

this factor known it is possible to intelligently forecast the needs of the district for every class of public works and public service and to plan accordingly, with the confidence that whatever is done will be done properly, permanently and economically.

Transportation is the great, controlling factor in the growth and development of the modern city, and the most difficult problem municipalities are called upon to solve; its difficulties would be greatly lessened if the density of population could be kept within reasonably certain limits; this is understood in the German system of town-planning and the locations of the trams, or street-railway lines, are determined as the street system is extended and are based upon the volume of traffic likely to be created by the known population and the predetermined character of the territory they will serve; the same is true of main, or trunk, lines of every kind of underground service: sewers, water pipe, electrical lines, pneumatic tubes; and subways, pipes, and tubes for every purpose of subterranean transportation. The number and capacity of public service structures, under, upon, or above the surface depends upon the density of the population and the local needs of the community; these elements being known the original construction of public works can be of the most permanent character and the liability for repairs, reconstruction, and enlargement can be reduced to a minimum.

Wide streets, planned with the almost certain knowledge the zone system would give of the traffic requirements for long years of service, would permit of a far more economical system of secondary and residential streets than we now find in most of our cities. In almost every city we find large areas laid out with streets of uniform width and uniform improvement, but they seldom carry an equal amount of traffic or are of equal public use except in congested localities; certain ones, by reason of easier grades, better connections with important points, greater business activity, or other favorable local conditions, attract the greater volume of traffic, leaving perhaps half a dozen adjacent ones unused and unlovely expanses of costly pavement.

The zone system would permit property to be restricted to the use for which it is best adapted by natural conditions. If hilly and picturesque districts were reserved for high-class residences, or for residences requiring lawns or gardens, the cost of improvement, both as to property and streets, would be greatly reduced by removing the necessity for the usual formal street system and the great amount of grading required for the building of solid rows of houses on small lots.

It also frequently occurs that a quiet and attractive neighborhood that has been occupied for many years by the better class of residences, surrounded by well kept grounds, is invaded by rows of cheap houses, the character of the neighborhood enabling the builder to realize large profits; since these profits are generally the sole object of the builder the operation seldom fits harmoniously into the surroundings and almost invariably the result is that the character of the neighborhood changes and property loses some of its desirability and value, except for the erection of more rows of houses. Operation houses are usually built for sale rather than for stability and if their erection was confined to certain districts there would be competition among builders that would result in a higher class of workmanship, more attractive arrangement and surroundings, and better value of a home.

The skyscraper, as an institution of the business life of America, is a costly luxury for which the public pays, and will continue to pay in ratio increasing with its growth, a heavy price in both cash and health; it increases enormously

the difficult problem of transportation and with its brother evils, the subway and the tenement house, for both of which it is partly responsible, it is moving steadily toward the creation of an abnormal condition of urban life. This menace of the skyscraper, the subway, and the tenement can only be removed by the enactment of regulations limiting the height of buildings, defining the areas within which those of maximum height may be erected, and prescribing the percentage of surface area they may cover and the amount of light and air space around them.

In no department of city building is there a larger opportunity for the advantageous application of the zone system than in the defining of the areas within which industrial establishments may be erected. Mills, factories, and workshops of almost any kind may now be set down in any locality which seems favorable to the promoter of the enterprise. Such establishments must invariably have facilities for transportation by rail or water, or both, especially if they are conducted upon a large scale, as most modern establishments are. Their random placing may work to the disadvantage of an entire neighborhood. There is a large economy for any concern in having transportation companies deliver and receive freights directly at its doors and the problem of supplying such service is a difficult and complicated one where industrial plants are distributed widely throughout a community.

The confinement of industrial establishments within certain prescribed areas would protect residential districts from invasion by incongruous or otherwise objectionable institutions and would immeasurably simplify the problem of industrial transportation, both local and foreign. The creation of factory zones in locations conveniently reached by rail or water would permit the development of terminals of maximum efficiency at a minimum cost; drayage between the mill and the shipping station is a large item of expense to the manufacturer, and the collection, classification, and distribution of freights from or for scattered and isolated yards are distracting problems for the traffic manager and the yard master; the short haul, the reduction or concentration of trackage, and the saving of time and energy where freights originate, or are distributed, within certain prescribed areas, all count for economy in trade and transportation. Main traffic streets for through travel could be kept clear from obstruction by railroad crossings and sidings, and to a considerable extent from costly bridges, if freight yards and freight carrying lines were kept within industrial zones.

So apparent do the advantages of the industrial zone seem, and so complex and costly are the problems of industrial transportation under present methods, that it is strange the manufacturers and transportation companies, in their efforts toward scientific and economic management, have not used their influence to establish such a system; indeed, some of the large industrial concerns have found such an arrangement so desirable that they have established their own industrial colonies in which their factories and freight service are entirely separated from the residential sections; only the most extensive ones, however, have been able to do this successfully, the smaller ones having found the problem of obtaining and keeping skilled labor a difficult one in colonies a considerable distance from large towns.

Any attempt to engraft the zone system into American schemes of municipal development would probably meet with great opposition from landowners, real estate speculators and operative builders, and from large interests not directly concerned in the development of land. The objections of the first would doubtless be based upon the abridgement of their right to do as they pleased with their own property, of the second upon the cutting off of prospective profits and of the third upon the general proposition of the invasion of