



The siting of the railway was seriously considered for many years by the Town Planning Association, and a carefully planned scheme was drawn up by Mr. Fitzsimmons, Town Engineer of Boksburg, and put forward by the Association. It was strongly approved by the Railway Engineers, but vested interests prevented its adoption. Had it been carried out, the new station would have been situated nearer the City Hall than the present one, and the acute traffic problems would have been solved to a very great extent.

The heavy goods traffic from Kazerne to the industrial sites south of the town, most of which now passes through our shopping streets, would have been diverted, and Kazerne would have become a fine park area screening the markets, abattoirs, etc.

The siting of Kazerne is most unfortunate. The prevailing wind from the north-west covers the town with dust and dirt accumulated in the railway yards. The site of the present railway would have been converted into a great tree-lined boulevard separating the business from the residential areas of the city.

With the powers vested in the City Council under the Town Planning Ordinance, much may still be achieved, but at enormous cost to the rate-payers.

Time does not permit me to deal with the details of suburban planning in Johannesburg, but a study of the map of Johannesburg will show lack of co-ordination with its resultant confusion.

I trust that what I have said may be of sufficient interest to you and an indication of the necessity for care and forethought in the planning and development of our towns and cities in the future.

I would like to express my indebtedness to the City Engineers of Port Elizabeth, Pietermaritzburg, Bloemfontein and East London and the Town Engineer of Queenstown for valuable maps and data; to Colonel Bowling, of the Regional Planner's Office, for maps of Pretoria and Johannesburg, and to the "Cape Times" for permission to publish a portion of their map of Cape Town.

It is with a feeling of reluctance, almost of sorrow, that we set out from Rome to Naples on a bright Spring morning, with the air crisp and exhilarating and curiously reminiscent of a September morning in the Transvaal. On the way to the car, we comment again on the unbelievable delight of walking along the pavements of the Vatican City. The sounding of hooters is not allowed within its precincts, and the result is that the traffic proceeds with all due care for pedestrians and vehicles, and accidents are consequently reduced to a minimum. Hansje speculates on the introduction of such a rule in Johannesburg, but decides that it would be impracticable owing to the dangerous restraint it would impose upon the natures of the inhabitants of that far-away city who would be inconsolable if unable to express themselves by means of the most hideous and maddening of all noises, the strident blare of a motor horn.

In Rome one feels that humanism reigns once more as it did during the Renaissance. The machine world is placed in its right and proper relation to humanity and becomes a discreet and silent slave whose service permits us to enjoy in a leisurely fashion the few delights which are left to us. Without raising our voices we converse pleasantly as we make our way to the quiet piazza where we have left the car. Then we drive southwards and, without any of the bustle and confusion and strained nerves which would have accompanied such a movement in another city at this busy hour, we are at the outskirts of the city already looking forward with eager anticipation to the journey southwards—now that we have at last decided to take the step that would mean leaving Rome.

We proceed in a leisurely manner along the Via Appia, the first few miles of which are lined with the ruins of ancient tombs, forming a subtle and fitting transition from the peaceful dignity of the city to the green stretches of Campania. This ancient road is to carry us to Terracina, but when it enters the Pontine Marshes, we decide to turn right to Littoria in order to see the works of reclamation carried out in this new province by the Fascist Government.

For centuries these stagnant wastes have defied all attempts by man to make use of the fertile soil of the submerged plains. In Roman times various unsuccessful schemes were tried with a view to draining the Via Appia. The assassination of Cæsar prevented the execution of his project to deviate the lower course of the Tiber by cutting an immense canal from Ostia to Terracina, in order to drain the swamps and carry the waters of the Tiber into the sea. From this time at various periods attempts at reclamation were made by a long list of great leaders—Theodoric, the Medici, Benedict XIII, Pius VI, Napoleon—but every attempt was doomed to failure, and it is by these failures that we must measure the achievements in this direction of the present leader of Italy, Mussolini. In the space of a few years he has transformed a sodden, putrefying, malaria stricken morass into dry, fertile and healthy fields, and populated them with worthy citizens and their families.

