LA CIUDAD LINEAL

A CRITICAL STUDY OF THE LINEAR SUBURB OF MADRID

by IVAN BOILEAU

The Theory of Arturo Soria

IN 1882 Don Arturo Soria y Mata, a Spanish engineer, published in the Madrid periodical, 'El Progreso', a series of articles in which he described his concept of linear towns. He proposed that such towns should be planned in the form of ribbons of building on either side of a single wide central avenue which would form the main traffic artery carrying both road and railway. These ribbons of building were to extend through undeveloped countryside, raising living standards and encouraging agricultural production on either side of their path. Existing nucleated towns and cities were to be linked together by linear development in a systematic network extending over a whole country.

Soria set out ten fundamental principles for what he described as the rational planning of towns:

(1) Transport is the fundamental problem of town planning. Since the railway provides the best means of transport which is fast, frequent, and cheap, it follows that the layout of the town should conform with the linear path of the railway.

(2) As the plan for a house precedes its construction, so should town planning precede town building.

(3) A rectangular layout of roads and building blocks is to be preferred because it is more orderly, cheap, and convenient, than any irregular layout. It follows logically from the first principle that the form of a town should depend upon one principal street, the spine of the urban system. This road should be as wide as possible, at least 120 feet, and should carry in its centre two or more tramways, preferably electrified. The building blocks should have frontages to the main avenue of from 300 to 1,500 feet between the transverse roads, and should be rectangular, square, or trapezoid, in form. The main avenue should carry water, gas, and electricity services, which should be distributed along the transverse roads, the vertebrae of the spine, thus providing the most economical means of distribution.

(4) No building, whether public or private, should occupy more than one fifth of its site. The remainder of the site should be devoted to cultivation, orchards, and trees. The minimum size of house plot should be 60 feet in frontage and 3,600 sq. feet in area.

(5) For each family there should be one house and for each house a garden

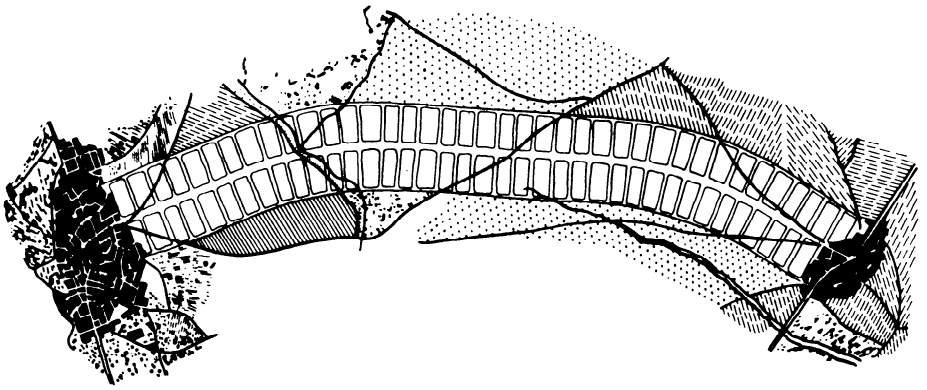

Fig. 1.—Diagram showing relation of a linear town to two existing cities (1882). Source, C.M.U.

for cultivation. Houses should be detached in order to provide privacy, light and air upon all four sides, and, at the same time, to reduce fire risks.

(6) Every building should be set back to a minimum building line 15 feet from the street. The justification for this is not only aesthetic but practical in that it allows for future road widening.

(7) The best method of combining the nucleated towns of the past with the linear towns of the future is to link the old towns together by means of linear towns, opening up agricultural land and bringing to it prosperity and the important services of water, electricity, and transport.

(8) In order to overcome difficulties of topography, such as rivers and mountains, in the path of linear development, its width could be reduced to the minimum required for the double railway lines at these points. The railway might be elevated in order to cross rivers, or carried in tunnel under mountains.

(9) The linear town would make possible a return to nature and to a civilized life in the country, thus arresting the dangerous and anarchic movement of people to the cities from the countryside.

(10) The linear town would be complementary to the doctrines of Henry George in that it would provide the most practical and just method of division of land, benefitting land owners whose land would be acquired and also the public generally.

The Theory Applied Near Madrid

In 1892 Soria published in Madrid a brochure describing a project for a tramway in the form of an arc around the capital at a radius of about three miles from its centre, and linking a number of outlying villages. He envisaged a ring of linear development based upon the tramway, and, had the project been realized in its entirety, there would have been a linear suburb in the shape of a horseshoe rather than a linear town.

