

Duplicate

SECOND ANNUAL REPORT

of the

Balto

BOARD OF ZONING APPEALS

to His Honor,

HOWARD W. JACKSON, MAYOR,
ENOCH PRATT
and to the **FREE LIBRARY**

HONORABLE MEMBERS OF THE CITY COUNCIL

for the Year ending

December 31, 1925.

SECOND ANNUAL REPORT

of the

BOARD OF ZONING APPEALS

to His Honor,

HOWARD W. JACKSON, MAYOR,

and to the

HONORABLE MEMBERS OF THE CITY COUNCIL

for the Year ending

December 31, 1925.

BOARD OF ZONING APPEALS.

C. MORGAN MARSHALL, *Chairman,*

BERNARD L. CROZIER,

A. J. FINK,

WALTER R. HOUGH,

DR. C. HAMPSON JONES,

THOMAS J. LINDSAY,

WALLACE MACWILLIAMS,

JEFFERSON C. GRINNALDS, *Secretary,*

ALBERT M. GREENFIELD, *Asst. Civil Egr. Zoning,*

DOUGLAS R. WARNER, *Engineering Aid,*

MARGARET C. MICHEL, *Senior Stenographer,*

RUTH E. MEREDITH, *Junior Stenographer.*

REPORT
of the
BOARD OF ZONING APPEALS.

It is probable that at no other time has there been a keener interest in Zoning, a more wide-spread desire—approaching determination—for a permanent comprehensive Zoning Act which will satisfy our Appellate Court.

So in this, the Second Annual Report of the Board of Zoning Appeals—the first to be put into print—it is felt that the history of Zoning in Baltimore should be rehearsed and part of the data which influenced the Zoning Commission in the final draft of Ordinance No. 922 might be of particular interest at this time.

Beginnings in Baltimore.

The Real Estate Board of Baltimore took initial steps in 1920 towards securing a zoning plan and ordinance. Before that year the present Secretary of the Board of Zoning Appeals had begun to make studies for the City Plan Committee of such ordinances as then existed and of the plans. Various civic organizations and many individuals were active at this time advocating zoning.

Ordinance No. 615, approved July 19, 1921, was enacted by the Mayor and City Council, creating a Zoning Commission and directing it to present a Zoning Ordinance dividing the City into districts with reference to the height, area and use of land and buildings in such districts, providing regulations therefore and maps which were to be a part of the ordinance and were to be the graphical representation of the zone plan.

Zoning Commission of 1921.

In August, 1921, a commission was appointed by his Honor, Mayor Broening, with the following personnel: Henry G. Perring, Chairman; Joseph W. Shirley, J. Frank Crowther, George W. Bahlke, Edward H. Bouton, John Holt Richardson and James Carey Martien. The present Secre-

tary of the Board of Zoning Appeals acted as Secretary to that Commission and directed the zoning work up until the time when the ordinance was submitted and passed by the City Council.

Surveys, Investigations and Studies.

Exhaustive surveys were made by this Commission showing the existing uses of all land and buildings in the City, the heights of all buildings, the relative land values throughout the City, the percentage of the area of the lots covered by buildings, location and sizes of water mains for domestic consumption and fire protection, high-pressure water service for fire protection in the central business district, sizes and location of sanitary and storm water sewers, the relation of water supply, sewers, transportation lines, land values and population density were analyzed in their relation to the general plan and incorporated in it. Studies of death rates in various parts of the City over a long period of years and other health considerations were made which included access of light, air, sunshine, dust, noise, injurious odors, gases, vapors, etc., to buildings used for both residence and business. Suitable regulations were incorporated in the ordinance to require open spaces, admission of light and air to buildings for increased accessibility for fire fighting, as stops or barriers to the spread of fire and disease and to permit a more accurate determination of sizes of storm water sewers hereafter. The rules were designed to regulate the population density hereafter in a reasonable way, to prevent slums and tenement districts in the future and to keep those things out of the City of Baltimore forever in order that such slums and tenements as are found in New York, Philadelphia and Boston could never be found in this City. The location, shape and size of parks and playgrounds, major streets, traffic highways, street widths, grades and an alignment were all important factors in determining districts and the regulations for them. The use, height and area regulations put in force by the Zoning Ordinance were based on exhaustive studies, were not chosen for aesthetic reasons but were based on good engineering practice. The whole was a technically accurate piece of work based on mathematics.

Publicity.

The people of Baltimore were well informed on the subject of zoning at the time the studies were going forward and while the ordinance and maps were being prepared, public hearings were held throughout the more than ninety (90) square miles of the City, at which hearings the people were given a tentative plan. Such hearings were well advertised by the posting of large placards in the neighborhoods announcing the time and place of hearings, all churches, building associations, parent-teacher associations and improvement associations in the area under discussion were notified and printed notices were given to all the school children to carry home to their parents. Numerous lectures, some of which were illustrated were given throughout the City. Committees were appointed by almost all improvement associations and by nearly all organizations of business men, to aid in the work by co-operation and advice.

A comprehensive Zoning Ordinance for Baltimore was passed by the Mayor and City Council May 19, 1923, and became effective immediately. That ordinance divided the City into use, height and area districts. Accompanying the ordinance and made part of it was a set of maps, namely: use district maps, height district maps and area district maps.

A case arose in court involving the constitutionality of the use districts and the use district regulations of this ordinance. On February 3, 1925, the Court of Appeals issued a decision in which it held all of the use provisions and the use district maps of Ordinance No. 922 invalid. Thereupon the Mayor and City Council passed what is called Ordinance No. 334, approved February 9, 1925, which ordinance gave the City through the Zoning Commissioner and the Board of Zoning Appeals authority to regulate uses of property through applications for permits. It was necessary to pass on each particular application as it affected the health, safety, morals and general welfare. This ordinance was contested in the courts and a decision of the Court of Appeals on December 10, 1925, declared the ordinance null and void. On December 14th of this year the Mayor and City Council passed Ordinance No. 522 which is similar to Ordinance No. 334 in the procedure prescribed and confers certain authority on the Zoning Commissioner and Board of

Zoning Appeals to deny permits for uses which would be detrimental to health, safety and morals. This ordinance is designed to meet the objections of the Court of Appeals of Maryland which were pointed out in both the prior decisions and it is to be hoped the courts will approve the validity of the regulations contained in this ordinance. All appeals before the Board of Zoning Appeals up to February 3, 1925, came under Ordinance No. 922. Between that time and December 10th the appeals relating to use before this Board came under Ordinance No. 334. From December 14th to the end of 1925 appeals as to use came under Ordinance No. 522.

In the decision of the Court of Appeals in the Goldman case which invalidated the use provisions of Ordinance No. 922, the court did not pass on the area and height regulations of that ordinance. Appeals as to height and area therefore, still come before the Board under Ordinance No. 922.

The Board of Zoning Appeals.

The Board of Zoning Appeals was created, as is provided for in Ordinance No. 922, consisting of the Chief Engineer of Baltimore, the Commissioner of Health, the President of the Board of Fire Commissioners and four other members appointed by the Mayor, one of whom is required to be a person who has had not less than ten years' practical experience as an architect, structural engineer or builder and another who shall have had not less than ten years practical experience in the real estate business and qualified as an expert on real estate.

Staff of The Board.

The Secretary of the Board of Zoning Appeals was appointed by the board in accordance with the provisions of Ordinance No. 922, the requirements of the position being not less than five years' experience in city planning or zoning, or both. The staff of the board for the first six months consisted of one Junior Civil Engineer and one senior stenographer. In January, 1924, one engineering aid was added and in July, 1924, one junior stenographer was added. In 1925 the position of Junior Civil Engineer was abolished and the position of Assistant Civil Engineering-Zoning was created, there being no change in the personnel of the staff.

Rules and Procedure Adopted by The Board.

A set of rules has been adopted by the board for its procedure in accordance with the provisions of Ordinance No. 922 and the advice of the City Solicitor. Since the passage of Ordinances No. 334 and No. 522 these rules have been revised and supplemented so as to cover appeals arising under those ordinances. A definite procedure is established for hearing all cases, full data on the case is required before it is set down for hearing and proper notice to the public is required before the case is heard. Forms for taking an appeal were prepared so that every detail entering into an appeal is furnished without requiring unnecessary paper work. These forms were so drawn as to co-ordinate the functions of the board with those of the Zoning Commissioner.

A complete record is kept of every case that comes before the board. The files are kept in such shape that information may be had by the public on all matters before the board and records may be located promptly. A modern and efficient filing system is used and all cases are thoroughly indexed. In order that proper information may be supplied by the office at all times a system of tickler sheets for every case is kept posted from the time of the beginning of the appeal until the final action of the board. By this means any member of the staff of the board can advise of the exact status of any case pending or in course of preparation. It has been the aim of the board to have its office function as efficiently and economically as that of any business office in the city. During 1923 it was necessary for the staff to give a great deal of time to educating the public and instructing the builders and dealers in real estate as to the method of procedure in handling of matters before the board and as to the application of the zoning regulations in general. During 1924 the public had become quite well acquainted with zoning but in the early part of 1925 when the Court of Appeals invalidated the use regulations of Ordinance No. 922 considerable confusion again arose, some seeking to take advantage of the court decision and to secure permits for commercial uses in residence districts and others seeking to be assured of the protection of their neighborhoods against invasion. Ordinance No. 334 becoming effective on February 9, 1925, promptly placed a check on the

rush of applicants for store permits. It then became necessary for the board to adjust its procedure to that ordinance and for the staff of the board to advise the public as to how they should secure the protection afforded by that ordinance and the builders and real estate dealers, as to how the use of property was regulated under Ordinance No. 334. Similar aid was given on the passage of Ordinance No. 522.

Maps.

The board arranged through a firm of map publishers and without cost to the City to have the zoning maps reproduced and placed on sale to the public.

Appeals to the Board.

Under Ordinance No. 922 any interested party who is dissatisfied with the decision of the Zoning Commissioner may take an appeal to the Board of Zoning Appeals. Notice of such appeal must be filed with the Board within five (5) days from the date of such decision. First, under Ordinance No. 334 and now under Ordinance No. 522, the Zoning Commissioner is required to post on a bulletin board in his office notice of his approval of every permit for the erection or alteration of buildings or the change of use of a building or premises except when such building or use is for residence purposes. The board has designed and supplied to the Zoning Commissioner a multiple form which he uses in connection with his form for disapproving applications under Ordinance No. 922 and Ordinance No. 522. This multiple form when signed and dated serves as a notice of appeal to the board. In cases where it is desired to file an appeal with the board from a decision of the Zoning Commissioner approving a permit, an ordinary letter filed with the board serves as a notice of appeal. Such appeals are designated as negative appeals because they seek to have a permit denied. Appeals to the board for the authorization of a permit which the Zoning Commissioner had denied are designated as positive appeals.

When a notice of a positive appeal is filed with the board the appellant is furnished with a blank form for appeal on which he gives the details of the proposed building or use and the reason for asking the board's approval. He is also furnished with a set of instructions explaining how to pro-

ceed with his appeal and how to prepare a plat showing the character and use of the properties in the neighborhood affected by the proposed building or use. When the appellant files the form for appeal and ten blue prints of a plat of the neighborhood the case is set down for hearing and the appellant is given the wording of an advertisement to be inserted once in each of two newspapers not less than ten (10) days prior to the date fixed for the hearing and also the wording for a sign to be posted on the property and to remain there for ten days prior to the date of the hearing.

In the case of a negative appeal to the board a notice of appeal in the form of a letter is filed with the board within five (5) days from the date of the decision of the Zoning Commissioner together with a copy of such decision. The appellant is then given forms for appeal and instructions for preparing plats just as is done in the case of positive appeals. As soon as a notice of negative appeal is received in the office, a date is set for the public hearing and a time is fixed for the filing of the required data by the appellant. The applicant is notified by registered mail, receipt requested. The appellant is notified of the time and place of the hearing and the Zoning Commissioner is likewise notified. In the case of negative appeals no posting or advertising is done, it being deemed sufficient to notify the party filing the appeal who may in turn notify any other interested parties who may care to appear at the hearing.

Inspection of The Premises Prior to A Public Hearing.

A data sheet on each case is prepared in the office of the board showing the facts of the case as submitted by the appellant and as shown by the application to the Building Inspector, describing the proposed buildings or uses and pointing out the provisions of both Ordinance No. 922 and Ordinance No. 522 which apply to the particular case. Prior to the public hearing each week a data sheet together with a plat for each case is handed to each member of the board. With this information in hand, the board members individually make an inspection of the premises in question a few days prior to the date of the public hearing. The Secretary of the board also makes an inspection of the premises and studies each case in order to report to the board the rela-

tionship of the proposed building or use to the general zone plan in cases arising under Ordinance No. 922; and on cases arising under Ordinance No. 522, to report the relationship of the proposed building or use, to security, health or morals and to the hazard from fire or disease.

Classes of Appeals.

For purposes of discussion, all appeals to the board may be divided into four classes:

- (1) Positive appeals arising under Ordinance No. 922 relating to height and area.
- (2) Negative appeals arising under Ordinance No. 922 relating to height and area.
- (3) Positive appeals arising under Ordinance No. 522 relating to use of property.
- (4) Negative appeals arising under Ordinance No. 522 relating to use of property.

Frequently, of course, a positive appeal might be based on both Ordinances Nos. 522 and 922, and the negative appeal might also be based on both ordinances. Some few individuals have had the mistaken idea that everyone who came to the board with an appeal was trying to violate or evade the law. The zoning law, Ordinance No. 922, lays down general regulations for front yards designed to cover usual conditions. When the topography or irregular shape of a particular lot or plot of ground necessitates special treatment, the applicant may take an appeal to the board and ask for a variation from the standard regulations. This is an unavoidable procedure and does not indicate that the applicant is asking for something contrary to the law or to the spirit of the law, nor does it indicate that the law is not properly drawn. It is not possible to draw a set of definite regulations which would properly regulate the location of all buildings on their lots, unless provision is made in such regulations for adjusting them to the many peculiar shapes and conditions that are met with in actual practice.

If, for instance, in a D Area district, in a certain section of the city, a builder is planning to erect a group of houses and the zoning regulations require for that location a front yard 25 feet deep, it might develop that the topography of the land was such that an excessive fill would be required to permit him to comply with this regulation. Or he might

find that a heavy rock cut would be necessary in order to allow him to place his house 25 feet back from the street line. Under these conditions he takes a positive appeal under Ordinance No. 922 governing area regulations, and the board will make a reasonable variation of the requirements. There is no evasion or circumvention of the letter or the spirit of the law in such a case.

Negative appeals under Ordinance No. 922 come to the board in cases where an interested party feels that the Zoning Commissioner has not required a compliance with the area regulations or has not taken into consideration certain conditions, or when he has been misinformed as to the actual physical conditions. For instance, the depth of front yards of certain buildings in a block may have been inaccurately submitted to the Zoning Commissioner and a permit may have been issued on this erroneous information. In such cases the interested or aggrieved parties file a negative appeal under Ordinance No. 922, and the board goes into the matter in detail and renders its decision.

Positive appeals under Ordinance No. 334 and now under Ordinance No. 522 arise when the Zoning Commissioner has disapproved an application for the use of a property because in his opinion it would be detrimental to the public security, health or morals. Any person aggrieved by a decision may take an appeal to the board. The board is required to hear promptly all such appeals after having given due notice of the hearings.

Negative appeals under Ordinance No. 334 and now under Ordinance No. 522 arise when the Zoning Commissioner approves a permit for the use of a property, which use some interested person feels will be detrimental to the public security, health or morals.

In all cases coming before the Board of Appeals, whether the application has been disapproved because of the proposed use of the premises under the use ordinance or whether it has been disapproved because of the height or area regulations of Ordinance No. 922, the board passes on the application under the provisions of both ordinances that may be in effect at that time. At the end of the year 1925 the height and area regulations of Ordinance No. 922 and the use provisions of Ordinance No. 522 are the laws in effect.

Public Hearings.

Public hearings are held every Tuesday at 2:00 P. M., and additional hearings are held at such times as the number of cases demands. From July 24th to the end of 1923, twenty-four public hearings were held on ninety-five appeals; in 1924, fifty-one public hearings were held on three hundred and three appeals; in 1925, fifty-one public hearings were held on two hundred and twenty appeals. Cases are scheduled promptly, they are heard on schedule time and decisions are rendered without delay. It is to be noted that before sitting on a case at a public hearing, each member of the board has been furnished with a data sheet giving the facts in the case, a blueprint showing the neighborhood affected, and a staff report pointing out the various elements that enter into the case and its relationship to the general zone plan. With this information in hand the members of the board make personal examinations of the premises before the time of the public hearing.

Procedure at Public Hearings.

The public hearings are called to order, and the cases to be heard are announced. The first case on the calendar is then called and the Secretary reads out the data sheet giving the facts of the application and a statement of the applicant in support of his appeal. In the case of a positive appeal the Chairman then asks if there is any opposition to the application and if so the protestants are asked to limit the number of their witnesses to about three. These are required to take the customary witness' oath and they then proceed to give their reasons for opposing the application and answer any questions that may be asked by the board or the representative of the applicant. When the opposition has given its testimony the applicant is given the floor and he likewise is limited to three witnesses and is subjected to questioning by the board and the opposition. When both sides have given their testimony the representative of the protestants is permitted to present his argument and is followed by the representative of the applicant. Either side may have representatives or attorneys appear for them.

In the case of negative appeals the procedure is the same except that when the case is first called the applicant for the permit is required to disclose fully exactly what he pro-

poses to do and to acquaint the board and the opposition with such details as they may call for.