In South Africa some four years ago, we saw an illustration of the Duce assisting in the threshing of the first wheat grown in Littoria. At the time it had signified nothing more than one of the every-day formalities which is on the programme of every national leader. But when one sees the ordered lands of fresh April green, and the vast network of roads and canals, the significance of this ceremony becomes forcibly apparent.

From a slight promontory a striking geometric pattern unfolds itself before our eyes. A vast plain stretches between the Lepini mountains on

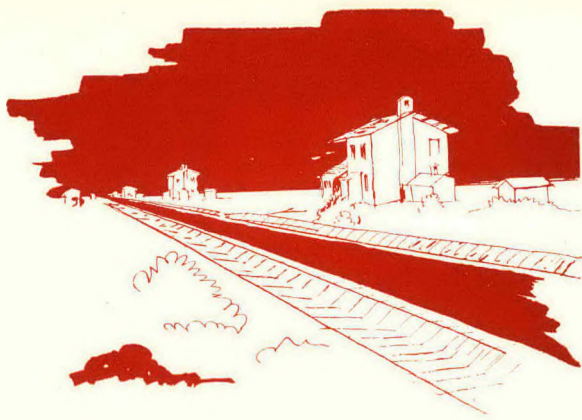


THE PONTINE MARSHES

Reproductions from "Agro Pontino." E.N.I.T.



THE SITE OF SABAUDIA



the east, the Tyrrhenian Sea on the west, the Alban hills on the north. To the south the flatness is relieved by Mount Circeo, which apparently rises from the sea. But for the mountains and the sparkling sun, one would draw a comparison with the fields of the Netherlands with the grey atmosphere lifted—that damp veil which with ever persistent modesty conceals the subtle contours of Holland.

The roads in the new province are lined with a monotonous repetition of identical farm houses painted a pale shade of blue—blobs of sky arranged at intervals of mathematical precision in a composition of green fields and canals which palely reflect more sky. Was it an instinctive object to construct the barns and houses to such a design that the geometric pattern of the Pontine fields could be spun out without a single element likely to distract from the expression—which the canals and banks and roads so forcibly outline—of this colossal achievement of winning new ground square by reluctant square?

If the arrangement of this simple farm architecture was an instinctive feeling for perfect harmony, then it is surely a reflection of the Italian genius for coherent expression. In any other European country there would have been either a futile attempt to introduce the picturesque into entirely unsuitable surroundings or to force machine-like dwellings into an aggressive composition which would lie brutally over the wheatfields and destroy their freshness with its vulgarity. Of these two evils I cannot imagine a lesser. The Italian, however, produces an effect so harmonious, so correct, that it would seem that the spirit which produced the Etruscan bronzes, the Roman viaducts, the Siennese and Florentine painters and the sculpture of Michel Angelo, is still alive in Italy—expressing itself as it has always done, with a subtlety and force before which one stands amazed. . . .

Driving practically on the shore of the Mediterranean, we approach the new village of Sabaudia, which is visible on a very slight promontory ahead of us, with Mount Circeo forming a dramatic and vigorous background. Before reaching the village, we turn right towards the sea and drive southwards on a good road which has been built along a narrow sandbank flanking the beach, so that when we enter Sabaudia it is not by the main road from Rome, but from the sea by a sweeping drive which carries us round one of the arms of the lake, and which shows pleasing glimpses of the clean and simple buildings with the Campanile and the tower of the Commune set against the massive background of Mount Circeo.

We drive past the post office, which is most attractively designed and so pleasantly coloured that we think sorrowfully of the invariably hideous post offices which are erected in South Africa—but South Africa is thousands of miles away, and we suddenly realise that coffee is clearly needed before we can allow ourselves the full enjoyment of seeing the other buildings of this colourful little town. When we pull up before a café old stragglers gather round our coupé to comment on its foreign appearance and to puzzle over the Z.A. plate. Even the most enlightened has never seen or heard of such an identification. We recognise the signs, by now familiar, of the election of a delegate to approach us in order to receive the much desired information, and hastily crowd into the café where the formidable bulk of the proprietor will protect us from the embarrassment of having to answer a hundred respectful questions.