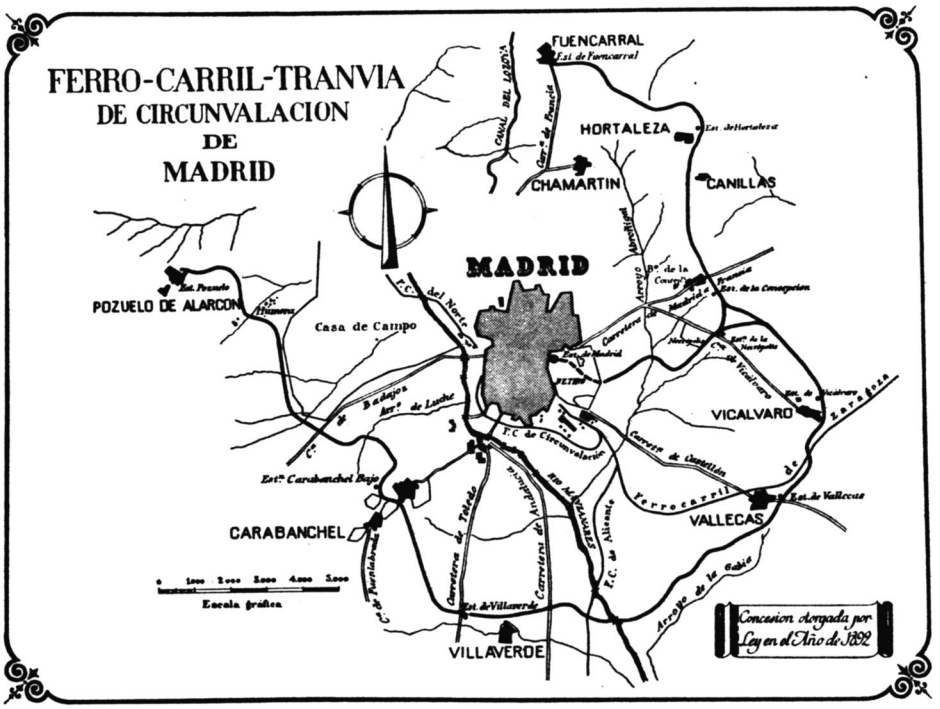

Fig. 2.—Diagram showing Soria's project for a tramway around Madrid (1892). Source, C.M.U.

On 5th March, 1894, the Compañia Madrileña de Urbanización (C.M.U.) was formed by Soria in order to promote linear development near Madrid upon the basis of his plan of 1892, and to construct and operate the associated tramways. At first, this Company operated tramways leading from Madrid in a north easterly direction to the villages of Fuencarral, Chamartin de la Rosa, and Barrio de la Concepción. Land was meanwhile acquired for the construction of the first 'barriada', or suburb, which was designed to link Chamartin with Barrio de la Concepción. In 1901 the tramway along the central avenue, the Calle de Arturo Soria, was authorised. These tramways, which at first had depended upon animal traction, were subsequently converted to steam traction, and finally were electrified in 1909.

This first sector of Soria's project is virtually the only portion to be substantially completed; it is known in Madrid today as 'La Ciudad Lineal', though this name belies its suburban nature. The main avenue has a width of 120 feet and contains a double tramway, usually in the central reservation of the avenue,