Order is maintained, all testimony is made under oath and a stenographic record is kept. Sufficient time is permitted for full discussion. It is thus seen that the board goes thoroughly into every case before it reaches a decision. After all the cases scheduled for the day have been heard, the board takes a vote on every case, the decisions are recorded, the applicant, the appellant and the Zoning Commissioner being advised in writing as to the decision. Some cases arising under Ordinance No. 922 require a majority vote to approve them and others require the concurring vote of five out of the seven members. Cases arising under Ordinances No. 334 and No. 522 require the concurring vote of at least four members of the board to disapprove an application for a permit.

Attendance at Hearings.

At the public hearings as many as two hundred and fifty people have attended at one time and the average attendance per hearing has been about sixty. In addition to the personal attendance at the public hearings, numerous written petitions and protests have been filed, as many as five hundred letters and signatures having been received on a single case.

The first public hearings were held in the old First Branch Council Chamber. During 1924 the old Second Branch Council Chamber was used as a public hearing room by the board. This room has now been converted into offices and the board has been holding its public hearings in the Mayor's Reception Room. This room is not large enough to accommodate the number of people who attend the public hearings, and at times the Mayor has needed the reception room for other purposes when the board was using it. It is hoped that arrangements will be made in the near future for a suitable room for holding public hearings.

Benefits Derived from the Public Hearings.

The board consisting as it does of the Chief Engineer of the City, the Commissioner of Health, the President of the Board of Fire Commissioners, an expert in real estate, an experienced builder and two practical business men, guided by a definite zone plan for the entire city and with the full information brought out at the public hearing, after a per-

sonal inspection of the premises in question, is probably as efficient, economical, scientific and practical a means of regulating the future development of the city as can be devised.

The zone plan for the city consisted of the use, height and area maps together with the accompanying regulations of Ordinance No. 922 until the court invalidated the use map and the use regulations. Since that time the board has had to rely on the plan as outlined by the height and area maps and the accompanying height and area regulations of Ordinance No. 922 for considering the general trend of development of the City. Since the adoption of Ordinances No. 334 and No. 522 the board has had to consider cases coming to them on use as individual propositions without the benefit of a general use plan for the city and has had to decide each case from the standpoint of how the particular use of the particular property in question would affect the public security, health and morals. It has been difficult in some cases to determine whether or not a commercial use should be permitted in a locality without having a definite idea as to the future development of the community.

Amendments to the Zoning Ordinance.

During 1923 and 1924 there were no amendments to the written Zoning Ordinance. In 1925, two amendments were adopted, one amending Section 22, paragraph (h), removing the limit of three acres on the size of a tract of land for which the board could approve a development plan and the other amended Section 17, paragraph (b), so that the required width of a side yard for a semi-detached dwelling was reduced from fifteen feet to ten feet.

The zoning maps have been amended by few ordinances of the Mayor and City Council. There were no amending ordinances passed in 1923. All were passed in 1924 and 1925 and a large majority of them were more restrictive in nature, that is, they changed a district from one with less restrictions to one with greater restrictions. Since the people have seen fit to request the City Council to pass greater restrictions on their property and to change districts from less restricted ones to more restricted ones, and since the Council members representing the people in the community have seen fit to pass these amending ordinances, it is apparent that the people have felt the benefits of zoning regulations.

Amendments Referred by Council to Board for Report.

All ordinances proposing to amend the zoning maps were referred by the City Council to the Board of Zoning Appeals for their recommendations. The board held a public hearing on every ordinance, after full notice had been given to all property owners affected. The City Council has adopted the recommendations of the Board of Zoning Appeals in every case except one. Considering the vast territory in the City of Baltimore, the small amount of rezoning since the adoption of the original Zoning Ordinance indicates that the original zoning maps were prepared with a high degree of skill and so as to be of practical application.

It is appropriate to quote the following article from the February, 1925, issue of "Housing Betterment," the journal of the National Housing Association:

"When Zoning Ordinances are first enacted in a community, the first reaction against them is generally found in an effort by some property owner—who finds that he is no longer able to develop his property in the way he desires—to put through the local legislative body, generally the Board of Aldermen or Council, an ordinance, making exceptions in the case of his particular property. Sometimes this is quite baldly done and an attempt is made to definitely exempt the property described by name. Other times it is broached as a general amendment to the ordinance but so drawn as to clearly apply to a particular piece of property and to that property only.

That this method of "granting indulgences" is disappearing, is evidenced, by the action of the City Council of Baltimore some months ago—a refreshing indication of a more intelligent attitude on the part of our City Fathers, and a realization that a comprehensive Zoning Ordinance, with a Board of Zoning Appeals, if it is to function at all, must not be interfered with by constant tinkering by the City Council and gradual whittling away of the ordinance by process of amendment.

The case arose in connection with an application to change from commercial to residence use two properties located in a certain part of Baltimore, the application to do this having been denied by the Board of Zoning Appeals.

In discussing the proposed ordinance which would have overridden the decision of the Board of Appeals and changed

the whole district scheme of the city one councilman said: 'It is a blemish on our record every time we fail to uphold the Zoning Board. I am going to stick by that body and I think the whole Council should. Zoning will become a joke if we do otherwise.'

Consequently the Council saw the wisdom of these suggestions and referred the proposed ordinance back to the Board of Zoning Appeals, which at a later date disapproved it. What the Board of Zoning Appeals has to say in stating its position is quite instructive, affording, as it does, an argument that can be used to advantage in other cities where similar situations arise, for the sustaining of a Zoning Ordinance once it is adopted and districts have become established.

On this phase of the subject the Board of Zoning Appeals has the following to say:

'The regulation proposed to be changed has been in effect 18 months after the zoning of the district had been approved by the property owners. Certain property values undoubtedly have been established along the York Road and other sections of the city due to the zoning districts. Transactions undoubtedly have been made which depend entirely upon the zoning of particular neighborhoods. If the Zoning Ordinance is to maintain stable property values the commercial districts as they now exist should be altered very little.

The board is not in accord with a policy which would from time to time cause to be selected one or two pieces of property here and there to be taken out of the commercial districts and placed in the residential districts—in some cases such action being equivalent to favoring one property over others of the same kind and similarly situated.'

Scope of the Ordinances.

It is hardly conceivable that any ordinance could be enacted that would be as far-reaching in its scope as the Zoning Ordinance. By reason of extending throughout the entire area of the city and having direct influence upon every home and business enterprise within the city limits, it directly affects each resident of the entire city. The powers conferred upon the Board of Zoning Appeals are necessarily broad and, accordingly, demand at all times that its personnel shall be absolutely divorced from politi-

cal control, that its members shall command public confidence and that its actions shall be safeguarded for public welfare.

One of the purposes of a zoning ordinance is to provide for the orderly and comprehensive development of a city. Such a requirement is sufficiently difficult in new districts to be developed, but it becomes exceedingly difficult when it is necessary to apply the regulations to a city of Baltimore's size, with its many ramifications of industrial, commercial and residential areas.

As stated in the preamble of Ordinance No. 922:

"It is deemed necessary in order to protect and promote the public health, safety and comfort, convenience, prosperity and general welfare, to establish a general zone plan which will insure a fair and adequate division of light and air among buildings, protect the residence districts, prevent congestion, lessen the fire hazard, increase industrial and commercial efficiency, conserve property values and direct the building of the city in accord with a comprehensive plan for the use and development of all parts of the city."

It will be recognized, by the duties imposed upon the Board of Zoning Appeals in promoting these conditions, that it is necessary at all times to view the subject from a practical, common-sense viewpoint rather than from a theoretical or contracted viewpoint.

Prior to the passage of the Zoning Ordinance the lack of any definite plan for the future growth of the city is adequately evidenced in hundreds of communities in the city. There may be some difference of opinion as to the propriety of the location of certain uses in certain localities. There can be no doubt, however, as to the value of having a definite plan for the future building up of a city. To know in advance what will be the future development of a neighborhood is to bring everyone in a position to develop their property with a feeling of security. But, in addition to this, the future development of various public utilities may be planned. For instance, the Water Department in designing any portion of its water supply system now consults the zoning maps and bases its designs of water mains on what the zoning maps show to be the future development provided for in a community. The Telephone Com-

pany utilizes the zoning maps in planning their facilities for meeting future demands for service. The City Plan Committee is enabled to work out proper street layouts and to plan for public parks and playgrounds in accordance with a general plan for the development of the city. Likewise for the other public utilities, the Sewer Division and the Highways Department are enabled to plan their activities in accordance with a definite plan which will be followed in the future.

The chief difficulty in applying zoning is due to what might be called its main fault, and that is, that it was not adopted many years ago. In traveling over the city the many blighted sections are monuments to the lack of proper regulation. The many individual cases where one property owner has used his property to the detriment of his neighbors are perfectly evident. The Board of Zoning Appeals, by the slow process of preventing an injury here and ameliorating a proposed nuisance there is steadily bringing about a gradual improvement of the living conditions in Baltimore. Each individual case may seem of minor importance, but in the course of time a surprising effect will result. In the newer sections of the city now being developed under the Zoning Ordinance the benefits will be more readily observed and will be more quickly apparent than in the older sections of the city. After a few years the developments in the new sections of the city will show by comparison with similar sections in the older parts of the city what benefits have been derived from zoning.

Decisions of the Board.

Reference should be made to Exhibits Nos. 1, 2 and 3, which show the number of cases heard by the Board of Zoning Appeals, the number of applications for permits made to the Building Inspector and the number of cases appealed to the court for the years 1923, 1924 and 1925, respectively. We find that the total number of applications made to the Inspector of Buildings and Zoning Commissioner were as follows: For 1923 (for the six months period during which Ordinance No. 922 was in effect) 7,854; for 1924, 19,747. The number of permits issued in 1925 was 20,140. The number of appeals heard by the Board of Zoning Appeals during this period is as follows: For 1923 (six months period), 95; for 1924, 303; for 1925, 220.

EXHIBIT No. 1.

1923

Applications.		Appealed.										Court Decisions.						
Inspector of Buildings Department.		Board of Zoning Appeals.										Cases Appealed						
		Total Applications		Applications Disapproved		Percent Disapproved		A.	B.	A.C. Dis.	Pending	Total	Percent A.	Percent D.	Mandamus	Baltimore Court	Court of Appeals	U. S. Supreme Court
Month.	Total Applications	Total Applications	Applications Disapproved	Percent Disapproved	A.	B.	A.C. Dis.	Pending	Total	Percent A.	Percent D.	A.R.	A.	R.	D.*	A.	R.	D.*
July	1356	36	2.65	2	3	3	1	6	33.3	50	1	1	1	1	1	1	1	1
August	1384	35	2.52	11	5	3	2	21	52.4	23.8	2	2	2	2	2	2	2	2
Sept.	1341	25	1.86	10	6	3	3	19	52.6	31.6	1	1	1	1	1	1	1	1
Oct.	1637	21	1.28	7	7	3	3	17	41.1	41.1	2	2	2	2	2	2	2	2
Nov.	1182	24	2.03	8	3	2	2	13	61.5	23	2	2	2	2	2	2	2	2
Dec.	954	28	2.93	7	5	5	2	19	36.8	26.3	1	1	1	1	1	1	1	1
Total six month period.	7854	169	2.15	45	29	16	5	95	47.36	30.52	9	1	1	2	2	2	2	2

A.—Approved. D.—Disapproved. A.C.—Approved Conditionally. D* Dis.—Dismissed. R.—Reversed.

EXHIBIT No. 2.
1924

Applications.			Appealed.						Court Decisions.							
Month.	Inspector of Buildings Department.		Board of Zoning Appeals.						Mandamus Cases Appealed	Baltimore City Court	Court of Appeals	U. S. Supreme Court				
	Total Applications	Total Disapproved	A.	D.	A.C.	Dis.	Total.	% A.					% D.	A.	R.	D.*	A.	R.	D.*
Jan.	997	51	8	6	3	.....	17	47	35.3	1	.....	.....	.....	.....	.....	.....
Feb.	1,098	22	13	4	3	.....	20	65	20	.....	.....	.....	.....	.....	.....	.....
March ...	1,570	27	6	7	1	1	15	40	46.6	2	.....	.....	.....	.....	.....	.....
April ...	1,702	25	20	8	8	4	40	50	20	2	.....	.....	.....	.....	.....	.....
May	2,221	44	16	13	5	.....	34	47	38.2	3	.....	.....	.....	.....	.....	.....
June	1,793	32	14	8	4	1	27	51.8	29.6	2	.....	.....	.....	.....	.....	.....
July	1,752	23	14	15	6	1	36	38.8	41.7	2	.....	.....	.....	.....	.....	.....
Aug.	1,718	24	7	4	3	1	15	47.3	27.3	.....	.....	.....	.....	.....	.....	.....
Sept. ...	1,704	35	12	14	5	3	34	35.3	41.1	.....	.....	.....	.....	.....	.....	.....
Oct.	2,273	26	4	18	2	.....	24	16.6	75	.....	.....	.....	.....	.....	.....	.....
Nov.	1,543	25	6	3	4	1	14	42.9	21.4	.....	.....	.....	.....	.....	.....	.....
Dec.	1,176	20	11	3	8	5	27	40.7	11.1	.....	.....	.....	.....	.....	.....	.....
Total 12-month period..	19,747	358	131	103	52	17	303	43.23	33.99	.....	.....	.....	.....	.....	.....	.....
										19	3	.....	.....	.....	.....	.....

A.—Approved. D.—Disapproved. A.C.—Approved Conditionally. D* Dis.—Dismissed. R.—Reversed.

EXHIBIT No. 3.
1925

Applications.		Appealed.										Court Decisions.						
Bureau of Buildings.		Board of Zoning Appeals.										Court of Appeals						
												U. S. Supreme Court						
Month.	Total.	A.	D.	A.C.	Dis.	Total.	% A.	% D.	A.R.	Mandamus	Cases Appealed	Baltimore City Court	A.	R.	D.*	A.	R.	D.*
Jan.	944	8	6	2	1	17	47	35	1*									
Feb.	1,289	15	5	2		22	68.2	22.7		1								
Mar.	1,996	11	5			16	68.7	31.2										
Apr.	2,146	4	4	3		11	36.3	36.3		2								
May.	2,099	8	9	3	3	23	34.8	39.1		1		1						
June.	1,990	8	19	4		31	25.8	61.3		3		1						
July.	1,672	3	7	2	2	12	25	58.3		1		1						
Aug.	1,732	9	17	4		30	30	56.6		3								
Sept.	1,643	5	7	2	1	15	33.3	46.6										
Oct.	1,815		4	3	1	8		50										
Nov.	1,490																	
Dec.	1,325	4	14	4	1	23	17.4	60.8						1				
Total																		
12																		
Month	20,141	77	104	30	9	220	35.0	47.3	1*	11		1			3			
Period																		

A.—Approved. D.—Disapproved. A.C.—Approved Conditionally. D* Dis.—Dismissed. R.—Reversed.

Of the appeals taken to the board in 1923, 30% were disapproved; in 1924, 34% were disapproved and in 1925, 47% were disapproved. It is interesting to note that of all the applications filed with the Building Inspector only 0.36% were finally disapproved by the Board of Zoning Appeals for 1923; 0.51% were disapproved in 1924. These figures are ample answer to those who may have complained that zoning would cripple building construction and hinder the growth of the city.

Zoning under the Police Power.

Numerous studies made by the Zoning Commission during 1920, 1921 and 1922 convinced the members that zoning regulations could be passed only under the Police Power. The Police Power is inherent in the State. It is, in particular cases, donated to cities. Under the charter the City of Baltimore may exercise all of the Police Power which the State might exercise within the corporate limits. The Police Power has never been exactly defined nor has it been limited. It was one of those powers enjoyed by the states previous to the adoption of the Constitution of the United States and which power was not specifically delegated to the Federal Government. The Federal Courts have consistently refrained from defining Police Power and from prescribing limits. It is something the application of which changes from time to time to meet new conditions that arise with changing living conditions and inventions. To quote from Freund on Police Power, he says: "It aims directly to secure and promote public welfare and it does so by restraint and compulsion * * * *. It is the expression of social, economic and political conditions. As long as these conditions vary the Police Power must continue to be elastic, that is, capable of development * * * * public policy assumes the superiority of social over individual interests."

The Police Power is the power to pass regulations to promote health, safety and morals. For these reasons health departments are created which have power to adopt rules which may be necessary for the preservation and maintenance of public health. Fire regulations are passed to protect the people from this kind of hazard. Traffic regulations are adopted to promote the safety of the people and to protect them. Building codes are enforced in order to

secure safe construction of buildings. Housing codes operate to protect the lives and health of the people in buildings individually. The city taxing department, in Baltimore called the Appeal Tax Court, fixes assessments, hears appeals, makes adjustments, all similar and under the same Police Power as the Board of Zoning Appeals. The above mentioned departments are all vested with discretionary power so necessary to properly function.

Zoning Regulations.