We order coffee and our huge host attends to our needs in a most hospitable manner. Unfortunately his desire to please us makes him turn his radio, newly acquired and obviously the pride of the establishment, to full blast. Our ears, grown accustomed to the peaceful sounds of Rome and the countryside, cannot stand the bedlam, and rather than hurt his feelings, we hurriedly drink his delicious coffee and escape to the street.



From "PIANI REGOLATORI IN ITALIA"

LA PIAZZA DELLA CHIESA E IL BATTISTORO



LE TORRE DEL COMMUNE
Sketches by the Author.

The town is pleasantly quiet and the afternoon air fresh and invigorating, and we give ourselves up to the enjoyment of stretching our limbs and contemplating the pleasant harmonies of the very pale colours, blue, red, primrose, with which the Italians love to paint their plastered walls. Turning a corner, we find the small cathedral facing us. Above the centre doorway a sunken panel of mosaic extends to the full height of the south facade, terminating the dignified vista with a brilliant splash of colour. The design of the cathedral and its tower is simple and unostentatious, and the asymmetrical arrangement of the masses of tower, church and baptistry is particularly satisfactory amidst the rigid forms of the buildings which surround them. On the steps we turn to look back. The quiet dignity of the newly-erected buildings is framed against the contemplative blue mass that is Mount Circeo in the distance. The town of the Commune ties the whole composition of buildings, mountain, distant plains and sky into a coherent and vigorous expression of formal relations.

Four architects collaborated on the layout of Sabaudia and the design of its buildings. The result is a formal harmony that is unique in urban architecture. These buildings make no pretensions to individual architectural significance. They are designed for working people and to serve the needs of the population of that part of the Pontine Marshes which form its district. The single purpose of service, the dignity of the simple designs, the

painstaking planning and zoning of the functional units—all contribute to the realisation of an ideal which should be the guiding spirit of all civic organisations the world over. The conscientious efforts which these four architects, G. Cancellotti, E. Montuori, L. Piccinato and A. Scalpelli, brought to bear to solve an extremely difficult social problem are above criticism, and their solution of the problem is the most convincing proof that such collaboration between professional men is not only possible but desirable if the world is to build cities that will efficiently serve the needs of humanity.

We drive to the site of the hospital overlooking the lake and set in a wide open space. We no longer see the sparse scrub which covers these zones of green. We can see the shady trees and lawns which will make the future Sabaudia even more attractive, and when we turn south to leave this pleasant village the newly-planted trees are transformed into stately giants of shade, carrying us past the school on the road to Terracina, to Naples.

To Naples. The ordered arrangement of Sabaudia has attuned our spirits to the right mood—not for the confusion and the squalor mixed with the fantastic charm that is Naples—but for the appreciation of the treasures of ancient sculpture which lie buried in her Museum. The setting sun speeds us on our way south as we swing out of the fresh and youthful Sabaudia towards the old Naples. A last backward glance shows the youthful grace of the tower of the Campanile silhouetted against the glittering sky—a symbol of architectural and engineering achievement in the redeemed Agro Pontino.

METHODS AND PRINCIPLES OF TOWN PLANNING IN THE U.S.S.R.

By ERICH MAUTHNER

A Paper read to the Architectural Students' Society, University of the Witwatersrand

● INTRODUCTION.

It may seem a little strange to give a lecture on this subject, strange at a time when some representatives of a policy hostile to the political and economical ideas and ideals evolved in Russia try to imply in the words Bolshevik and Bolshevism something of an insult, preaching that Bolshevism would mean the end of all human culture and all civilisation. Strange also because the political and economic system in the U.S.S.R. is creating conditions quite different from those prevailing anywhere else. Still, I think it is worth while trying to make you acquainted with one of the most interesting chapters in the development of modern Russia.