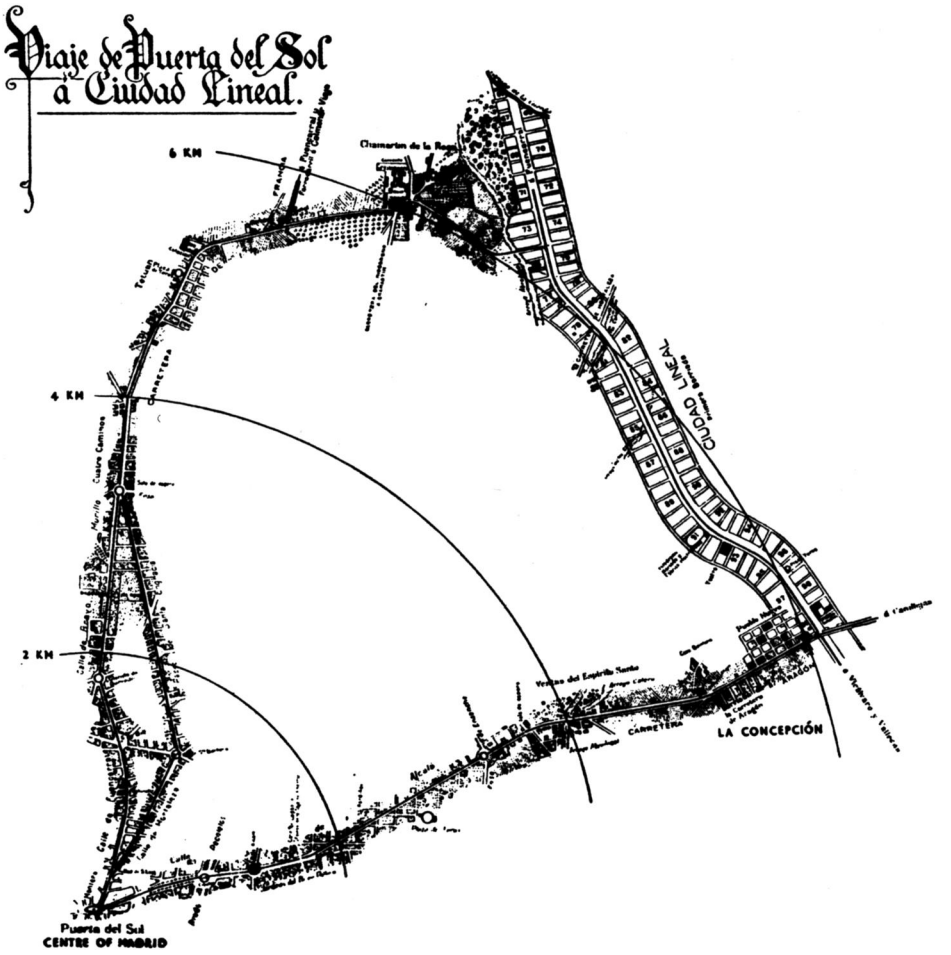

Fig. 3.—Plan showing location of La Ciudad Lineal in relation to Madrid (1911). Source, C.M.U.

and screened on either side by numerous pine trees. There are two carriageways, one on each side of the tramway, though only one of the roads is metalled and fit for vehicular traffic. The standard rectangular building block between two successive vertebrae is 240 feet in frontage to the main avenue and 600 feet in depth. The transverse roads separating the building blocks are 45 or 60 feet wide and are also planted with pine trees. The two roads running parallel to the central avenue and flanking the ribbon of development are 30 feet in width, but have not been constructed everywhere.

The C.M.U., which is still in existence today, performed six principal functions in the development of the Ciudad Lineal. It sold land to prospective house builders; it built houses for sale to a variety of standard designs; it supplied water and electricity and provided sewerage; and it operated the tramways until 1st January, 1952, when these were taken over by the Municipality of Madrid. The building of houses progressed steadily; by 1912 there were 680 dwellings with a total population of four thousand, and in 1927 there were 2,500 dwellings. Building was strictly controlled by the C.M.U. and stipulations were made that houses should be single-family detached dwellings, not covering more than one fifth of their plots, and not exceeding three storeys in height. The minimum size of plot was fixed at 40 x 60 metres (3/5 acre) for plots fronting the central avenue, 20 x 40 metres (1/5 acre) for plots fronting the transverse roads, and 20 x 20 metres (1/10 acre) for plots upon the flanking roads. The last was the smallest permissible size of plot anywhere in the Ciudad Lineal. Building lines were set back to 15 feet upon the central avenue and to 9 feet upon the transverse roads. An examination of the suburb as it is now shows that there have been local departures from these standards, but, nevertheless, the overall density of houses has scarcely been affected. The maximum net density based upon plot areas and roads works out at 3.16 houses to the acre, if each house plot is of the minimum permissible size. The density for a typical fully developed block as shown upon survey maps of the area works out at 3.2 houses to the acre.

Comment

The achievement of Arturo Soria and the C.M.U. in developing the first sector of the Ciudad Lineal is remarkable having regard to the many obstacles which they had to overcome. The site was remote from any existing public utilities at the time when building began, and the Company lacked any powers of compulsory purchase of land and any assistance from local government authorities in the provision of services such as water, electricity and sewerage. The greatest difficulty lay in obtaining the land necessary for the development and, in fact, some of the blocks in the first sector are still undeveloped because land owners have persistently refused to sell. Soria also bought considerably more land than was needed and this excess land has proved burdensome to the Company. The initial success of the project reflects closely the history of street passenger transport in Madrid. The C.M.U. electric tramway represented a complete revolution in rapid and economical travel, considering that hitherto the mule, the donkey, and the horse were the principal means of locomotion, as they still are in the more remote parts of Spain. The Ciudad Lineal prospered and was subsidised by its transport revenue as long as the tramway was in public favour. In the early 1930's the tramway system began to lose money and became a liability rather than an asset. The greater convenience and flexibility of service offered by the motor bus was the cause of this.