Zoning regulations and the division of municipalities into districts for use of land, use, height and area of buildings and to control density of population are to protect the health of the people and provide open spaces, permitting access of light and air to the streets and to the buildings, by preventing congestion of population and slum districts, by providing space between buildings and permitting greater facility for fire fighting, preventing spread of conflagration by provision of open spaces, by eliminating inadequate yards and courts, which are usually damp and dark and the kind of places where disease germs are said to thrive. Beside area districts there are created by zoning regulations districts in which the heights of buildings are regulated, the heights differing in different parts of the city and similar in similar parts of the city. The limitation on the heights of buildings is to lessen the fire hazard, to provide the maximum height where there are maximum facilities for coping with fires, to lessen congestion of population in the buildings, on the streets and on the lines of transportation, to prevent long dark shadows which cut off sunlight from the buildings and streets and causing much artificial illumination in places where people work, which would otherwise be unfit for occupancy. Districts are also provided and allocated for residence, business and industry so that dust, fumes, smoke, gas, noise, vibration and unnecessary fire hazards incident to business and manufacturing are not injected into the residence neighborhoods. The various relations of use, height and area zoning will be discussed in detail on some of the following pages of this report.

The safety of the people is involved in all matters relating to fire hazard and fire fighting facilities, sewerage collec-

tion and disposal, the collection of garbage and its disposal, the provision of adequate supplies of water for domestic consumption and for fire extinguishment, a properly distributed police protection, the regulation of traffic which is always increased as business increases in the various parts of a city and normally without regulation for traffic and business necessarily follow the more direct thoroughfare routes. Safety of pedestrians and children depends on the concentration of much of the vehicular traffic on the main thoroughfares which are normally appropriate for business, and on the discouragement of heavy hauling on local residential streets. Obviously all of the obligations of the municipality to the people can be designed and coordinated only by having a comprehensive scientifically determined plan which has the force of law.

Comprehensive zoning requires a plan for residence, business and industry, for the various types of dwelling houses, for the regulation of population densities, for the regulation of open spaces between buildings, for the regulation of the heights of buildings permitting tall buildings where the fire fighting facilities are best. The plan enables the city to make ample provision for schools in residence districts, for the design of public and private utilities, size and location of which absolutely depend on population density and the uses of property and the height and bulk of buildings, public recreational facilities, parks, parkways, playgrounds, public baths, markets, comfort stations, public libraries. Ancillary considerations are conservation, stabilization and protection of property values for the sake of individual owners as well as for maintenance of the taxable basis, comfortable living conditions affording rest and home enjoyment, better housed families where poverty, low vitality, immorality and crime are reduced to a minimum, satisfied home owners and the promotion of home ownership which makes better American citizens. Notwithstanding that zoning, under the name of "Districting," has long been practiced in Europe it seems that such regulation and such a plan are typically American, and ought to make our cities better places in which to live and to make of people better Americans. All of the items mentioned in the last few paragraphs are some of those things which go to make up a comprehensive city plan.

EXHIBIT No. 4.

A PARTIAL LIST OF STUDIES MADE BY THE ZONING COMMISSION TO DETERMINE THE RELATION OF ZONING TO THE POLICE POWER AND AS A GUIDE FOR THE DETERMINATION OF THE BOUNDARIES OF ZONING DISTRICTS.

- Areas unavailable for Resident Use.
- Athletic Fields and Playgrounds.
- Deaths Due to Tuberculosis in 10 years, 1891-1900.
- Distribution of Place of Residence of Employees of Maryland Casualty and Maryland Assurance Corporation in relation to Place of Employment.
- Existing and Proposed Drainage Systems and Areas.
- Existing Parks and Proposed Parks as suggested by the City Plan Commission.
- Existing and Proposed Public Schools.
- Existing and Proposed Major Street Plan.
- Existing and Proposed Sanitary Collecting Sewers.
- Existing and Proposed Sanitary Systems.
- Existing and Proposed Police Stations.
- Existing Public Schools, White and Colored.
- Existing Parks in relation to Population Distribution.
- Existing and Proposed Parks and Cemeteries in relation to Population Distribution.
- Existing Parks and Residences and Proposed Parks as recommended by City Plan Commission.
- Growth of Baltimore, 1752-1914.
- Existing Industrial Areas, 1921.
- Electrical Commission Plan of Conduit System, Old City and Annex.
- Grade Crossings.
- Hospitals, Sanitariums, Homes, Asylums and Institutions.
- Industrial Sites with Railroad Sidings.
- Infant Mortality.
- Location of Births during 1921.
- Location of Existing and Proposed Free Pratt Libraries.
- Location of Employees of L. Grief & Company, Milton and Ashland Aves., in relation to Place of Employment.
- Location of Employees of L. Grief & Company, Eutaw and Redwood Sts.

- Location of Employees of American Wholesale Corporation.
- Location of Employees of Wise Bros.
- Location of Employees of General Electric Company.
- Location of Employees of Henry Sonneborn & Company.
- Location of Fire Apparatus.
- Location of Fires during 1920.
- Location of Fire Houses.
- Location of Industrial Areas.
- Location of Leading Hotels.
- Location of Markets.
- Location of Monuments.
- Location of Post Offices.
- Location of Public Baths.
- Location of Public Baths according to Population Distribution.
- Location of Playgrounds, Public and Private.
- Location of Playgrounds and their relation to Population Distribution.
- Location of Recreation Centers.
- Location of Sanitary Sewers.
- Location of Storm Water Sewers.
- Location of Water Mains and Size.
- Location of Wooded Areas.
- Main Radial Streets of the Tentative Arterial Street Plan.
- Natural and Uncontrolled Segregation Tendency of Certain Races.
- Plan of Conduit System, Old City and Annex, Electrical Commission.
- Public Streets.
- Population Distribution, its relation to Present Industrial Areas.
- Population Distribution.
- Police Beats Used in Housing Survey.
- Parks and Public Squares.
- Parks, Cemeteries and Public Squares.
- Present Park System.
- Plan for Streets, Parks and Water Front Development.
- C. P. Comm.
- Relation of Residence Areas to all Property Devoted to Business Use.
- Steam and Electric Railroads within Baltimore City.

Street Car System.

Streets 66 feet wide or over.

Streets Paved with Improved Paving to December 31, 1919.

Tentative Arterial Street Plan, in relation to Existing Park System.

Tentative Arterial Street Plan, City Plan Commission.

Tentative Arterial Street Plan in relation to Proposed and Existing Park System.

Tentative Arterial Street Plan in relation to Population Distribution.

Tentative Use Map with Suggested Changes.

Tentative Use Map as Submitted for Public Hearing.

United Railways and Electric Company Fare Zone Map.

United Railways and Electric Company Complete System.

Land Value Map.

Height Map.

Non-taxable Property.

Widths of Existing Streets.

Definition.

Zoning as applied to cities is the creation of different districts, for different purposes and for different kinds of buildings and the regulations are the same for similar districts and different for dissimilar districts.

Fundamental Data and Studies Necessary for The Preparation of A Comprehensive Zoning Ordinance and Plan.

In order to find out what regulation would be suitable in various districts and, indeed, to find out what districts would be proper it was necessary to make a survey of all uses of property existing throughout the city. There are in the office of the Board of Zoning Appeals all of the studies made by the original Zoning Commission. A set of maps on the two hundred foot scale shows all of the buildings throughout the city on square mile sheets and the uses of those buildings at the time of the survey. The different uses are indicated by a color scheme which is easily legible even to anyone unfamiliar with the use of the maps. Other sets of maps show the heights of all buildings, the percentage of the area of the lot covered by buildings and the

relative land values per front foot throughout the city. Exhibit No. 4 shows a partial list of the studies made by the Zoning Commission to determine the relation of Zoning to Police Power and as a guide for the determination of the boundaries of zoning districts. The city was inspected throughout over and over again to determine what were good living conditions, the appropriate uses in various sections, the sizes of open spaces essential to health and safety.

The Relation of Zoning to Health.

LIGHT

Since Area and Height regulations are designed, among other things to admit light to streets and to buildings, it is appropriate here to quote from a paper entitled "Zoning and Health," written by the late Dr. George C. Whipple, the leading authority on sanitation in the United States, and Professor of Sanitary Engineering at Harvard University, and which paper was prepared for the Detroit meeting of the American Society of Civil Engineers, October 24th, 1924. The following sentences are quoted at random from Dr. Whipple's paper: "The rays of the sun bring light and heat to the earth and both are necessary to man's existence. Sunlight is of positive biological benefit; its action is both physiological and psychological. It is a natural stimulant to the skin and to the nervous system. It aids naturally in providing resistance to the body against diseases like tuberculosis. It adds an important part in the prevention and cure of rickets in children. It helps to cure tuberculosis of the bones. It provides illumination, the absence of which hampers activities of the mind and body and induces eye strain with its attendant dangers and discomforts. Sunlit rooms are not only cheerful but healthful, and dark rooms are gloomy and unhealthful. Sunlight is a powerful disinfectant, rapidly destroying bacteria exposed to it. It tends to dry pools of water which otherwise might become breeding spots for mosquitoes. Shade of trees differs from the shade of buildings. During the summer trees produce desirable shade, yet in winter they do not obstruct the sunlight. Daylight, which means indirect lighting from the sun, does all these things, but to a less

degree than direct sunlight. Daylight has an important economic value. Artificial illumination involves expense. Adequate provision for allowing sunlight to enter an inhabited building is essential to human growth, vitality and comfort.

Whoever, by building overmuch on his own land, prevents his neighbor from receiving a reasonable amount of light on his land and is doing him an injury that properly comes within the scope of the police power."

Access of light to streets and buildings is promoted by open spaces on the front, rear or sides of buildings. Such open spaces can be obtained on the sides only by regulations requiring side yards. It can be assured on the rear of lots only by requiring rear yards, or land sub-division which provides alleys between rear lot lines. On the front it is provided by the streets or by front yards. Without regulations for open spaces it would be possible for every block in the city to be built up solidly. If such a condition could arise one could imagine block after block of solid masonry. Very little light could penetrate beyond the front windows of the buildings or in dark courts where little sunlight filters. Dark streets, buildings, yards or courts, we are told, are the breeding places of disease germs.

AIR

Access of air, and emphatically "pure air," is as much a necessity for human existence as light. The necessity for it need not be argued. Temperature, humidity and circulation are all important. The following sharp and pertinent sentences are quoted from Dr. Whipple: "Dust in the air tends to irritate and clog the breathing apparatus. Sharp dust particles wound the delicate membranes, so that bacterial infection is likely to follow. Dust may injure the eyes and clog the pores of the skin. Irritating fumes from chemical processes may cause pysiological injury (here it may be noted that many manufacturing processes involve more or less chemical reactions). Any air which by reason of dust or bacteria, irritating fumes, or offensive odors tends instinctively to induce shallow breathing, must be regarded as injurious to health. Exposure to vitiated air tends to break down the individual's power to resist disease, especially respiratory effects, such as colds, pneumonia

and tuberculosis. The air which enters a building both in quality and quantity is influenced by the neighboring buildings and by the streets. Dust in the air is greatest near the streets. Dust is closely associated with the cleanliness of the streets and method of cleaning. Automobile traffic produces less dust than horse traffic, but distributes it to a greater extent. Street cars raise dust. Less dust is found over grass land than pavements. Less dust is found in residential districts than in business or industrial districts. Smoke is an important source of dust. Where heavy trucks are used and traffic is heavy poisonous fumes of carbonic oxide are especially bad. In the interest of air purity, Zoning is justified. Residential districts, where people sleep and recreate and where children grow up, need protection against the atmosphere or dirt of the business and industrial districts."

The quotations given here from Dr. Whipple might all be verified by many sanitary engineers and by a great host of physicians.

NOISE.

Noises hinder sleep. Physicians say that people suffering from nervous diseases are seriously injured by noise and vibration. The comfort and tranquility of life is interfered with by noise. Quiet in residence districts near hospitals and schools is essential. Most noises are inseparable from traffic, business and manufacturing processes and separation of uses of property into districts is the best way to protect from noise the parts of the city where people live and sleep.

Noises of the city can be reduced by a limitation on the heights of buildings, because sound waves are reflected by building walls. Vegetation tends to dampen or absorb, or at least obstruct the propagation of sound waves. Vegetation can only be encouraged by open spaces where the growth will survive by access of light and air. The same open spaces remove the buildings so much from the roadways.

CONGESTION AND SLUMS.

Zoning aims to regulate the density of population in the several parts of the city by using some ascertainable and practical unit for measuring this population. It is evident

that to limit the population by the number of people per acre would not work practically because if a family, say of two people were to increase to a family of three or more people, the members of the family would be guilty of a violation of the regulations unless they moved into a district which for a while might place them within the law, and again they may become violators. The only practical unit is the family. Therefore, that is the unit selected to regulate population density. To measure the number of families which may be living in a particular house, the unit used is the number of separate housekeeping apartments. Normally one can count the number of kitchens in a house and tell how many families live there with very slight chance of contradiction. If a second kitchen is found in a house where food is prepared for hired servants, it is obvious that one family only lives in the house with separate quarters for the servants. There may be some rare border line cases which might admit of slight difference of opinion.

Overcrowding of buildings and, in the final analysis, the land, results ultimately in slums. The prevention of slum districts hereafter is therefore one of the many kinds of protection given cities and people by Zoning. No argument here is necessary to show the relation of health to regulations appropriate for tenements. The experience of New York City, Philadelphia and Boston may well be studied to advantage. There is no question in those cities about the appropriateness and constitutionality of regulations relating to tenements which have for their aim the promotion and protection of health, safety and morals.

New slums in a city will be prevented by Zoning. An exhaustive study by the United States Public Health Service shows in Bulletin No. 73 that "The Distribution of Tuberculosis Bears a Distinct Relation to that of Tenements, being Twice as Great Among Tenement Dwellers as Among those Living in Separate Houses." Reference here should be made to a report entitled "Statement and Evidence Submitted on Pending Zoning Ordinance to City Council of Cincinnati on the 24th day of January, 1924." One cannot read this report without concluding that Zoning has a relation to Police Power which is clearly shown by the evidence in the report. The report was intended to show that relation to the City Council of Cincinnati in

order that the Council would have conclusive evidence that Zoning bore a distinct relation to all of the phases of city development, life and activities which are normally subject to Police Power regulation without question.

A paper entitled "The Health Value of City Zoning" by Charles B. Ball of the Department of Health, Chicago, is an excellent writing which is the result of careful and intelligent research work by the author during many years of experience. From Dr. Ball's paper it is appropriate to quote language relating to the influence of use of land and buildings upon health: "Minor nuisances, such as those caused by the carrying on of light industries and some kinds of business in close proximity to dwellings, are common. They may consist of untimely noises such as handling milk cans in the early morning hours (so also early deliveries of bread at neighborhood grocery stores, etc.); in hammering and pounding such as takes place in auto repair shops; in odors such as constant gasoline fumes from the testing of motors; in dust from the cleaning of carpets or the unloading of coal in the open; in the presence of flies attracted to stores and markets and in many other neighborhood disturbances and annoyances."

Much of the evidence before the Board of Zoning Appeals in cases which have been heard to date contains reference to proposed uses drawing flies, mosquitoes, rats, mice, stray cats, dogs and vermin, all such creatures affecting health of the people, because almost everyone of the kinds mentioned above are said to be carriers of diseases.

The Relation of Zoning to Safety.

SAFETY FROM FIRE.

OPEN SPACES AND FIRE HAZARDS.

A legitimate end to be sought under the Police Power is safety for the people. Protection from fire stands out preeminently. This is promoted by open spaces between buildings produced by yard regulations under Zoning. Means of access to fires must be had. If buildings were erected (and they could be without zoning) to cover the entire area of the lot, access could be obtained only through the fronts of the buildings or the rear. If the rear of the building abutted the rear of another building which faced on

another street, access could be obtained only through the front. If a fire broke out in the front part of the building there would be no means of escape for the occupants. In the downtown business section of a city fire houses are closer together, there is more fire fighting apparatus, better facilities for fighting fires, a more adequate water supply to fight a conflagration, comparatively little sleeping population and therefore not the necessity for as much open space as ought to be provided in the residence districts.

EXHIBIT No. 5.



Courtesy of National Board of Fire Underwriters.

Exhibit No. 5 is an excellent example of the way frame buildings ought not to be built. This exhibit shows a condition in the Borough of Queens, greater New York, and is published here through the courtesy of the National Board of Fire Underwriters. These buildings are built with so little space between them as to amount to almost a solid block of frame construction. The secretary of the Board of Zoning Appeals had opportunity, during the year, to inspect these buildings and is of the opinion that a fire in any one

of them with a strong wind blowing would probably sweep out the whole development. The only open spaces that might act as fire stops are the streets, together with the front yards and the rear yards. Adequate side yards are necessary to act as additional fire stops where the material of construction for dwellings is wood. Where open spaces are so necessary for fire protection and since it is not practical to require all building construction of brick or other material which does not burn, it is not expedient to remove the side yard regulations from a house built of masonry when it is adjacent to, or in the midst of, buildings built of wood, or even in a district where wood construction is permissible. The neighboring frame house on the lot adjacent can, in the case of fire, cause loss of life and serious injury to the brick or masonry building, the flames being propagated by wooden window frames, wooden steps or porches or through the windows themselves. Furthermore, one or two masonry buildings in the midst of frame buildings cannot possibly survive a conflagration with meteorological conditions favorable.

Fire Hazard in High Buildings.

So much can be said and has been written on the subject of fire hazard in tall buildings and in so-called fire-proof buildings, that this subject will not be dealt with at length in this report. It is timely, however, to refer to the 1925 Fire Prevention Year Book on page 63 to an article entitled "When the Word Fire-Proof Proves a Misnomer." This article will describe some of the actual occurrences of fires in tall buildings. Through the courtesy of the Firemen's Fund Insurance Company of San Francisco it is possible to reproduce an exhibit here, No. 6, to show one of these buildings actually on fire. Some examples nearer home are available from the fire of 1904 in Baltimore. The facts are that the so-called fire-proof buildings are not absolutely fire-proof. Fires may start inside of them and may be propagated from one office to another. There is always a certain amount of inflammable material in offices. Fires may start on the outside of such buildings in neighboring buildings and spread to the so-called fire-proof buildings. Even the fact that tall buildings are usually built of so-

called fire-proof construction and called "fire-proof" would seem to put more lives in jeopardy. It is so easy for one

EXHIBIT No. 6.



