot hope to take money out of a business endlessly and yet have an efficient up-to-date business. To maintain a business establishment upon a high level of efficiency new capital must be spent upon permanent improvements and upon replacing obsolete machinery and worn out equipment. The same is true of a city,—an attractive, efficient, healthy city is not the result of indifference any more than an enterprising business.

The citizen himself, therefore, has the choice within his own hands whether he is or whether he is not going to live in an enterprising community; in the long run his community will be as progressive, as forward-looking and as imaginative as he is,—if he is none of these things, then neither will his community be. In other words, a community reflects the character of its citizenship. Since a community can be little better than its citizens, the best way to make a better city is for all of us to become better citizens of our city.