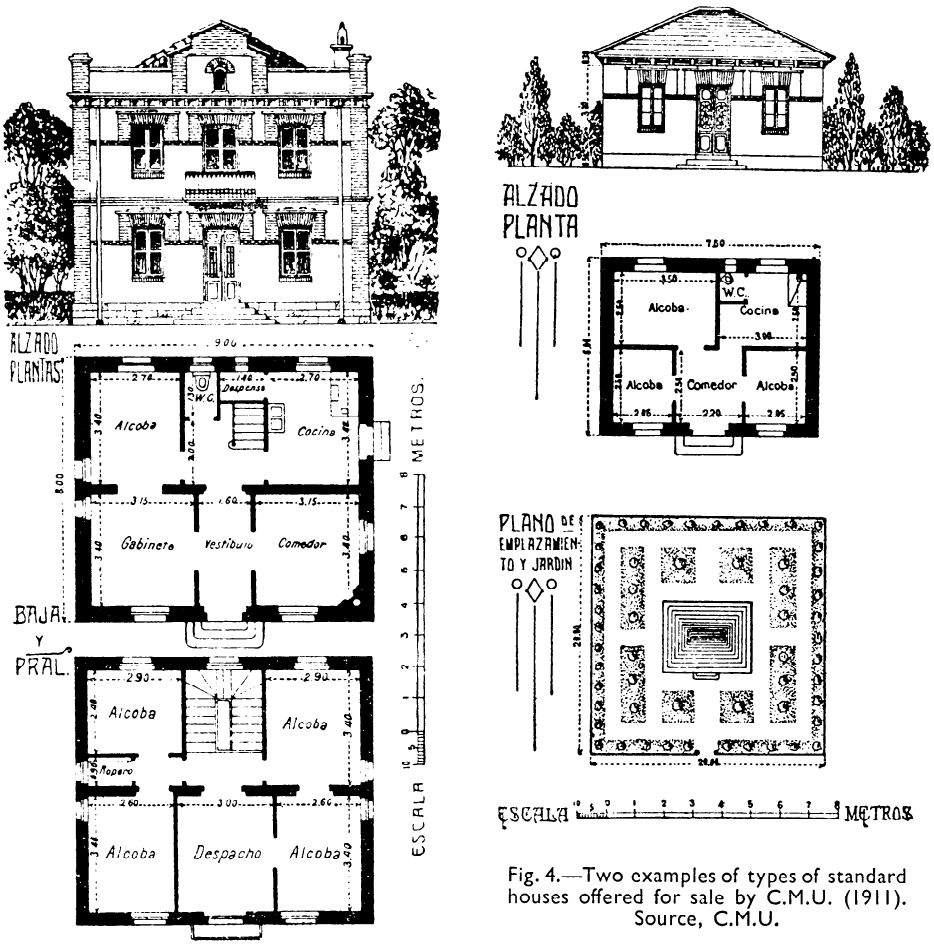

Fig. 4.—Two examples of types of standard houses offered for sale by C.M.U. (1911). Source, C.M.U.

In their Guide to the Ciudad Lineal for the year 1931 the C.M.U. published a list of some thousand of its residents with their address and occupation. Analysis of this directory shows that of the people who disclosed their vocation, approximately three quarters of the total number, 19 per cent. were drawn from the aristocracy, the church, and the professions, 4 per cent. were writers, artists, and musicians, and 8 per cent. skilled workers. The remaining 69 per cent. were either in humble employ or so described their occupation as to conceal its true status. Although land was at first freely purchased and developed by the higher

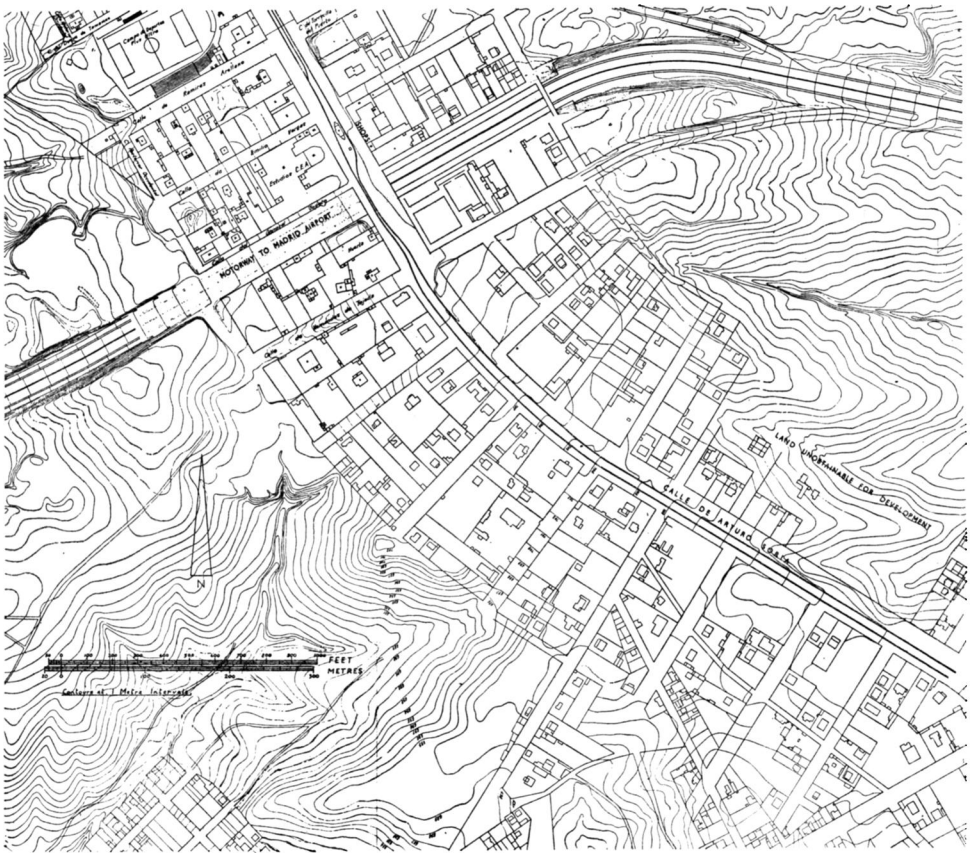

Fig. 5.—Survey map showing part of La Ciudad Lineal as developed (1952)
Source, Town Planning Commission for Madrid.