Courtesy of Firemen's Fund Insurance Co.

to sit high up in a tall office building and think to himself "I am in a fire-proof building" and to neglect all the necessary precautions to get out in case of the slightest fire on floors either above or below. Usually such buildings house so many tenants and people who are there transacting business with the tenants that in case of a conflagration or great disaster, if they were all to make a rush for the elevators or the stairways, panic would ensue and serious loss of life result. It is difficult for the Fire Department to cope successfully with a fire more than about 100 feet above the ground. Above this height, the buildings ought to be supplied with standpipes and automatic sprinklers, and they

are dependent almost entirely on this method for the extinguishment of fires. No better authority on fires in tall buildings could be found than the chief of the New York Fire Department. His experience verifies everything said above and his own statements may be found in the "Report of the Heights of Buildings Commission of New York," 1913.

Here it is appropriate to quote from the decision of the Court of Appeals of Maryland in *Cochran vs. Preston*, 108 Md., page 222. This court has very decided views on fire hazards as follows:

"Extracts from an account of the fire will demonstrate some of the dangers to be apprehended from this devouring element. The account says: "The fire spread to the north and east, rapidly devouring block after block of buildings. Landmark after landmark went down. Nothing but burnt clay—bricks and cement—could stand against a conflagration which developed 2,500 degrees of heat, and was carrying itself along by its own volume, against which no water supply, no human effort could be effective. The lofty skyscrapers on Charles, St. Paul, Calvert and Baltimore Streets, burned like great torches up to the sky. Granite and marble cracked and spalled off. The marble work of the new Custom House, then in course of construction, was badly damaged wherever exposed to the heat, as was also the St. Paul Street front of the new Court House. Shortly after midnight the American newspaper office was enveloped in flames which quickly spread across to the Sun Iron Building involving all in common ruin. Devastation was carried down Calvert Street, down South Street and Holiday Street and Gay Street, wiping out hotels, newspaper offices, bank buildings, warehouses and nearly everything in the way clear to the water front of the inner harbor. Among the buildings destroyed were many so-called fire-proof structures. After the fire these lofty buildings stood amidst the ruins of lesser buildings, like gaunt skeletons, burned out interiorly but still structurally fire-proof, with from 40 to 60 per cent salvage credited to their construction."

Great impetus is given to such a fire by very tall buildings. They serve as so many large funnels furnishing draft for the flames, thereby intensifying the heat, and outreaching the efforts of the firemen."

Uses of Buildings and Fire.

Certain kinds of manufacturing produce or involve the use of highly inflammable substances. Some are explosive. These kinds of industries ought to be in a district set apart for industry. They ought not to be in the central business district of a city nor should they be scattered throughout the residence districts. Retail and wholesale business establishments contain, oftentimes, quantities of materials which are highly inflammable. Gasoline filling stations and public garages are in this class of retail business. Around retail stores there is an accumulation, almost invariably, of a certain amount of empty boxes, waste paper and cartons where fires are liable to start and be propagated easily. Much evidence has been produced during the argument of cases before the Board of Zoning Appeals to show that matches are part of the stock of many retail stores and that fires have started by rats gnawing this kind of stock. The evidence also contains numerous references to spontaneous combustion.

Special and occasional uses of buildings sometimes produce distinct and substantial fire hazards. Exhibit No. 7 shows an automobile show in Kansas City after a fire of February 13th and 14th, 1925, reduced the building and its contents to a mass of twisted metal. A total loss! A use of this kind is not even as great a fire hazard as the ordinary public garage use because, normally, where in large halls automobile exhibits are held, there is no gasoline in the tanks of the cars nor are the cars run under their own power in the building. This picture is produced through the courtesy of the American Insurance Company of Newark, N. J.

Certain industrial uses in the midst of or adjacent to dwellings are responsible for great hazard to life and property. Exhibit No. 8, used here through the courtesy of the Foamite-Childs Corporation of Utica, New York, illustrates factories ablaze and which fire spread to the neighboring dwellings driving out the occupants. These dwellings were wiped out during this fire.

A serious hazard to life and property is a fire in a theatre or moving picture parlor. They are occurring continually especially in the moving picture business where films of

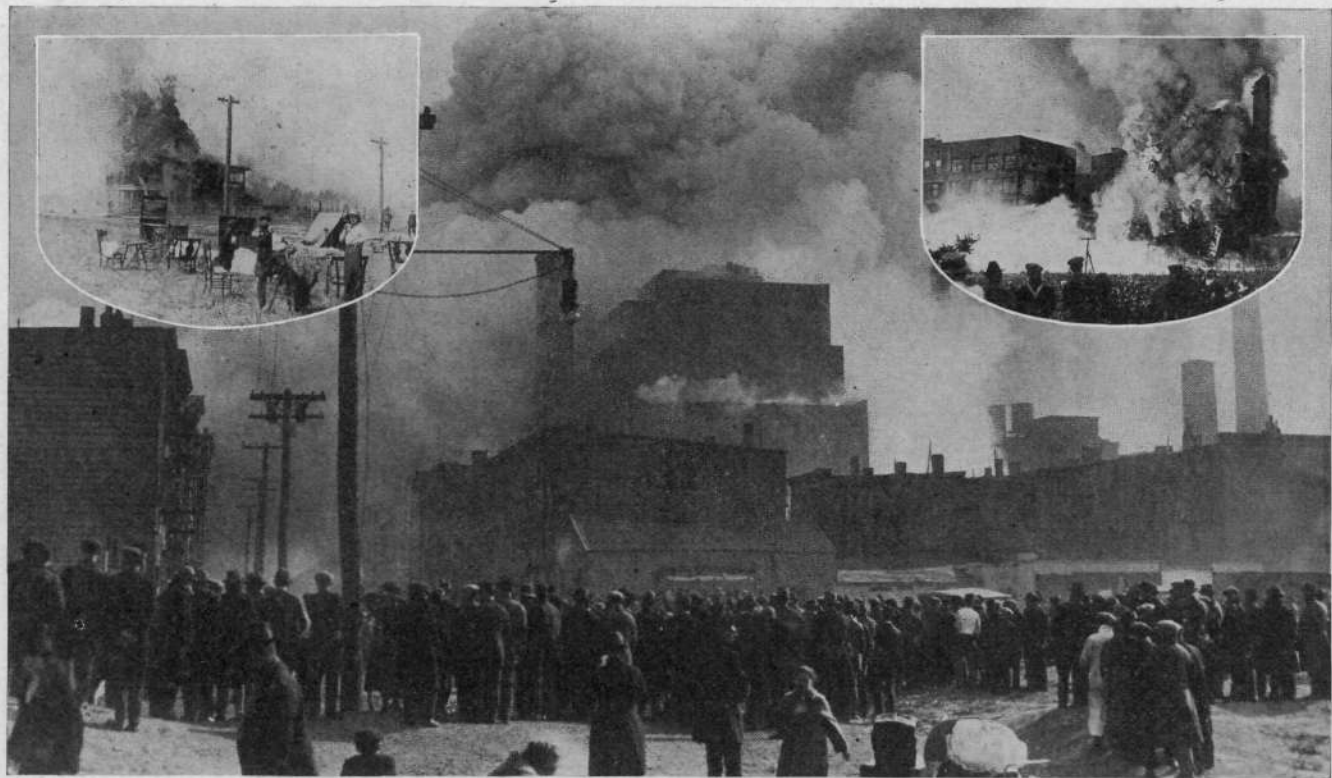
highly inflammable material are used. Exhibit No. 9 from the Fire Prevention Year Book of 1925 (p. 53) shows one of the old theatres in Baltimore just after a fire which wrecked the interior. It so happened that this fire occurred just after the building had been vacated by a large audience.

Fires During 1921.

During the year 1921 most of the Existing Use map was compiled by the Zoning Commission showing what all land and buildings throughout the city were used for. Exhibit No. 10 indicates the uses compiled from this map. During the same year there were 3193 fires in the city shown on Exhibits Nos. 11, 12 and 13. Exhibit No. 10 contains also a summary of the fires in different kinds of buildings and shows the percentage of fires occurring in those buildings. It is noticeable that in buildings devoted to business and manufacturing only there were fires in 6.90% of those buildings. In buildings used for residence only there were fires in 1.02% of those buildings. It seems that there should be no need for argument that buildings used entirely for business should be separated from buildings used entirely for residence on account of the fire hazard which is almost seven times as great in buildings used entirely for business as in buildings used entirely for residence. Further, the figures indicate that there is no question about the necessity for separating business from buildings used partly for residence because the number of fires is over twice as great for buildings used for combination of residence and business as for buildings used for residence only. The figures relating to the number of fires were obtained from the records of the Baltimore Fire Department.



Courtesy of American Insurance Co., Newark, N. J.



Courtesy of Foamite-Childs Corporation, Utica, N. Y.

EXHIBIT No. 9.



Courtesy of Fire Prevention Year Book, 1925.

EXHIBIT No. 10.

Uses of Buildings as shown on the Existing Use Maps made by
Zoning Commission in 1921:

Buildings used for Residence only.....	124,414
Buildings used for both Residence and Business..	11,118
Buildings used for Business and Manufacturing only	7,225

Fires Occurring During 1921 from Records of the Fire
Department.

In Buildings used for Residence only.....	1,272
In Buildings used for Both Residence and Business	278
In Buildings used for Business and Manufacturing only	500

Of the Buildings used for *Residence only*, Fires
occurred in1.02 per cent.
Of the Buildings used for both *Residence and
Business*, Fires occurred in.....2.50 per cent.
Of the Buildings used for *Business and Manu-
facturing*, Fires occurred in.....6.90 per cent.

An examination of Exhibit No. 13 shows that of the buildings devoted to business use only, there were fires in seven grocery stores. Exhibit No. 11 shows that of the buildings used for a combination of residence and grocery store there were fires in fifty-eight of such buildings. The fact is that most of these grocery stores are the neighborhood stores in the basement or the first floor of dwellings found scattered throughout all sections of the city. Undoubtedly such a combination ought not to be permitted. Fifty-eight fires in the combination grocery and dwelling is twice as many as there were in any other kind of store in combination with dwelling. It is the opinion of those who have studied zoning in Baltimore, that the remedy to reduce the fire hazards shown to exist by Exhibits Nos. 10, 11, 12 and 13 is to set aside districts for residence use from which business shall be excluded, districts for neighborhood business, districts in the central part of the city such as the downtown business section and industrial districts for those kinds of industries which produce or use explosive or highly inflammable substances.

Fires During 1923.

During 1923, immediately after the passage of the Zoning Ordinance, a survey was made of the uses of all land and buildings throughout the city by the Police Department at the request of the Board of Zoning Appeals. Exhibit No. 14 shows the uses of buildings used for residence, for residence and business combined and for business only as taken from the survey. The same exhibit shows information similar to the data combined for the year 1921 taken from the records of the Fire Department for 1923. A comparison of the tables for 1921 and 1923 indicates that for buildings used for residence only, fires occurred annually in about 1%. Of the buildings used for both residence and business fires occurred in 1921 in 2.50%, and in 1923 in 2.56%. From the 1923 figures it appears that the fires in buildings used for business only decreased slightly from 6.90% to 5.20%. The buildings used for combination residence and business show a slight increase in the percentage in which fires occurred. This tabular information will be continued if possible by the Board of Zoning Appeals on alternate years and in as many intervening years as may be possible. Exhibits Nos. 15, 16 and 17 are the tabular sta-

EXHIBIT No. 13.

FIRES DURING 1921 IN BUILDINGS USED FOR BUSINESS OR MANUFACTURING ONLY.

	Jan'y. and Feb'y.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year's Total.	Year's Grand Total.
Bakery.....		1				1		1	1	1		5	
Bank.....				1		1						2	
Bookbinding.....	1											1	
Blacksmith Shop.....			1				1		1			3	
Boiler House.....						1		1				2	
Bottling Establishment.....	1					1	1					3	
Canning House.....			1									1	
Carpenter Shop.....					1				1			2	
Carpet Cleaning.....	1											1	
Chemical Plant.....	2										1	3	
Cleaning and Dyeing.....			1			1						2	
Clothing Mfg'r.....	1			1		2	1	2	1	3		11	
Coal and Wood Yard.....	1						1					2	
Confectionery.....			2				1					3	
Department Store.....	1	1							1	1		4	
Distillery.....										1		1	
Dressmaking.....	1											1	
Drug Mfg'r.....							1					1	
Drug Store.....								1				1	
Elevator—Grain.....						1						1	
Factory—Candy, etc.....	5	4	3	3	3	2	2	1		1	1	25	
Foundry.....	2					1	2	1				6	
Furniture Store.....					1		2				1	4	
Garage—Public.....	10	9	4	9	3	5	4	3	6	7	6	66	
Gasoline Filling Station.....		1		1		1						3	
Gas Plant.....		1										1	
Glue Factory.....	1	1							1			3	
Greenhouse.....	1											1	
Grocery Store.....		1				1		3			4	7	
Guano Factory.....	2	1		1								4	
Haberdasher.....		1			1						2	4	
Hardware Store.....	3											3	
Hospital.....		1			1					1		3	
Hotel.....	5		1			2	1					9	
Ice House.....	1		1		4							6	
Industrial Building.....	1											1	
Institutions.....	1	2		2	1		3			1	1	11	
Junk Shop.....	1				1				1		1	4	
Kiln—Lumber.....	1											1	
Kiosk.....					1					1		2	
Laundry.....	1											1	
Livery Stable.....	1											1	
Lodging House.....			1	1								2	
Lumber Yard.....						1						1	
Machine Shop.....	2	1								1		4	
Manufacturing—General.....		3	1					2	7	3	9	25	
Market Stall.....				1		2				1		4	
Mattress and Bedding.....		2					2	1				5	
Moving Picture Parlor.....	1	2	1		2		1		1		1	9	
Notions and Dry Goods.....						2						2	
Office.....			1									1	
Office Building.....	4	3	2	3	4	4		1	1	2	3	27	
Oil Refinery.....	1	1	1		1	2	3				1	10	
Packing Plant.....	1	1				4	2				2	10	
Paper Box Factory.....	1	1										2	
Pool Parlor.....			1									1	
Printing and Publishing.....	3											3	
Restaurant.....	4	2		2	1	3	1					13	
Retail Stores—Misc.....	5	4	3		5	2	1	1	3	2	5	31	
Rooming House.....			1	1	4	1	1	2	2			12	
Sawmill.....	2					1						3	
Shipbuilding Plant.....	2	1										3	
Shoe Manufacturing.....	3									1		4	
Shoe Repairing.....	2			2						1	1	6	
Stone Crusher.....					1							1	
Storage Shed.....	5	2	7	3	4		6	8	1	4	3	43	
Tailor Establishment.....	2					1		1		1		5	
Tent—Show.....				1								1	
Theatre.....	1			1		1			1		2	6	
Toy and Carriage Mfg.....		1	1						1			3	
Type Foundry.....	1											1	
Warehouse.....	7		2	2	1	4	2	1	6	3	1	29	
Welding Establishment.....											1	1	
Wholesale Grocery.....	3		1									4	
Woodworking Shop.....	2	1	2									5	
Wooden Box Factory.....	1		1					2				4	
Yeast Factory.....	1											1	
Total.....	99	49	40	35	40	48	39	32	36	36	46		500
Grand Total.....													500

SUMMARY.

FIRE, 1921.

Dwellings.....	1455
Apartments.....	69
Tenement House.....	5
Vacant House.....	21
Miscellaneous.....	1143
Business or Manufacturing only.....	500

tistics taken from the records of the Fire Department for 1923. Again Exhibit No. 15 indicates that of the buildings used for combination residence and business those wherein there are grocery stores show the greatest number of fires, 87 for 1923 as against 58 for 1921. Those fires are increasing in number and from the observation of the writer it is his opinion that the number of those combinations is increasing considerably because there are so many applications for permits for buildings to be used as grocery stores on the first floor and apartments on the second floor. Undoubtedly from the evidence accumulated for 1921 and 1923 the combination grocery dwelling is an extreme fire hazard. The number of fires in such combination for 1923 are more than three times as great as for any other combination business and dwelling. The remedy to reduce the fire hazards shown to exist for 1921 and 1923, Exhibits Nos. 10, 11, 12, 13, 14, 15, 16 and 17, is to set aside districts for residence use from which business shall be excluded, districts for neighborhood business, districts in the central part of the city such as the downtown business section and industrial districts for those kinds of industries which use or produce explosives or highly inflammable substances.

EXHIBIT No. 14.

Uses of Buildings from Police Survey for Board of Zoning Appeals.

1923

Buildings used for Residence only.....	126,943
Buildings used for both Residence and Business..	12,609
Buildings used for Business and Manufacturing only	7,777

Fires Occurring During 1923, from Records of the Fire Department.

In Buildings used for Residence only.....	1,358
In Buildings used for both Residence and Business	323
In Buildings used for Business and Manufacturing only	408
Of the Buildings used for <i>Residence only</i> , Fires occurred in	1.06 per cent.
Of the Buildings used for both <i>Residence and Business</i> , Fires occurred in.....	2.56 per cent.
Of the Buildings used for <i>Business and Manu- facturing</i> , Fires occurred in.....	5.20 per cent.