The system of town planning in the U.S.S.R. is a direct result of the social and economic order. The main obstacle preventing systematic town planning in other countries is the private ownership of ground. In the U.S.S.R. this has been abolished. Therefore there can be no speculation, estate agents, etc.—planning on broad lines becomes possible.

This planning process goes far beyond mere town planning, which, in fact, is only one amongst many items of the national economy based on the State Plan. This Plan is derived from the natural possibilities provided by the existence of minerals, water, coal, labour power, and transport facilities. In the course of the fulfilment of a Plan new possibilities are created which in turn serve as a basis for the next Plan. The whole is a scientific system, relating natural, human and mechanical energies in such a way as to produce the best possible results.

Town planning reflects the same system within its particular sphere. A great number of different specialists combine their efforts in the planning office. Of these the most important are: the economist, the planner, architect, various engineers, geologist, climatologist, cartographer. Outside specialists are called in for any problems which require the assistance of still further specialised scientists.

Let us then see how the problem of town planning arises in the U.S.S.R.

Industrialisation, formation of new industrial centres in agricultural districts, transformation of agriculture into collective or State farms—all this is accompanied by the growth of the population in the old towns and by the foundation of new towns and villages where the working people are to find housing accommodation satisfying all cultural and hygienic requirements.

In the following I shall try to give you a short summary of the proceedings necessary for the realisation of a town planning scheme, say for an industrial town. There are no private offices where this work is carried out, but the offices dealing with it are working on their own and have large staffs at their disposal. They belong to the system of one of the Government departments called "peoples' commissariats." The client who gives the order for the town planning scheme and who has to pay for it may be the administration of an existing factory or of a factory which is to be erected, or of an industrial combine. It might also be, usually in the case of reconstruction, the municipality or town itself. In no case is it left to the discretion of the people whether they want a scheme carried out or not, but there are special decrees deciding what work is to be done and in what time. No money is available for any construction which is not in accordance with an approved planning scheme. A proper agreement has to be concluded between client and town planning office in the form of a contract. Nevertheless, all working people, for instance, the workers of the factory for which the scheme is designed, take part in the work by discussing the sketches for the scheme, frequently making valuable suggestions.

It would be wrong to think that the completion of a town planning scheme is an easier task in the U.S.S.R. than elsewhere. I do not think so. The work consists not only of many graphical documents which are indispensable, supplementary schemes to the general scheme and much written information; but there are also many problems concerning Sociology, Society, Nationality, etc. It is a matter of course that there cannot be a uniform solution of the planning problem which could be valid for the whole territory of the U.S.S.R., where so many—well over 160—different nationalities are living, representing widely different stages of historic development. To this must be added the extreme variations of climate, geological formation, etc. The task is to find the best solution and organisation for every particular scheme, keeping in mind the characteristics of the future population, their habits, their conditions of life, their work in factories and other activities. In this connection questions of eating, sleeping, recreation, physical culture, nursing, prophylaxis, education, cultural needs, etc., must be considered and satisfied. That means, in order to get a satisfactory scheme, the whole territory has to be zoned in the right way. Space has to be allocated to the different types of buildings and these must be properly related to the communal amenities, such as streets, parks, sports grounds and transport facilities.

The impracticability of extending or rebuilding an existing settlement in the particular district may be the reason for building a new town or village near a new factory. The Government will decide by decree the construction of a new settlement. Application for the erection of the settlement may be made by the Commissariat of Industry to which the new factory belongs. In the meantime all obligations between employer and those who carry out the scheme have to be settled in the form of a contract. The collecting of all information may be considered as the first stage of the work to be done by the planning office. Sometimes the employer will put at their disposal some supplementary information. The result of this research will be a certain amount of statistic and other data in writing; altogether a special monography dealing with the settlement to be built, and based on this work the agreement might be altered or additions may be made. Besides, there will be a collection of cartographical material necessary for the future work. If possible existing materials will be used; that will be the case in developed districts. But in new districts there are great difficulties, which the town planner and his associated specialists have to overcome; though the reconstruction of an old town will be a still more difficult task than the planning of a new one. The importance of this first stage of the planning work is obvious; all further decisions are based on it, and rashness and negligence at the beginning may lead to delays and unnecessary additions and variations later on.