income groups in close proximity to the dwellings of poorer people, and the social mixing desired by Soria in fact achieved, if only temporarily, it is evident today that the fortunes of the Ciudad Lineal have declined. The more prosperous Madrilenians have sought homes in newer and more attractive suburbs to the north and west of Madrid.

Little attention was paid by Soria to the systematic provision of shops, though small buildings each including a café, bar and waiting room have been constructed in the centre of the main avenue at the principal tramway stages. The residents of the Ciudad Lineal depend upon the shops of the three older villages near its path for their daily shopping. Some provision was made for other communal facilities, including a bull ring, an amusement park and a theatre which is now used as cinema studios. The criticism made by Purdom in 'The Building

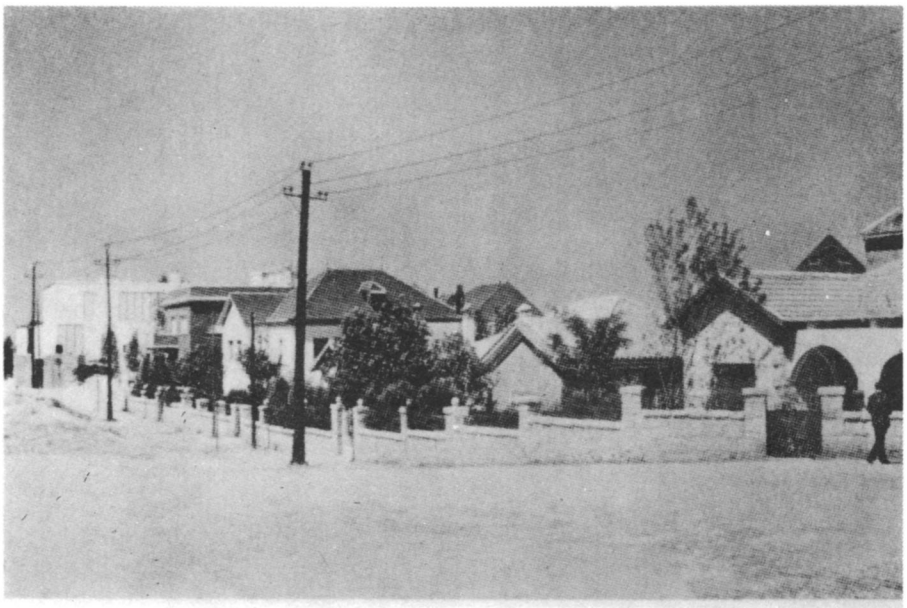

Fig. 6.—La Ciudad Lineal, Transverse Road. Recent Housing (1958).

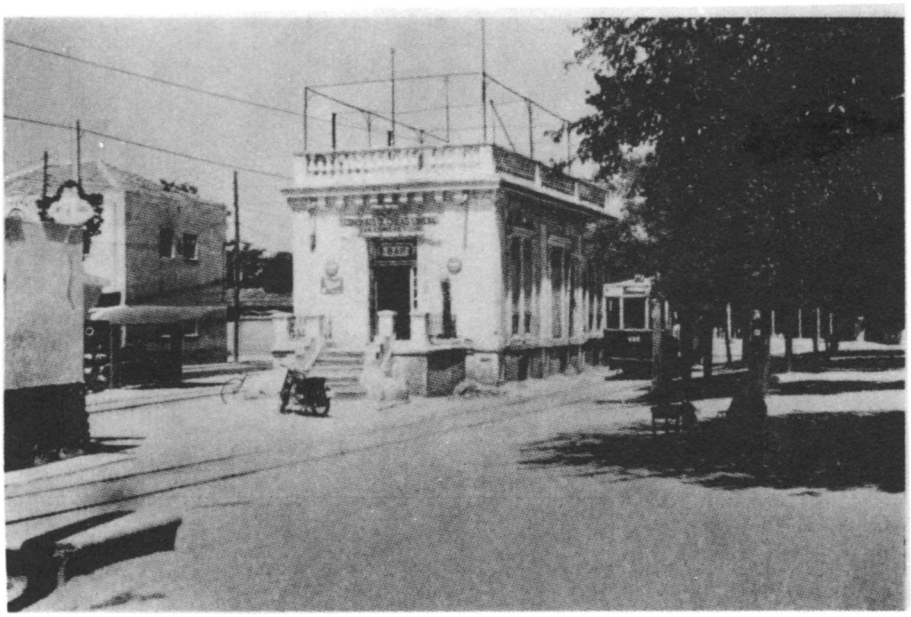

Fig. 7.—La Ciudad Lineal, Tramway stage in Central Avenue (1958).