EXHIBIT No. 17.

FIRES DURING 1923 IN BUILDINGS USED FOR BUSINESS OR MANUFACTURING.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Auto. Accessory Store.....					1		1			1			3
Bakery	1		1						1			1	4
Bank	1		1										2
Blacksmith					1					1	1		3
Bottling Estab.....			1			1	1						3
Brush Factory					1					1			2
Carpet Cleaning							1						1
Carpet Factory		1											1
Chemical Plant		1				1	1		1			1	5
Cleaning and Dyeing.....										1			1
Clothing Factory	1	1		1	1		2	1	2			2	11
Coal and Wood Yard.....			1			1		1	1				4
Confectionery	1	4		1	2								8
Cotton Mill			1										1
Dairy						1	1		1				3
Department Store		1		1		2	2			1		4	11
Drug Factory											1		1
Factory, Miscellaneous.....	3	4	1	1	2	2		4	2	3	5	7	34
Foundry		1	1	2	1	1		1	1		2		10
Furniture Store	1	1						1		1			4
Garage, Public	6	4	4	8	4	4	9	5	3	2	1	2	52
Gasoline Filling Sta.....		1					2	1	1		1		6
Glass Factory				1				1		1			3
Grocery Store		1											1
Guano Factory									1				1
Haberdasher	1			1									2
Hospital	2	1		1				2	1	1		1	9
Hotel	1	2	1	1	1		1	1				2	10
Ice Cream Factory.....								1			2		3
Industrial Bldg.....				1									1
Institution			1	1									2
Junk Shop.....		1	2		2		1	1	1	1			9
Kiln									1				1
Laundry					1			1			1		4
Lumber Yard.....	1	1				1				1			4
Machine Shop.....							1	1		2			4
Market Stall.....			1						1				2
Mattress Factory.....						1				1	1		3
Moving Pict. Parlor.....					1	2	1						4
News Paper Office.....						1							1
Notions and Dry Goods.....						1						1	2
Office or Office Bldg.....	6	5	3	4	2	3		4	1	2	4	3	37
Oil Refinery.....					1			1	1	1	1		5
Packing Plant.....	1	1		1		1	1		1	1	1		8
Paint Factory.....			1	1		1							3
Paper Products.....	1							1		1		1	4
Plating Estab.....			1										1
Pool Parlor.....	1						1						2
Printing and Publishing.....					1		1	1					3
Restaurant	1	2		1			1	2	2		1		10
Retail Stores (Miscl.).....								1				2	3
Rooming House	4	1	1		2	1	2			1	1	3	16
Saw Mill		1								1			2
Ship Yard						1				1			2
Shoe Store					1				1				2
Storage Shed			2	3	1	3	3	1	1				14
Straw Hat Factory.....		1	1										2
Syrup Factory					1								1
Tailor Estab.....		1		2		2	1						6
Toy and Carriage Factory.....			1	2				1			1		5
Warehouse	5	4	3	2	3	5	3	2		4		2	33
Wire Works						1							1
Wood Work Shop.....	1			1	6						1	2	11
Wooden Box Factory.....							1						1
Monthly Total	39	41	29	37	36	37	38	36	25	31	25	34	
Grand Total													408

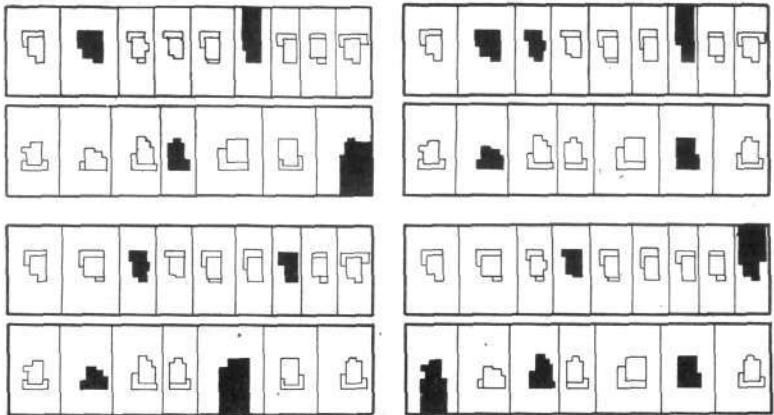
SEMBLE.

Business only	39	41	29	37	36	37	38	36	25	31	25	34	408
Dwellings only	145	177	129	101	86	77	87	57	68	79	110	92	1208
Business and Dwell. Combined*.....	52	51	50	42	35	35	43	27	17	36	53	32	473
Miscellaneous	114	129	203	247	149	127	159	90	86	86	111	93	1594
Monthly Total	350	398	411	427	306	276	327	210	196	232	299	251	
Grand Total Year 1923.....													3683

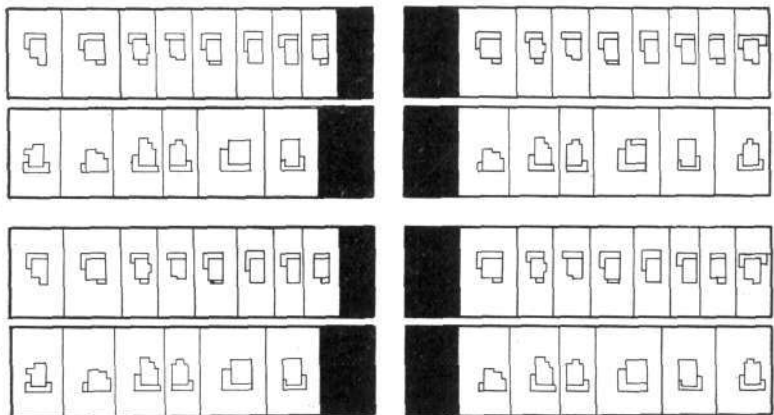
*This also includes Apartments, Apartments and Business combined and Vacant Houses.

Fire Houses.

The records of the Fire Department indicate that the fire hazard is greater in buildings used for business than those used exclusively for residence. The logical arrangement then is the concentration of business in suitable places so danger to people and dwellings may be minimized. Then in such business districts the best fire fighting facilities ought to be provided. They are the places where fire houses ought to be or if the business districts are very close fire apparatus ought to be nearby. The city is continually planning and building to that end. Examples of the concentration of business at certain important street intersections on main highways both by natural selection and by zoning are found throughout the business districts of the city. In the parts of the city at some distance from the central business district there are also business districts provided by the zone plan. At many of these locations there is already fire apparatus and at others apparatus will be provided by the city. A city, by zoning, has a definite plan to follow, knowing where the fire hazard is or will be the greatest, and where it is most necessary to provide apparatus. Examples of these locations in Baltimore are, running around the circle, Union Avenue and Washington Road, Frederick Road and Hilton Street, Edmondson and Swan Avenues, Bentalou Street and Edmondson Avenue, North Avenue and Tenth Street, Reisterstown Road and Liberty Heights Avenue, Garrison and Liberty Heights Avenues, Gwynn Oak Junction at Liberty Heights and Gwynn Oak Avenues, Reisterstown Road and Belvidere Avenue, Park Heights and Quantico Avenues, North Avenue and First Street in Mount Washington, Roland Avenue and Upland Road, York Road and Bellona Avenue, Greenmount Avenue and 33rd Street, Harford Road and Gorsuch Avenue, Harford Road and Hamilton Avenue, Harford Road and Berwick Avenue, Belair Road and White Avenue, Belair Road and Spring Avenue and Monument Street and Highland Avenues. The Fire Department recognizes the necessity for fire apparatus in these outlying business districts, which districts ought to be established by a zone plan in order that business with its attendant fire hazard shall not be mixed up with dwellings promiscuously throughout the residence neighborhood. If business can be mixed up with the residences uncontrolled, the cost to the city to adequately meet the fire hazard will be prohibitive. See Exhibits Nos. 18 and 19.

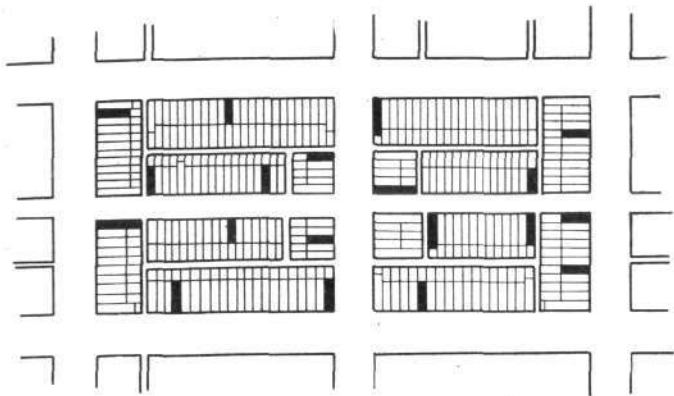
EXHIBIT N^o 18

Stores scattered among dwellings without zoning

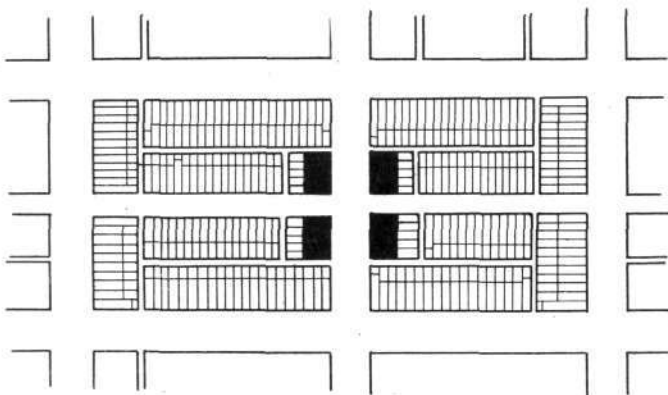


Orderly arrangement of business districts among the residence districts with zoning

EXHIBIT No 19



Stores scattered among dwellings
without zoning



Orderly arrangement of business
districts among the residence
districts with zoning

Some of the above mentioned fire houses have been built since the passage of the Zoning Ordinance; their location was chosen because of the business districts. Others were built before the passage of the Zoning Ordinance in districts which were selected for business particularly on account of the fire protection and for many other reasons.

Water Supply and Fire Protection.

The Water Engineer of Baltimore says "The efficiency of the system for extinguishing fires depends upon the quantity of water that can be discharged with a certain pressure from fire hydrants a reasonable distance from the fire, which quantity is limited by the capacity of the source of supply, the static pressure and the size and length of the water mains." Zoning can not modify the capacity of the source of supply nor the static pressure, but it does determine the size and length of the water mains. Water engineers tell us that the distribution system, no matter how carefully designed, may, in the course of time, prove inadequate without some control over uses of property and an assurance that those uses will be stable. The distribution structure is almost unalterable to meet changing needs and if inadequate must be replaced. The size of a water main necessary to supply a residential development is smaller than is required to supply a neighborhood which is interspersed with stores. As the number of business houses increase the size of the water main must be increased until the high value commercial district is reached, which is approximately the downtown business district, where the maximum supply must be provided. The Water Engineer of Baltimore says further "In order to design a water distribution system intelligently the character of the future development of the community and the location and widths of proposed traffic arteries must be known. Small mains have been laid into new territories on the theory that the demand would be slight, only to be replaced by larger mains when the territory became more closely built or its character changed. Where a system of City Planning is followed the future consumption in a newly developed territory may be anticipated. * * * * A determination of the size of the feeder main extension to be economically installed may be made in advance."

The engineer is designing the water distribution system for Baltimore based on the zone plan. He has used the old use districts of the Zoning Ordinance and has made several further sub-divisions described as follows:

First residential—a purely residential development without stores, the dwellings being individual and surrounded by yards. There are no large apartment houses in this zone.

Second Residential—this development is more congested. Dwellings may be in block construction with occasional community stores. Structures in this zone are not generally separated by yards (meaning side yards).

First Commercial—although this development is partly residential in character, the number of small stores is greatly increased. It represents a transitional stage in the development of a residential community to one commercial in character. Here are found the typical store-front dwellings.

Average Commercial—this zone embraces the smaller commercial and minor mercantile enterprises. There are very few dwellings, although some structures may have apartments on the upper floors.

Second Commercial—this zone is a congested, purely commercial section, buildings are large and high.

High Value Commercial—this zone represents the limit of the commercial development. Here are the largest structures to be found in the town, the greatest fire hazards, the most congested development, the most valuable property.

Industrial—the name of this zone is descriptive of its character. Here are grouped more or less closely the large industrial plants of a town.

Exhibit No. 20 shows the probable fire flow required for serious fires in the various zones of Baltimore. It is noticeable that the maximum for the first residential zone is two thousand (2,000) gallons per minute, for the second residential zone, three thousand (3,000), for the average commercial zone, seven thousand (7,000), and for the high value commercial and mercantile zone, fourteen thousand, five hundred gallons per minute. Therefore, if the system is designed to supply two thousand gallons per minute for a residence district of detached houses and this district changes to one of solid rows of houses or tall apartment houses, then the water supply is inadequate. Further, if a residential zone change to what the Water Engineer has

termed a first commercial which is a district partly used for residence and with a number of small stores together with the typical store front dwellings, again the system which is adequate for residence is inadequate for such a changed district. If the whole city of Baltimore is opened to business use without zoning, water mains of the size necessary for first commercial districts must be provided for all of the city now used for residence and all undeveloped areas. Otherwise, there is no assurance that pipes for residence development will not have to be torn up and replaced by larger ones, to say nothing of the necessity for replacing great feeders coming from the reservoirs, due to the changed conditions.

Reference should be made to Exhibit No. 21 showing the fire engine pump capacity responding to alarms in the various zones of Baltimore and to Exhibit No. 22 which shows the delivery capacity and fire hydrant distribution, all based on zoning. Here, too, the reader should refer to Exhibit No. 23 and Exhibit No. 24 which are made primarily to show the relation of zoning to sewers, but which illustrate the kinds of development (percentage of the area of the lot covered) which the water Engineer must consider.

Summing up the opinion of the Water Engineer his own words are as follows: "A revised method of determining required fire flows has been developed which should be applicable to all conditions. From investigation it seems that the required fire flow is the criterion upon which the pipe capacity of any gridiron system should be based. To insure an *economical* and *permanent* design anticipation of the development of the territory to be supplied should be made possible through the adoption of a definite scheme of zoning."

The facts are that the zone plan has been so designed that the several business districts have been situated where there is already afforded the best fire protection in the downtown central district, along the main radial and cross-town thoroughfares where the largest water mains are now or will have to be built. The several height districts of the zone plan are so situated that the high value downtown commercial district and the maximum height district are approximately coincident with the high pressure water service district as shown on Exhibit No. 25, that the heights are

EXHIBIT No. 20.

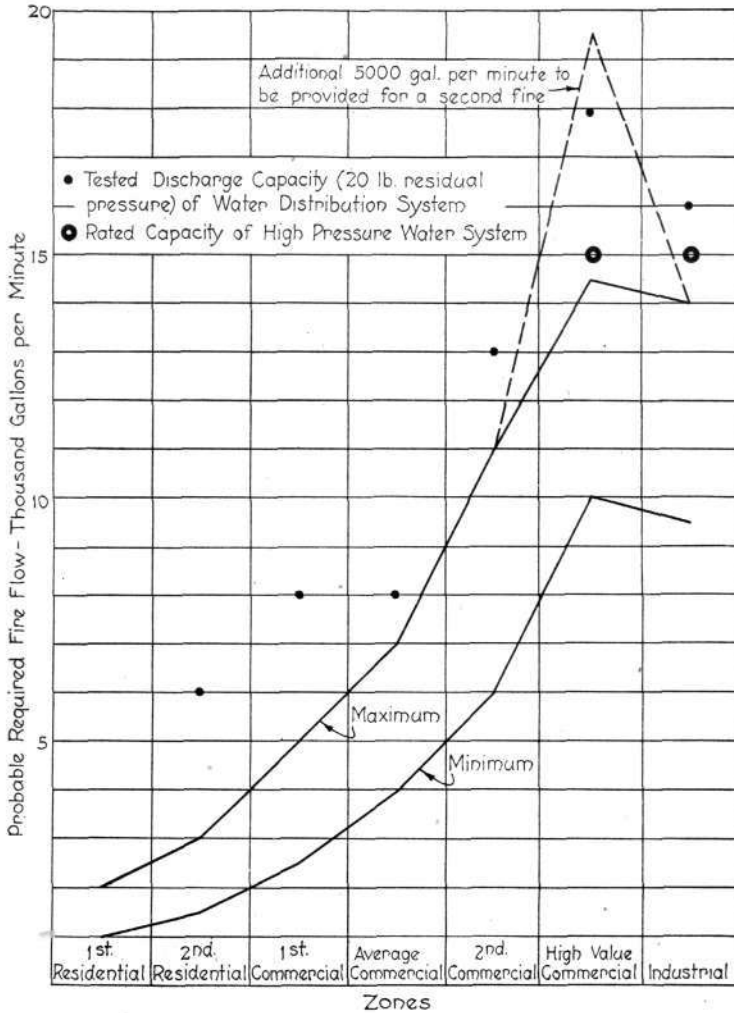


EXHIBIT No. 21.