Plate 26

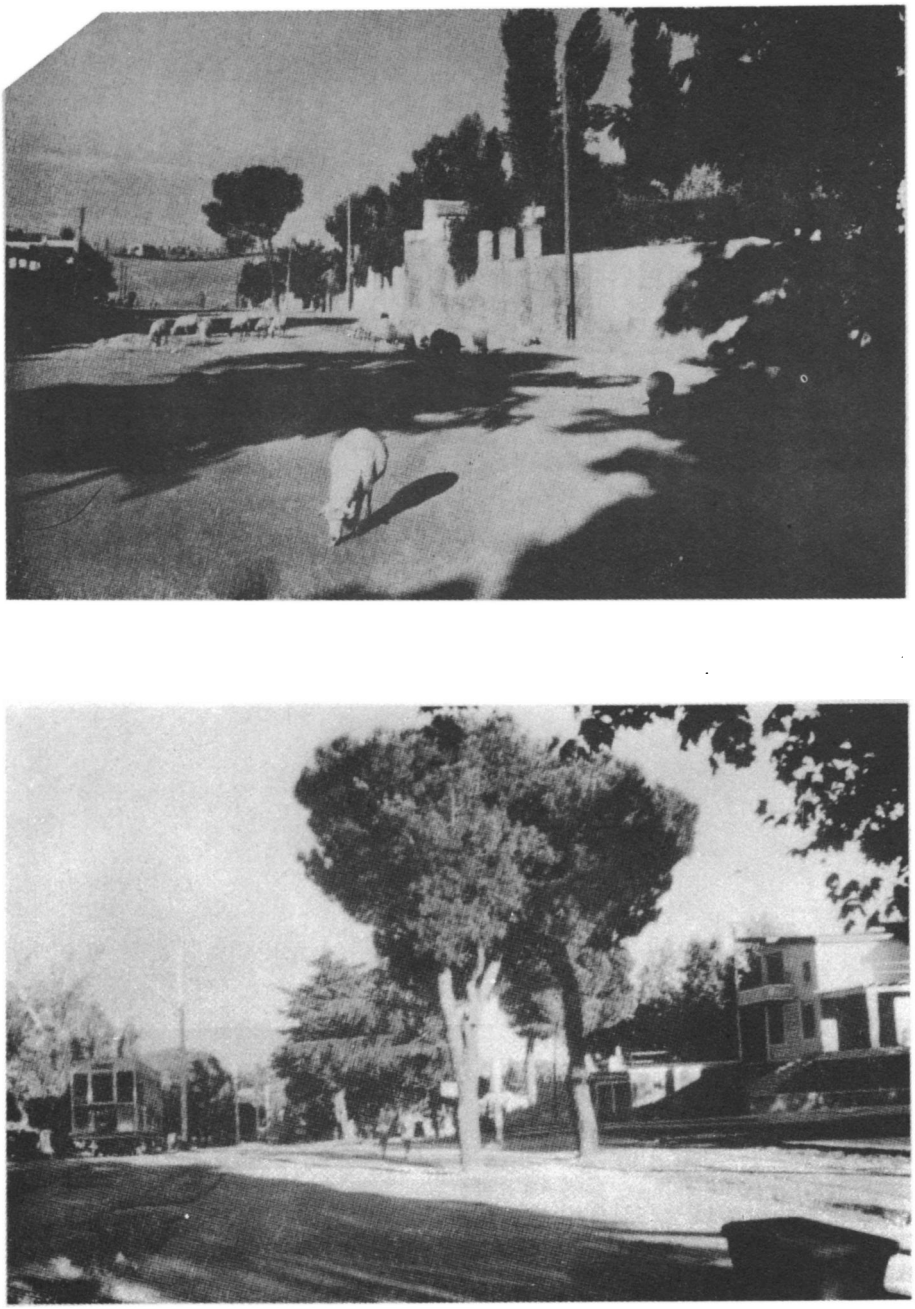

Fig. 9.—La Ciudad Lineal, Central Avenue (1958).

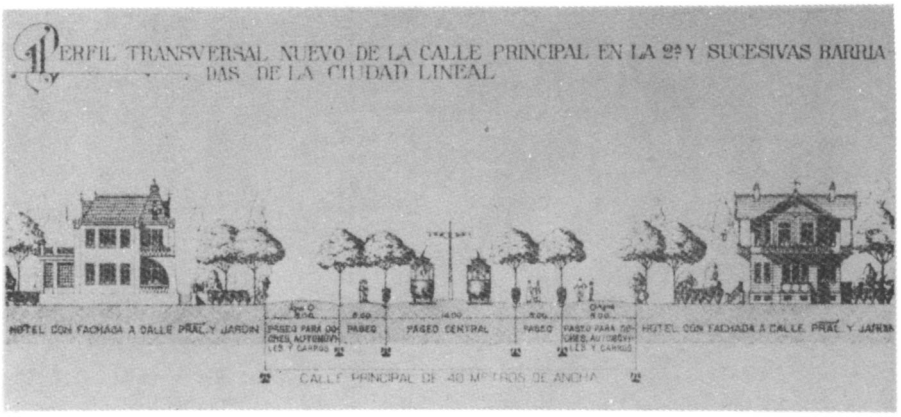

Fig. 10 —Sketch showing cross section through central avenue of La Ciudad Lineal (1911). Source, C.M.U.

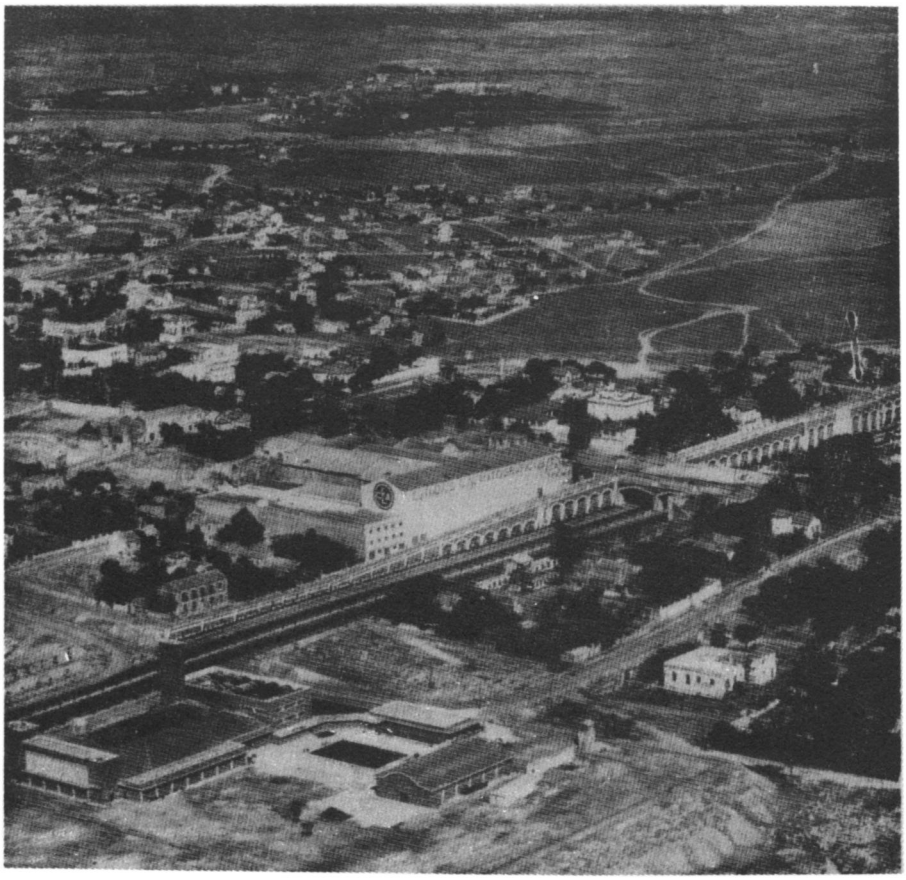

Fig. 11.—Air ew of the portion of La Ciudad Lineal shown in Fig. 5 (1954). Source, Town Planning Commission for Madrid.