34,000 ©

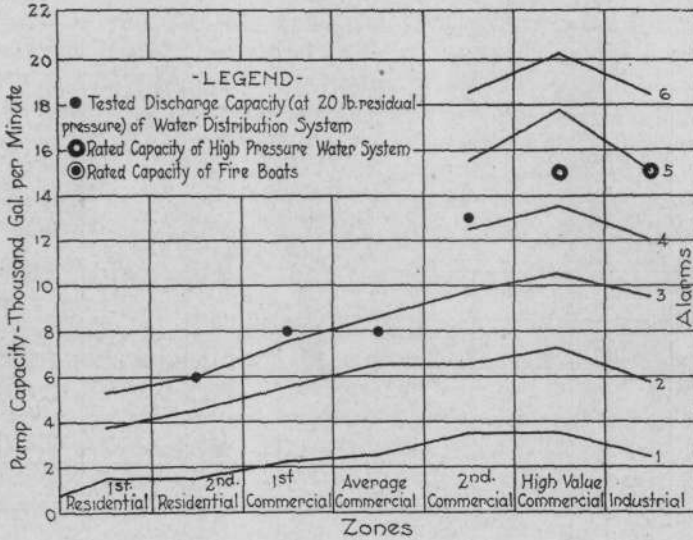


EXHIBIT No. 22.

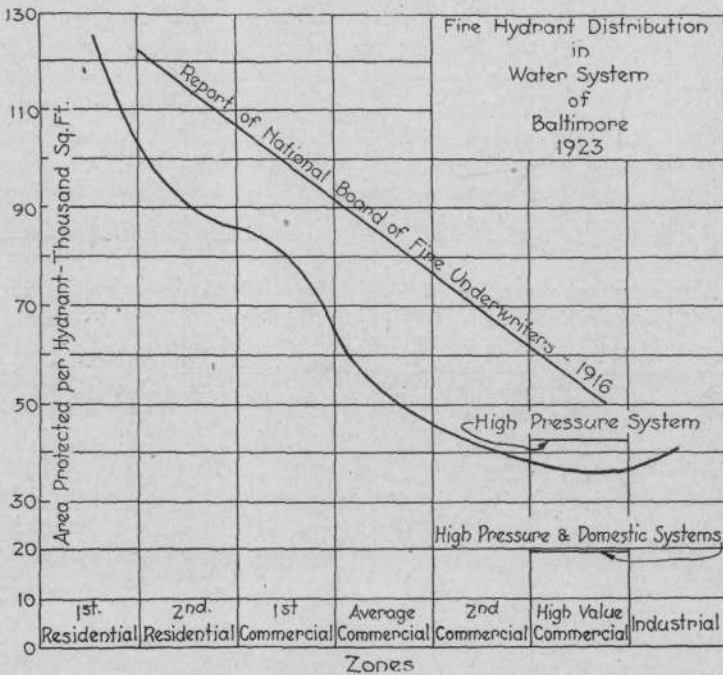


EXHIBIT No. 23.



EXHIBIT No. 24.

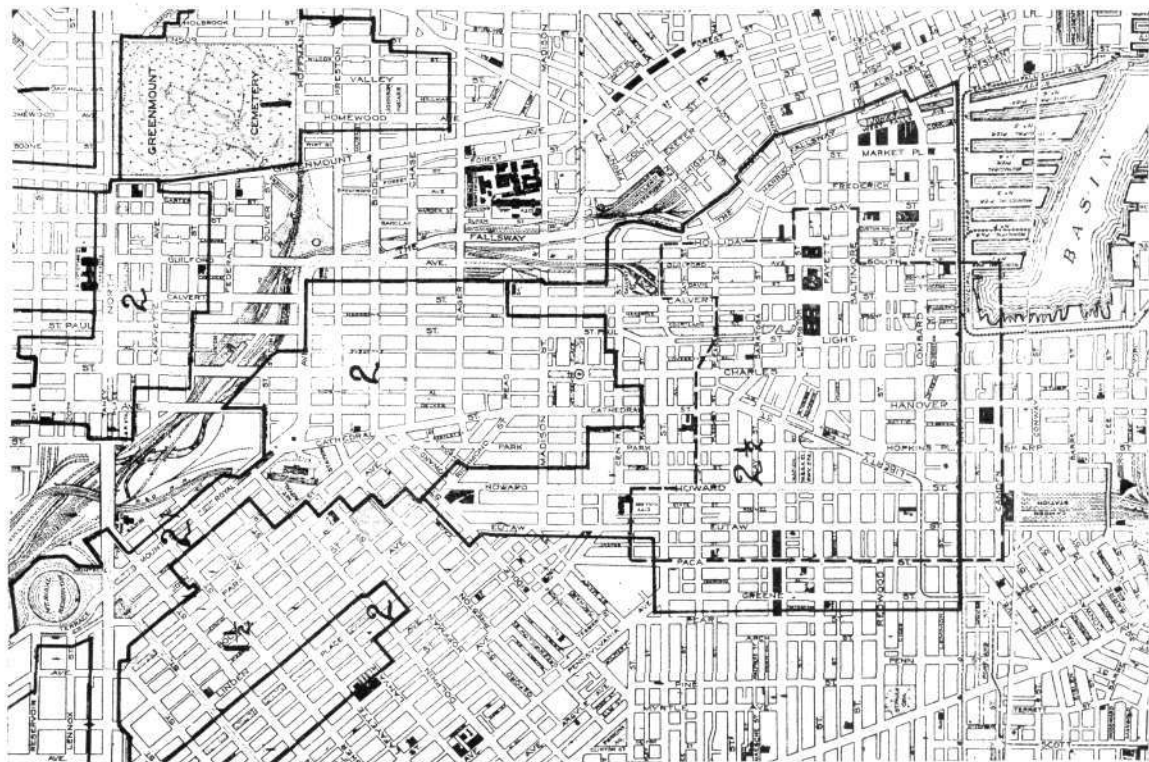


so graduated away from this central two and one-half times height district that the water supply for fire protection will be adequate or can most economically be provided permanently. The various area districts graduate from the center of town where 100% of the area of the lot may be covered if the building is used entirely for business out to the outlying districts where the E and F area districts are situated and where the minimum area of the lot may be covered.

Absolutely, the design of the water distribution system for fire protection and for domestic and manufacturing consumption is dependent on a definite plan for the use of property and on the height and bulk of buildings. Be it remembered here that in 1918 the area of Baltimore City was about thirty-two (32) square miles, and that at the present time the city is confronted with the problem of the necessity for providing water for sixty (60) square miles more, due to the annexation of 1918. And besides, by the Act of Annexation, Baltimore is compelled to provide water for surrounding territory in Baltimore and Anne Arundel Counties. If it were possible at this time to compute the cost of the water system for the thirty (30) square miles in the old city one might form some deductions as to the cost of watering the additional area which is twice as great as the old area. The task is so gigantic both in design and cost that nothing must be left to guess-work and a comprehensive zone plan having the force of law is indispensable.

Several examples of large industries which have been established in Baltimore requiring changes in sizes of water mains are as follows: The American Sugar Refinery at Decatur and Woodall Streets, where the area was formerly supplied with 6 and 10 inch water mains, now 16 and 20 inch mains have become necessary, and the consumption of water has increased from 10,000 gallons per day in that neighborhood to approximately 1,000,000 gallons per day; Archers Laundry, located on Eutaw, St. Mary's and McCulloh Streets, a site formerly occupied by small residential properties with daily consumption of about 9,000 gallons per day, but which neighborhood now has to be supplied with at least 100,000 gallons per day, a lot of this consumption being demanded at excessive rates for short periods of time,

EXHIBIT No. 25.



but which nevertheless must be available at all times and of course determines the sizes of supply pipes; The Standard Sanitary Enamel Company and the Gold Dust Twins Corporation, located at Fifth Avenue and Eighteenth Street, necessitating a change from a 10-inch main to a 20-inch main to meet the demands.

Tall buildings in isolated cases have important bearing on water supply. For instance, the operation of any valve over 30 inches in size in the water district's low service zone west of Jones' Falls will cause a slack supply of water on the upper floors of the Professional Building at Charles and Pleasant Streets. A seven-story apartment house in Roland Park on Upland Avenue required a change of water service. The Industrial Building on Preston Street has a slack water supply if there is water drawn from a 20-inch valve in the vicinity. The Union Memorial Hospital on 33rd Street and Calvert could not be served from the same supply from which buildings in the neighborhood were served. Numerous other cases could be mentioned where isolated buildings entirely different in use, height and bulk had to be served specially by the city's water department. No argument is necessary to show that this kind of special service can not be carried on all over the city without limitation. It is not even fair to the taxpayers to have to carry the burden of special service of this kind when a general plan would provide adequately for the requirements created in such isolated cases. Similar deductions relating to the quantity of water consumed have been made and proven correct by the Water Department with reference to population density. For instance a suburban territory consumed about 45 gallons per capita, whereas in a densely populated section of the city 65 gallons per capita was the consumption. Samples of the cost of replacing smaller water mains with larger ones are as follows: A 6-inch main in Park Heights Avenue from Belvidere Avenue to Clarks Lane valued at \$6,600 is being replaced by a 12-inch main at a cost of about \$50,400; 3 and 4-inch mains in Old Pimlico Road from Kate Avenue to Belvidere Avenue, worth about \$3,900, are being replaced by 6 and 8-inch mains at a cost of about \$28,730; some replacements in the central business district of 3-inch, 4½-inch and 6-inch mains worth \$82,475 were made by the installation of 6-inch,

10-inch, 12-inch and 20-inch mains worth \$167,000. Further replacement in that same area brings the total cost up to \$224,342. These several items from a long list indicate the monetary importance of ample provision of water supply for domestic consumption and fire fighting to the people of Baltimore. Obviously some plan such as Zoning is most necessary to conserve the investments, to protect the health and safety of the people and the general welfare by economy in expenditure, thus preventing a prohibitive tax rate or the bankruptcy of the municipal corporation as the only alternative.

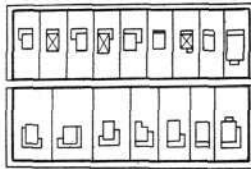
The Relation of Zoning to the Sizes and Location of Sewers.

The sizes of storm water sewers are dependent, among other things, on the amount of surface which is impervious to water. Therefore, the surface of the land which is covered by buildings, sidewalks, pavements and other structures is impervious to rainfall and the water must be carried off by storm water sewers. The sizes of sanitary sewers are dependent, among other things, on the density of population, the amount of water used in households which finds its way into the sanitary sewer, and increases or decreases with the population. The location of both kinds of sewers depends on the kinds of development which they are to serve.

Storm Water Sewers.

There are inserted here Exhibit No. 26 and Exhibit No. 27. These diagrams represent the various kinds of residence development. The first diagram on Exhibit No. 26 represents an existing block in the City of Baltimore and shows the way it is developed at present. Without zoning the Sewer Engineer might hazard a guess that certain territory adjacent to the block will be developed the same way. The percentage of the lots which is covered by buildings is 10.12. Knowing the widths of the streets between building lines, the width of the roadway (which is determined by the paving authorities and which is dependent on the location, the use of the adjacent property and the probable use of property in the future) sidewalks, etc., the Sewer Engineer needs to add the percentage of the lot which is now or which is to be occupied to determine the area impervious to rainfall. Therefore, he can design a storm water system.

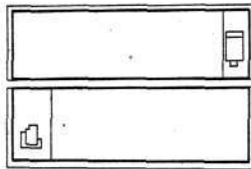
EXHIBIT No 26
TYPICAL RESIDENCE DEVELOPMENT



Per cent of lot occupied.....10.12%

Families.....16

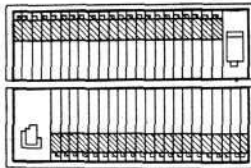
Population about.....80



Per cent of lot which may be occupied.....24.76%

Families may amount to 45

Population.....225

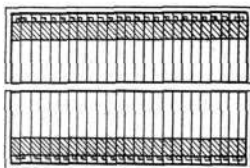


Per cent of lot occupied...24.76%

Families.....45

Population.....225

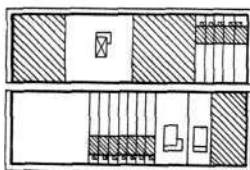
EXHIBIT No 27
TYPICAL RESIDENCE DEVELOPMENT



Percent of lot occupied.....26.66%

Families.....50

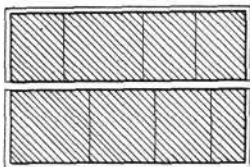
Population.....250



Percent of lot which may be occupied.....100%

Families that may be housed.....2511

Population.....12555



Percent of lot occupied.....100%

Compared with one high grade apartment house in this city, there may be housed here 2511 families.

Population.....12555

Such a system, however, is dependent on the probability that he has made a good guess about the kind of development and the use of the property. With a zone plan which specifies a maximum area of the lot that may be covered and which determines the use of land and buildings it is possible for a storm water sewer to be designed in the beginning and built with the assurance that it will be adequate as long as the life of the sewer itself.

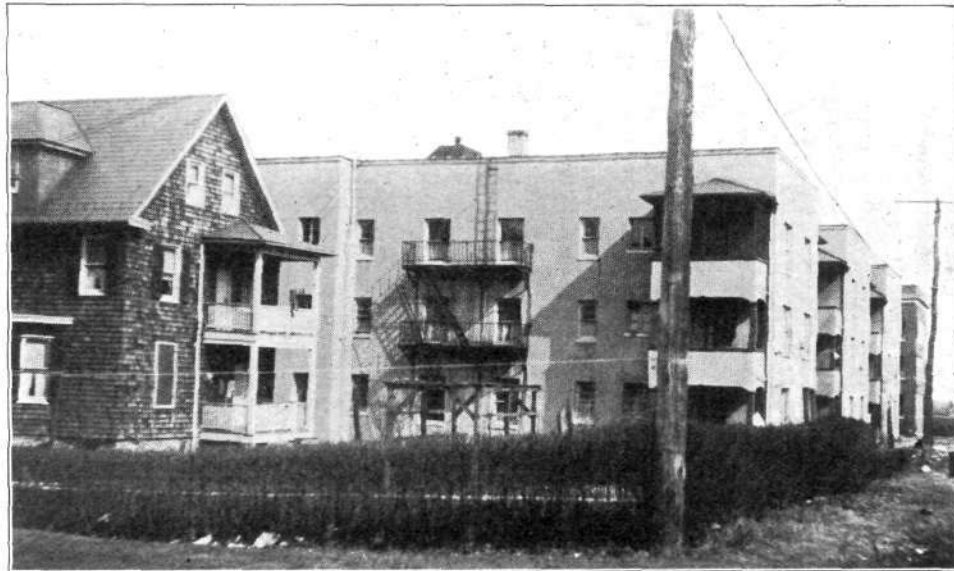
The second diagram on Exhibit No. 26 shows the same block only partially developed and with detached cottages. Without zoning the designer of the storm water sewers must hazard a guess as to the future development of the rest of the block, and to be on the safe side it is more than likely that if it is in a neighborhood which is partly used for residence it may be assumed that the rest of the block might be built up with residences. From our knowledge of past practice it will be very likely that without any restrictions on the land in deeds, a speculator may complete the block with rows of brick houses built solidly from one end to the other covering 40 or 50 per cent of the area of the lot. It is also possible that all of the lots might be built up by building large apartment houses, covering nearly 100 per cent. Therefore the sewers must be designed to anticipate a possible 100 per cent impervious surface. With zoning the block in question would be in one of the area districts where the maximum percentage of the area of the lot which could be covered will be determined. A sewer designed under the zone plan for this block will conform to the maximum requirements and will be adequate and permanent.

The third diagram on Exhibit No. 26 shows how the same block might be built without zoning regulations. Exhibit No. 27 represents some of the other ways in which a block may be built up. If there is an absence of zoning, the design of the storm water sewers can be certain only by providing for 100 per cent occupancy of the lots and figuring practically 100 per cent impervious surface which is illustrated in the third diagram on Exhibit No. 27. The second diagram on Exhibit No. 27 illustrates the heterogeneous development of a block which may occur without zoning, and there are such blocks in the city which were built up prior to the passage of the Zoning Ordinance.

Sanitary Sewers.

The same diagrams on Exhibits Nos. 26 and 27 are illustrative of the problems incident to the design of sanitary sewers. The population which such sewers are to serve is the outstanding determining factor in their size. The first diagram on Exhibit No. 26 represents detached dwellings. If the sewers must be designed without a zone plan the engineer must speculate on the number of families likely to be housed for a long time in the future in this block. With a zone plan which fixes the percentage of the area of the lot that may be covered, the size of front, side and rear yards, the maximum number of families per acre that might be housed, the information is available at once on which to design a sanitary sewer which will take care of the needs of that block indefinitely. Indeed, the zone plan which fixes the maximum number of families per acre at once gives the designer the necessary information to determine the size of the sanitary sewer in any part of the city. With the aid of the diagrams the reader may visualize how the design of sanitary sewers must vary according to the kind of development. Without treating each particular kind of development in this paper with a long discussion of the application of the formula for determining size of sanitary sewers it is easy to make deductions. In more open developments and the less families per acre, the smaller the necessary sanitary sewer; the more families per acre, hence the more dense the population, the larger the sewer necessary. The several exhibits of photographs will show the different kinds of development for residence use that are illustrated on the diagrams discussed above. They will illustrate existing conditions, where, without zoning, detached house districts have been invaded by solid rows of houses, thereby increasing the population density about threefold. Other photographs will show large apartment houses covering almost the entire lot, both in districts originally devoted to detached dwellings and in neighborhoods where originally rows of two-story brick houses were built with front yards. The apartment house will be seen to extend to the front lot line and to the rear lot line. The population density has been increased almost ten times over the density in the detached house development and again about three times over the normal density with rows of two-story brick houses. See Exhibits Nos. 23, 24 and 28.

EXHIBIT No. 28.