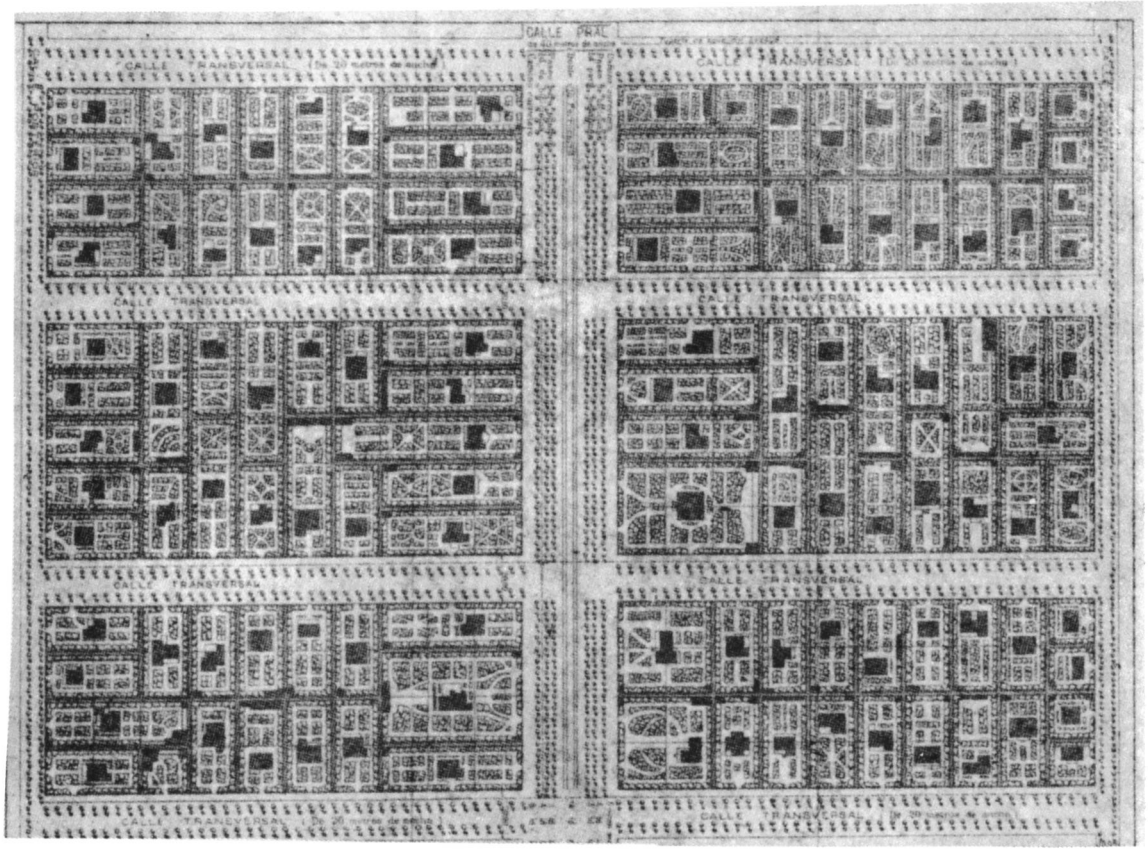

Fig. 12.—Plan showing proposed method of subdivision of land and site planning (1911). Source, C.M.U.

of Satellite Towns' that the Ciudad Lineal is not a self-sufficient town but rather a system of suburban extension is a fair one.

The first sector of the Ciudad Lineal between the Aragon road at Barrio de la Concepción and the pinewood at Chamartin is 3.2 miles in length, and was mostly developed by 1931. Work upon the second sector, which was planned to extend the first southwards through Vicalvaro to the village of Vallecas, was then already begun at its northern end, but did not proceed for more than 5/8 of a mile. The Spanish Civil War intervened bringing development to a halt, and there has since been no further extension of the Ciudad Lineal, nor is any proposed by the Company. A limited amount of recent building has taken place within the first sector and also upon land owned by the C.M.U. but not allocated for development in Soria's original project. Due to this opportunism the Ciudad Lineal in places extends beyond the limits of width set by Soria, and is thereby confused with sporadic building around the nuclei of the older villages which adjoin the Ciudad Lineal.

The principal merit of the system of town building invented by Soria lies in the means it provides for opening up undeveloped land and bringing urban services to agricultural areas. Though the Ciudad Lineal may, to a limited extent, have fulfilled this purpose in its earlier years, the present proximity of urban Madrid takes away much of its meaning. As in the MARS plan for London, or the linear plan for Stalingrad, linear building has definite advantages in the easy and orderly way in which town expansion may be catered for. For application elsewhere Soria's method is too simple and rigidly geometrical to meet the varied demands upon town layout which result from modern social organisation and modes of transport. The railway, which was the *raison d'être* of the Ciudad Lineal, no longer enjoys its former popularity. It would be possible to plan a more complex linear town upon the basis of motor transport and allowing the deliberate creation of nodal points for the various communal facilities which are fortuitously provided in the Ciudad Lineal.

Although the virgin site of the Ciudad Lineal was bare and unpromising, the water supplies for irrigation and the liberal tree planting carried out by the C.M.U. created a green and shady residential suburb for Madrid. There is little or no architectural merit in the buildings which comprise a hotchpotch of styles and materials. The surviving pleasantness derives from the trees and gardens, for low density and height restriction have generally prevented any domination by buildings. There is not much that can be considered worthy of preservation, and the significance of the Ciudad Lineal will soon be lost in the outward spread of metropolitan Madrid. The whole of the Ciudad Lineal was included in the administrative area of Madrid by a boundary extension in 1951. The population of Madrid, which was 800,000 before the Spanish Civil War, now approaches two millions and the city is fast growing. Plans have been prepared for extensive building by the Madrid Housing Authority in the vicinity of the Ciudad Lineal, whose identity will be sustained by little more than the name of Arturo Soria upon the long wide central avenue.

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