Sewer Design by the Sewer Engineer.

Up to the time of the passage of the Zoning Ordinance and during the period of the existence of the Sewerage Commission of Baltimore the population of different sewer districts in the city was computed by the Sewer Engineer according to the rules, notes, etc., shown on Exhibit No. 29. It is evident from the rules shown on this exhibit that the conclusions were more or less speculative. Sewers, therefore, might have been designed according to these rules and the kind of development might have changed and it could change without zoning regulations. Such change might result in scrapping a considerable part of the system and replacing it. The people in such a case would have to pay for the sewers twice.

Since the passage of the Zoning Ordinance the Sewer Engineer of Baltimore has been designing sanitary and storm water sewers based on the zone plan. The first thing that is done is to check the population. He then determines whether the proposed sewers are in what was under Ordinance 922, a residence, business or industrial district and in what area district they lie. A reference to the Zoning Ordinance then indicates the percentage of the area of the lot that may be covered and the uses of land and buildings permissible in the district to be sewered. The ordinance also fixes the maximum population per acre which may be housed in the district. At once he has the population density necessary to determine the size of sanitary sewers. He has also the amount of pervious and impervious surface which determines the size of storm water sewers. He has the uses which were permissible under the Zoning Ordinance which determines the depths to which the pipes will be laid. If the sewers are in a residence district they are not laid so deep as in a business district because in a business district buildings may be erected with deeper foundations, deeper basements, cellars or sub-cellars which require drainage and they may have boiler rooms at some distance below the street grade. Therefore, the uses to which property may be put determine the cost of the installations as well as does the size. In approving buildings the Board of Zoning Appeals must necessarily take into consideration uses as well as heights and areas as they affect the sewer collecting systems.

EXHIBIT No. 29.**Rules, Notes, Etc., for making up Population Maps for the various Sanitary Sewer Districts.**

Case 1. In a typical residential section:—

Count the number of houses in the precincts, and divide the population of each precinct by the number of houses, obtaining a constant, which is the population per house for this precinct.

Count the houses on the sewer line, in this district of course, and multiply the number by the population per house, or the constant obtained for this same district, to get the population contributing to this sewer line.

Place totals at each block, so that sizes can be determined thereby.

Case 2. In a suburban section where the population is given as so much per acre:—

Find the net area of section, which is usually 70 per cent of entire area; 30 per cent being taken up by streets, roads, etc., and multiply this acreage by the constant allowed for the specific section.

Case 3. In a typical business section, where the population is reduced to a discharge of gallons per acre:—

Find the net acreage as in Case 2, and multiply this by the constant, of so many gallons per acre, obtained from the Designing Engineer.

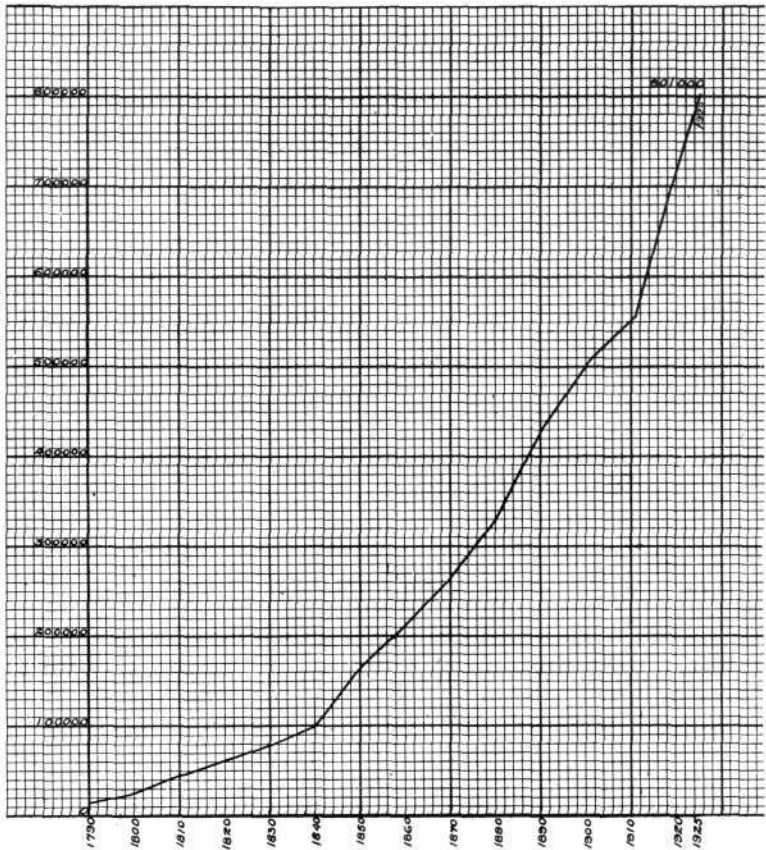
Note: Above was the solution of problem before Zoning.

Sewer System in the Herring Run Valley.

Studies are now being made by the engineer, designing the sewer system, both sanitary and storm water, for the Herring Run Valley and property adjacent thereto. His design is being based on the zone plan. Parts of this valley were in residence, first commercial, second commercial and the industrial districts, as well as in B, C, D and E area districts. It is important here to mention that certain factory wastes must be turned into the sanitary sewers instead of storm water sewers, particularly those wastes which may be poisonous, mixed with dyes, acids, etc. While they may be liquids and could be taken care of in storm water sewers, owing to their poisonous nature they can not be emptied into the harbor or river. Incidentally the Herring Run Valley, lying within the city limits, is twenty square miles or greater in extent. This valley is only one of the great undeveloped parts of Baltimore for which sewers must be designed and built.

The Relation of Zoning to Traffic Regulation.

In 1923 His Honor, Mayor Howard W. Jackson, appointed a Traffic Committee to study traffic conditions in Baltimore and to suggest regulations or methods for relief. After that Committee had made its report an ordinance of the Mayor and City Council authorized the Commissioner of Police to prepare suitable traffic regulations which should become effective on the approval of the Mayor and have the force of law thereafter. The problem grew and is still becoming more aggravated every day, notwithstanding that many improvements and devices have been used and the force of traffic officers increased. Another survey is in process now, supervised by a Commission composed of a representative of the city, the state, the Public Service Commission and the United Railways and Electric Co. This Commission and its experts will make a survey and recommendations for re-routing street cars as part of the regulations designed to solve the traffic problem. The report will probably not be ready until early in 1926.



POPULATION CURVE FOR CITY OF BALTIMORE
FROM UNITED STATES BUREAU OF CENSUS.

1790 ~ 1920

{1925 Estimated by Health Dept. Balto. Md.}

EXHIBIT NO. 30

Some idea of the problem may be gained by the statement that the number of motor vehicles bears a relation to population to be brought out more fully below. Here Exhibit No. 30 ought to be examined. It shows the population of Baltimore City from 1790 to 1920 according to the United States Bureau of Census and an estimated population to the end of the year 1925 by the Baltimore City Health Department. The indications are that the population is increasing rapidly in this city. The figures on the chart show an increase of about 68,000 in five years, at which rate there will be about 1,000,000 population in Baltimore in 1940. These figures may be checked against an estimated population made by the Chesapeake and Potomac Telephone Company of Baltimore which estimates that the population will be about 1,000,000 in 1940. The original Zoning Commission made numerous studies relating to population. The Board of Zoning Appeals is using those studies because population has direct bearing on traffic density and distribution, on the use of land and buildings and on the heights of buildings, as well as their bulk. Furthermore the use of land and the use, height and area of buildings have a direct relation to traffic density.

Traffic Accidents in Baltimore.

There is compiled in this office a map showing traffic accidents on the highways. A study of that map leads to the conclusion that a large majority of the accidents occur in the business districts, comparatively few are in the residence districts. A count of the accidents on one of the Use district maps prepared by the Zoning Commission and part of the comprehensive Zoning Ordinance shows that 786 accidents on the highways occurred in residence use districts and 3411 accidents occurred in commercial and industrial use districts. Of the total of 4197 accidents 18.7 per cent were in residence districts and 81.3 per cent in commercial or industrial districts. The downtown central district is thoroughly spotted with accident locations. The main radial thoroughfares on which are situated the local business districts have most of the accidents which occur outside of the central business district and the large majority of them fall within the business districts along those streets. A study of Frederick Road, Edmondson Avenue,

North Avenue, Liberty Heights Avenue, Reisterstown Road, Park Heights Avenue, Falls Road, Charles Street, York Road, Hillen Road and Belair Road show that almost all of the accidents on those roads occur in the business districts. This Board can not refrain from making the deduction that business increases traffic and determines its kind, and that the more congested and more dangerous traffic conditions are in the business districts. Therefore, it is necessary for the city to work out a comprehensive zoning plan that will tend to lessen the danger of accidents on the highways in the districts devoted to residence use where practically all of the small children are found.

Garage Entrances Across Sidewalks Dangerous.

The Zoning Commission and this Board, in the exercise of its discretionary power, is of the opinion that a distinct traffic hazard exists to the safety of children and pedestrians generally in front of garages and particularly where exit from the garages is across sidewalks. Some garages have been built, opening across sidewalks, prior to the passage of the Zoning Ordinance. Normally a pedestrian is more cautious at a street intersection or at an alley intersection and might be on the alert to look for vehicles coming out of side streets and alleys, but it is certain that there is an unusual condition created when an automobile suddenly come out of a garage which may open on the sidewalk. An exhaustive study of traffic accidents, which was available, shows that most of them occur during the months of June, July, August and September—the very months of the year when children are not in school, but are apt to be playing outdoors, many of them on the streets. The number of accidents for the different months of the year varies as much as four times as many in August as there are in January, February or March.

Traffic Studies.

Numerous traffic studies have been made throughout the United States in many cities. A leading authority who has made extensive studies of traffic is Ernest P. Goodrich, Chief Engineer of the Bush Terminal Company, Consulting Engineer to the Borough of Manhattan, New York, and an

expert on City Planning and Zoning. Mr. Goodrich has reduced traffic density and flow to formulas and it is a subject that can absolutely be calculated from certain premises. His deductions agree with those of other specialists. Reference here should be made to a paper prepared by Mr. Goodrich entitled "The Design of the Street System in Relation to Vehicular Traffic," 1922. From this paper the following is quoted:

1. Vehicular traffic is found to vary in amount at the busiest point in a community in proportion to its size.

2. The total radial street traffic at equal distances from large communities of varying size is proportional to the population of each community.

3. The total radial street traffic at different distances from the center of each community varies inversely as the distance from the center.

4. A definite relationship exists between the amount of through traffic and the total number of automobiles licensed in that part of the country in which the community is located.

5. Through traffic may be expected to vary in the future in proportion to the degree of saturation of automobile ownership.

6. The amount of vehicular traffic originating in, and destined to residential districts is today approximately one vehicle per day per family.

7. Vehicular traffic from and to freight stations bears a definite ratio to the population and its proportion employed in industry, depending to some extent upon the dominating types of manufacture.

8. The amount of vehicular traffic created by industry may be closely approximated on a square foot basis of land and of floor space thus employed.

9. An industrial survey is the best method of approaching the creation of a city plan because it will provide data on the basis of which the future use of the streets can be estimated.

10. A zoning ordinance will definitely limit the amount of street traffic and provide the basis upon which it may be estimated.

11. The growth of communities shows that a general law is followed upon the basis of which estimates of future population can be made with considerable precision.

12. Cities will grow to a definite size depending in large measure upon the distance to larger surrounding communities.

13. The distribution of future population throughout a community can be closely estimated on the basis of the law of growth, the limit set by the zoning ordinance, topography, and social conditions which the community can establish.

14. In general, the density of the population varies inversely as the distance from the center of a community.

15. The traffic during the maximum hour of the day varies from 115 to 140 per cent of the average hour.

16. The traffic during the maximum week is approximately double the average of the year.

17. Roadway widths should be designed on the basis of the number of lines of traffic which they must handle.

18. Traffic conditions at intersections limit the number of vehicles per line per hour to a maximum of about 600.

19. The main thoroughfares in single family residence districts should be spaced not to exceed 3,000 feet apart; 2,000 feet in two family house districts and 1,250 feet in multi-family house districts.

20. In industrial districts the main thoroughfares should not be spaced more than 750 feet apart.

21. The total number of radiating streets which should be provided in any community can be determined on the basis of the amount of traffic which is to be expected.

22. The total width of the roadways of radiating streets can be determined on the basis of the traffic which must be carried.

23. The area allocated to zones for different uses in a community can be determined on a scientific basis.

24. The whole street transportation and street design problem can be worked out on a scientific basis.

Automobile Registration in Maryland.

The following table gives the total motor vehicle registration for the State of Maryland from 1920 to 1925. It has nearly doubled in that time. What the limit will be is difficult to say, but if Maryland keeps pace with other states there will be many more vehicles registered in the next few years.

1925.....	242,297	(to Dec. 11)
1924.....	206,522	
1923.....	213,808	
1922.....	174,322	
1921.....	144,650	
1920.....	124,693	

Studies by Baltimore Zoning Authorities.

Studies of the Zoning Commission included traffic counts at various street intersections. Some of the conclusions reached by the Zoning Commission and the Board of Zoning Appeals are that the kind and volume of traffic on a street depends on the number of buildings on the street and particularly on their use. It is difficult enough to have to solve a traffic problem in business districts without having business scattered all over the city without regard to any plan, and thereby increasing traffic problems in the residence neighborhoods. The important street intersections on the main radial streets and main cross-town streets have already become dangerous places. Traffic officers are stationed at many of these now. Studies are constantly being made by the Board which indicate that at most of the local business centers created by the Zoning Ordinance traffic officers are necessary. Surely this requirement ought not to continue until every street intersection in the city is guarded by a traffic officer.

Rule for Determining Traffic.

The location of traffic, its volume and kind therefore can be determined absolutely on a scientific basis by formulas. Its volume "depends chiefly upon the use made of abutting property, there is an ascertainable relation between the character, use and bulk of abutting buildings and the needed traffic capacity of the street. Furthermore, as the volume

of traffic upon a through or arterial street depends chiefly upon the character and size of the centers which feed into it, there is an ascertainable relation between such centers and the needed thoroughfare or arterial highway capacity." This quotation is from a Report of the National Conference on Street and Highway Safety, Washington, November 24th, 1924.

Traffic Determines Width of Streets, Kind and Cost of Paving.

In a paper by Mr. Ernest P. Goodrich, published in "Planning Problems of Town, City and Region," 1925, at Page 443, the author explained exhaustive studies made by him to determine the quantity of all supplies delivered to residents in New York City and computed the amount of traffic, the number of vehicles, the distance of hauling, the parking space, etc., necessary to give this service to the people.

Since it is possible to definitely determine the amount of traffic necessary to care for the needs of a business district of a given area or for a residence district of a given population, it is possible, too, to determine the width of streets necessary to carry the required volume of traffic, thus the functions of the City Planning Department of a city are dependent on zoning to determine the widths of the highways. The kind and quality of paving materials and the width of roadways to be paved, too, are by similar reasoning, dependent on the kind and amount of traffic and, in the last analysis, on the use, height, area of buildings and population. Population density in any part of the city varies inversely as the distance from the center of the community.

The Relation of Zoning to the Location of Schools.

It is appropriate in the beginning to quote from Dr. George D. Strayer, the leading authority on educational administration in the country, as follows:

"One-sixth of the total population of American cities is enrolled in public schools. From eight to ten months of each year these boys and girls spend by far the most important part of their waking hours in school buildings or on school grounds. The careful planning of school sites

and school buildings must affect, in large degree, the health and safety of the boys and girls now in school, and through them, the future development of the city."

School Sites According to a Well Defined Plan.

The school building program in Baltimore City, for which appropriations of \$21,000,000 have been made in the last four years, is not worked out according to any haphazard scheme. The school program is part and parcel of the city plan. The location of schools absolutely depends on zoning. It is necessary to select sites in districts occupied for residence. That is where the school population is. The school population is dependent on the whole population of the city. In Baltimore there was a school population in 1923 of about 135,000 children. There is a total area of 92 square miles in the city, much of it in the outlying territory which was poorly supplied with schools until recently and much of it is undeveloped. In the built-up area of the city there is found a school population of about 3230 pupils to the square mile. Of these about 2570 go to the elementary school.

The city is following standard specifications in the acquisition of school sites, the effort being made to provide 100 square feet of play space per child and of the buildings recently constructed about thirty-five square feet of lot area is provided per pupil. The sum of the play space and building area per pupil gives the total area per pupil necessary for his school site. The number of pupils per square mile multiplied by the space required per pupil gives the total school area per square mile necessary. The result of the computations give eleven and one-half acres per square mile as the total amount necessary for appropriate conditions to house elementary, junior and senior high schools. The location of these schools, their size and size of their lots has been determined by careful study of population. The maximum population in a given district is determined by the Zoning Ordinance. If a school is designed for a population of sixteen families per acre and the district changes in character to a residence district which houses forty or eighty families per acre or more as, for instance, in the A, B, C and D area districts, it therefore follows that immediately the school requirements are not met. In the mean-

time most of the undeveloped land may be built up and the city would be put to an abnormal cost to acquire more sites and build more buildings to accommodate the increased child population. With \$21,000,000 to barely meet the needs of the present outlying built up neighborhoods one may well pause to consider the cost of supplying school facilities for the present undeveloped areas which will be built up some day. When computing costs in tens and hundreds of millions of dollars there must be no haphazard building program either for schools or for dwellings. The whole must be built according to a predetermined plan. Otherwise, the cost to the people for educational facilities might be doubled. Schools are only one item in the necessary expenditures of a municipality. Their cost is of great moment to the taxpayers of the city.

Further Comment on School Locations.

It is obvious that schools should be located in the residence districts approximately central to a neighborhood population, they should not be in the business zones nor should they be on main traffic thoroughfares, which normally, in the future will become business streets. There are many reasons for placing the schools off the main traffic thoroughfares. One is that they should be located in a neighborhood which is zoned for residence and which will not be taken up by business establishments, thus putting out of proportion the population and the effective radius of the school. Another reason is that in the business districts there is greater fire hazard as shown by Exhibits Nos. 10, 11, 12, 13, 14, 15, 16 and 17. Another reason is that the school children should not be subjected to the danger of crossing main traffic thoroughfares, if it can be avoided, and thronging out on them as they do when school lets out. The danger of accident should be avoided and the traffic problem simplified to that degree by keeping the schools off the main traffic thoroughfares. The land values on main traffic thoroughfares are high, particularly in districts zoned for business and on the remainder of the main traffic thoroughfare the values are higher than on local residential streets. It is not expedient or good business to take up business sites with great lots necessary for schools. Even a blight and impasse to business development is created

by situating a school on a main thoroughfare and particularly on one which is most appropriate for business. Two glaring examples of this last comment are the location of the Baltimore City College on Howard Street, and the Academy of the Visitation on the east side of Howard Street at Center. Both of these schools, for years, created an impasse to business development northerly on Howard Street.

The Relation of Zoning to Police Protection.

The Zoning Commission found among its studies that policemen's posts were much smaller in the closely built up parts of the city than in the outlying districts. In the central business district more police are required for ordinary protection not including the number of special traffic officers that are stationed at almost every street intersection. At some of the busiest pedestrian intersections four or five traffic officers are necessary. As business reaches out into the old residence neighborhoods more police protection is required. Where there are stores open to the general public there are always those who congregate for purposes other than purchase of merchandise; idlers, loiterers and even those with criminal intent. A public place necessarily draws people who do not live there. Hence, policemen are necessary to keep order and to guard property as well as to protect those necessarily in that part of the city on business. Population density and the congestion of buildings determines also the number of policemen in a square mile, and the number of policemen determines the size of the policemen's post for a given area.

Ordinarily the suburban districts, removed from most of the population that does not live in that vicinity are places of quiet enjoyment where the peace of the neighborhood is rarely disturbed and where there is not so much necessity for policemen in great numbers. Any Police Department in the country will verify the statement that business increases the necessity for police protection and increases the number of patrolmen; that business mixed up with residence means more police protection in a district which normally ought to require the minimum. Many of the outlying neighborhood business districts established by the Zoning Ordinance are coincident now with the stations of

patrolmen who are necessary for the safety of the people. It is not intended by the Zoning Ordinance to hamper business development, but it is intended to direct it according to a plan which will make all of the activities of the city government function most efficiently and economically. The best way to illustrate this intent is by the question "Why should the city have to provide more police protection in a neighborhood because a few stores have been scattered among the dwellings, when those same stores could have been situated in a commercial district of ample area to serve the residents near to the dwellings?" In such a well-ordered business community the hazard would be concentrated and the police protection would function more effectively if the officer did not have so great an area to cover.

Size, Kind and Location of Parks and Playgrounds Depends on Zoning.

At the present time in Baltimore there is being prepared a plan for future park and playground development. Lands which are now available or which may be necessary as part of a comprehensive park system are being studied and a plan prepared. This plan is intended to be adequate for the needs of Baltimore for perhaps the next fifty years. Without a zone plan to determine and stabilize the uses of land and the density of population it is impossible to design a park plan which can be depended upon to be adequate and to function properly. Dr. Henry V. Hubbard of the firm of Olmstead Brothers of Brookline, Massachusetts, who is conducting the studies for the park plan has told the writer that present and future use of properties ought to be determined by a plan, as also the density of population, the type of development whether of detached and semi-detached houses or solid rows of houses without side yards. These facts can be determined by a zone plan. It is evident to those who give some thought to this problem that there can not be the necessity for playgrounds and as much park space in the cottage development as is necessary in the more congested parts of the city and even in newly built up areas developed with houses which have no side yards. The detached house affords open space on the front, rear and sides where children may play. There is easy access from the front to the rear yard by way of the

side yard. This is not so with the continuous rows of houses which have no side yards, the type which is so abundant in Baltimore as to be almost a type distinctive to this city. The only access from front yard to rear yard in that kind of development is through the house or around the block. Rear yards and front yards are usually of very limited size. In many cases there are no front yards. Hence the necessity for playground space for children and open, breathing space for the rest of the people.

The Relation of Zoning to Paving.

The uses of property abutting on a street determine the kind of paving material necessary. The use of a street as a principal connecting thoroughfare between two industrial or commercial areas determines the kind of paving material necessary. Even the use of land or buildings in a remote part of the city may be the determining factor as to the kind of paving necessary. The kind of paving as well as its location, the width of the roadway and the amount of excavation necessary to bring the road bed to grade are all factors in the determination of the cost of paving.

Different kinds of paving materials are suitable for different kinds of traffic. The volume of traffic also reacts on the kind of pavement as well as on its width. It is necessary for the paving engineer to know which are the main traffic thoroughfares and which may become main traffic thoroughfares in the future. They will be determined principally by the location of business centers. Therefore, the engineer may pave the arterial thoroughfares with paving suitable to carry the kind of traffic which is to be expected and he can determine a definite width for the highway to carry a certain volume of traffic.

The Relation of Zoning to Collection and Disposal of Waste Sewage.

Almost enough has been said in the early part of this report to show the relation of Zoning to collection and disposal of sewage. An additional comment here on location of sewage disposal plants may be appropriate. In the city of Baltimore there is one main disposal plant. There are several smaller ones. Such plants are not the

most agreeable things to have in any part of a city. It is probable that they are not dangerous to health, but it may be possible for any one of them to become a nuisance at a particular location. Location of such plants depends on some natural features, such as topography that can not be changed. Natural drainage areas must be considered and the uses of property in these drainage areas, as well as the density of population are all factors determining location and size of sewage disposal plants.

Trade Waste.

Factories of different kinds and even small retail stores have what are called trade wastes. There is no obligation on the city to dispose of trade wastes, such as, for instance, the many boxes, barrels, paper cartons and waste paper incident to retail grocery business. A certain amount of that kind of material is taken by the street cleaning department, but it is obvious that only a limited amount of this kind of material can be taken by the collector or else the force of street cleaners and garbage collectors would have to be increased considerably. Yet this kind of material can not be left on the premises. It is an extreme fire hazard and dangerous to the building in which it is stored and to neighboring buildings. In the case of many of the small retail stores of Baltimore people live on the second and third floors of the same buildings, thus the lives of those people are endangered by this accumulation of waste on the premises. This is an important reason for the separation of business from residence in order that the fire hazard incident to the business use may be kept out of the buildings to be used for residence. The tables given in the early part of this report taken from records of the Fire Department are ample to show the fire hazard incident to buildings used in whole or in part for business in comparison with those used for residence only.

The Relation of Zoning to the Heights of Buildings.

For many years the maximum heights of buildings have been fixed by Building Codes. It has very generally been conceded that cities can, under the police power, for fire protection, regulate the heights of buildings. As far back

as June 24, 1908 the Court fo Appeals of Maryland in Cockran vs. Preston, 108 Md. 226, decided that a height limit of seventy feet within a block of the Washington Monument in Baltimore was constitutional. This height limit was fixed by a legislative act and applied only to a very small territory of the city. Just after the Baltimore Fire of 1904 a maximum height limit was fixed for the entire city at 175 feet and the seventy foot height limit near the Monument was passed subsequent to the general height regulation.

A recent exhaustive study of the heights of buildings by the Real Estate Board of Chicago was published in a book entitled "Studies on Building Height Limitations in Large Cities, 1923." Another reference to be referred to by those interested in the subject of height regulation is the "Statement and Evidence Submitted on Pending Zoning Ordinance to City Council of Cincinnati on the 24th day of January, 1924."

Height Districts in Baltimore.

The Zoning Ordinance of Baltimore divides the city into five height districts, namely:

- 2½ Times
- 2 Times
- 1½ Times
- 1 Times
- 40 Foot

In the 2½ Times district buildings may be erected to a height not over 2½ Times the width of the street on which they abut. The 2½ Times height district is approximately coincident with the downtown central business district and with the boundaries of the high pressure water service for fire fighting. See Exhibit No. 25.

The 2 Times height district is adjacent on the north to the 2½ Times height district and it also extends along portions of Charles Street where it is of the maximum width, University Parkway, Eutaw Place and Lake Drive. The above mentioned streets are zoned for residence and are the locations where most of the tall apartment houses in the city are now. They are locations which are most likely to be used for and are most suitable for tall apart-

ment house development. Reference to the map will show that these streets are quite wide and in all but one case border a wide expanse of open territory used for park or permanent open space such as the grounds of Johns Hopkins University. The 2 Times height districts, therefore, are so situated as to create a minimum fire hazard.

The 1½ Times height districts are approximately coincident with the Second Commercial and Industrial Use districts. Those districts are the places where we might expect factory buildings to be erected.

The 1 Times height districts are the portions of the old city now mostly built up with dwellings three stories high. In these districts buildings may be erected to a height not to exceed one times the width of the street, and it might be possible to erect a building not over about five stories high.

The forty foot height districts are coincident with the residence districts which are now developed with two and three story brick houses or with frame cottages from one story to two and one-half stories high. In a Forty Foot height district it is possible to erect a building about three stories high as a maximum. The forty foot height districts are those residence districts which are situated farthest from the center of the town and farthest from the maximum fire fighting facilities.

Brief Survey of the Use Districts as Chosen by the Zoning Commission, included in Ordinance No. 922, and in Effect until February 3, 1925.

The downtown central business district is devoted almost exclusively to retail business, but there is, in some of the buildings, a limited amount of manufacturing. Organizations of retail merchants, namely: the Charles Street Association, the Baltimore Street Retail Merchants Association, the Howard Street Association, the Eutaw Street Association and the Retail Merchants Bureau of the Merchants and Manufacturers Association, in the center of the city, were of the opinion that use regulations for this part of the city should permit a certain amount of light manufacturing, but owing to the traffic and fire hazard it would be appropriate to limit the amount of manufacturing; also these merchants were of the opinion that property values

would be considerably affected and that conservation of property values in the central business district was an important consideration. The territory immediately surrounding the central First Commercial Use district is included in the Second Commercial Use district. There, buildings may be erected entirely for manufacturing purposes. Second Commercial Use districts are to be found also along all of the railroad rights-of-way which lie in the west, northwest and north parts of the city. The lowlands bordering railroads and the water-front on the south, southeast and east are in the Industrial Use districts. The Second Commercial and Industrial Use districts being the districts in which most of the manufacturing will be carried on are afforded every facility for movement of freight over the railroads or by water.

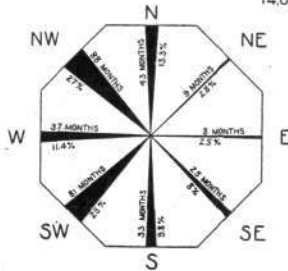
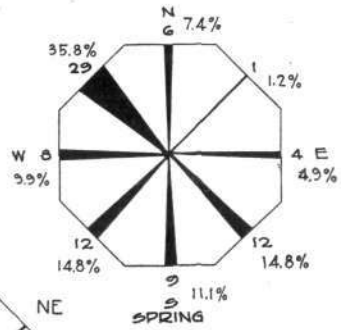
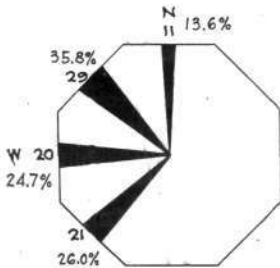
Direction of Prevailing Winds.

The Zoning Commission, in the selection of the various districts was careful to investigate the direction of the prevailing winds which blow over Baltimore. Exhibit No. 31 shows studies made by that commission for a period of twenty-seven years. It was recognized that the ideal condition would be to have the industries which give off fumes, smoke, gas, dust and excessive noise situated on the side of the city which was opposite from the direction of the prevailing winds. That location is approximately to the southeast. It will be noticed from the exhibits just referred to that it was possible to determine the prevailing winds at any season of the year. Consideration was given to the fact that certain kinds of business operate in particular times of the year. A factory which might be particularly objectionable in the summer time because the windows of business houses and dwellings would be open may not be subject to the same objection in the winter time.

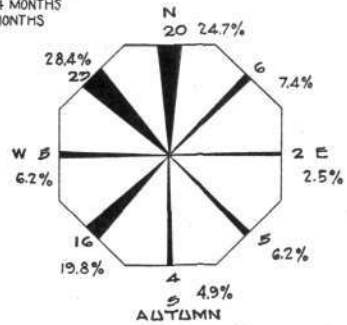
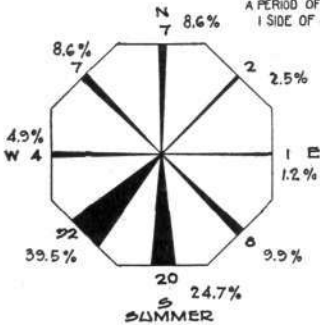
Outlying Business Districts.

The outlying business districts are termed by the ordinance First Commercial Use districts, but are situated away from the central part of the city. They are found on the map principally along the main highways of travel and particularly on main radial streets. These are the streets which normally become business streets. It so happens that there are also street car lines on most of the main radial thor-

EXHIBIT NO 31



PREVAILING WINDS BLOWING OVER
BALTIMORE CITY FROM 1893-1919 INCL.
A PERIOD OF 27 YEARS = 324 MONTHS
1 SIDE OF OCTAGON = 32.4 MONTHS



PREVAILING WINDS for FOUR SEASONS
1897-1919
1 SIDE OF OCTAGON = 81 MONTHS
CITY PLAN COMMITTEE BALTIMORE MD.

oroughfares. The points on these radial thoroughfares where the business districts are situated are usually at important street intersections, that is, intersections of main cross-town thoroughfares. It is evident that the main radial thoroughfares and the main cross-town thoroughfares are not the most desirable for residence use. Most of the heavy hauling passes over them. Much of it is through traffic as differentiated from local traffic such as is found on minor residential streets. The volume of traffic, the danger to pedestrians, the noise incident to traffic, the fire hazard due to business and the higher land values all discourage residence use of the main traffic thoroughfares and particularly at intersections with principal cross-town highways.

It is evident from all of the discussion that has gone before, that if business is given opportunity to develop at the most suitable places for it which are the intersections of main highways, that ample provision can be made in these local business districts for fire protection, police protection, water supply, sewers, etc. All can be done as part of the comprehensive development plan for the city and most economically. The locations of these neighborhood business districts were settled only after exhaustive studies were made by the Zoning Commission.

Orderly City Growth.

Orderly development of a city is absolutely necessary. Without a plan the city may be built up almost to one hundred per cent occupancy without open spaces. It is evident that it is exceedingly difficult to fight fires in many of the buildings, their only openings being on the street fronts. Such a condition is a dangerous fire hazard particularly as affecting property loss. This is the way a typical central business district is actually built up. There is no sleeping population in it at night time, but if all districts of the city are permitted to be built in such a way that the building occupies practically one hundred per cent of the lot the result will be blocks of solid masonry throughout the city bounded only by streets or alleys.

Good Living Conditions Necessary for the Welfare of the People.

From time to time counts have been made in Baltimore in order to ascertain the number of people who own and live in their own homes. Some counts have shown that particularly in East Baltimore as many as 75% of the

people live in homes which they own. A fair illustration of these kinds of homes is seen on Exhibit No. 32. This photograph is illustrative of the admirable conditions in this part of Baltimore which contribute to the accuracy of the saying that "Baltimore is a city of homes." It is this type of house in which a large percentage of the people live. It is the kind of house which is most easily purchased and at most reasonable prices. Whatever can be done to promote living conditions such as these will go far toward solving all social problems of the city. Here in these buildings the thrifty workman lives in comfort and is an ideal citizen. He is the type that makes up the back-bone of our community. With all workmen owning homes of this kind, labor turn-over and labor problems would be rare.

Any plan that provides for the protection of these orderly rows of dwellings to keep business with incidental fire hazard out of their midst, to keep heavy hauling and much traffic off their streets and to conserve property values are matters that the Zoning Commission and the Board of Zoning Appeals and all of the city who live in these houses feel are matters of public welfare.

Some consideration of one's neighbor is essential when one chooses to live in a city. What may be done on a piece of land in the outlying districts now used for farming is of not so much concern to one's neighbor, because with great open spaces there is not the intimate association between the people, there is not the proximity of one man's building to another's, such as you find in built up cities.

It may be argued that since a neighborhood changing from residence to business requires larger water mains or sewers or other utilities, the city ought to provide them. This argument is no more sound than the argument that because the downtown streets are so crowded as to require drastic traffic regulations and that instead of enforcing such regulations the city ought to widen all of the downtown business streets to such an extent that there would be no congestion of traffic. To provide utilities of abnormal size or to replace all of the present utilities with larger ones would require a prohibitive amount of money just the same as the cost would be prohibitive for the city to widen at its expense, and in the end at the expense of the people, all of the downtown business streets. Regulation, therefore, is necessary and is the solution for those problems which are encountered by the municipal authorities in their efforts to provide utilities and to conserve life and property.

Exhibit No. 32.



WITHDRAWN FROM
ENOCH PRATT
FREE LIBRARY