The second stage, based on this information, commences, and may be described as—Stating the Problem. The employer plays a part in so far as his point of view concerning the future works or factory has to be taken into account. This includes the proposed annual production, the number and type of workers and employees, cost of production, workmen's family budget, etc. The actual solution is based on several main points.

- (1.) The synthetic and analytical investigation of the economic aspect of the scheme, which is of great importance for all the sociological decisions.
- (2.) As regards buildings: sociological reasoning, dealing in the same way with modes of life, habits and all communal services for the future population, adapted, of course, to practical possibilities.
- (3.) Structural and sanitary planning dealing with the questions of building material, territory, the area to be covered and other questions concerning natural properties of the ground. Obviously, the sequence of building work has to be laid down with reference to industrial development or other factors.

After having stated the problems in writing there is still the graphical work to be done in form of the sketch scheme as the third stage of planning work. In practice, written and graphical work must be passed by several bodies. First by the employer, who will then forward them for examination to higher bodies. This necessity of consulting a number of specialists representing different Government departments such as those for education, transport, hygiene, etc., constitutes a procedure that is indispensable for a successful scheme. In this way all inconsistencies in the scheme will have been eradicated when it is submitted to the Government. It might be of interest to mention that public meetings are held, when the provisional sketch scheme is explained and exhibited for criticism and discussion. Thus a living contact between the town planner and the masses is established and maintained.

After passing the sketch scheme a fourth stage is reached—the final scheme is based on the sketch scheme, to which corrections and variations are made according to the decisions laid down in the Government protocol and in those of the public meetings.

Generally the working programme for planning a scheme will be the following :

- (1.) Provisional research, collecting material necessary for stating the problem and working on the scheme.
- (2.) Report on the problem.
- (3.) Passing of the report on the problem.
- (4.) Sketch scheme.
- (5.) Passing of sketch scheme.
- (6.) Final scheme, including schemes for water supply, sewerage, heating, etc.
- (7.) Passing of final scheme.
- (8.) Working drawings.

● INFORMATION CONCERNING INDUSTRY.

In stating the problem for a new settlement and for further planning work, different information is necessary concerning new industries and those which are already in existence, other information concerning, for instance, the question of whence the future working people are coming, and that of the adjoining existing districts which have to be taken into account. There is demographical information about labour power, and cartographical records showing the position of industrial sites and all buildings thereon. Information about the number of workers at the factory is the starting point for the calculation of the population of the future settlement. These figures must be based, with sufficient accuracy, on the needs of the production process and on further development of technics. In these records the number of workmen and employees, temporary and permanent, will be given according to the financial plan for the factory. There should also be information regarding apprenticeship and workmen's qualifications, the former with a view to the intended establishment of factory schools. Another important question is that of shifts, important for the solution of the transport problem with regard to the connection between housing and factory. Special attention is given to the question of women labourers in the factory. There are, for instance, more women employed in the textile industry than in the heavy industry. If a new factory is planned, the number and percentage of women workers will be known. For planning of stores and shops it is necessary to illustrate the anticipated budget of workers and employees. On the cartographical record not only the situation of the industrial site has to be shown, but also temporary and permanent railway lines, roads, railway stations, etc.

Further data on industrial waste waters and their disposal, data about unhealthy smoke, etc., must be indicated on the map because these factors are of importance in the selection of the residential area. This section of the work will conclude with data about intended development of the factory concerned during the following five to fifteen years.

● INFORMATION CONCERNING AGRICULTURE.

It is necessary to collect data about the occupations of the population of the district who are likely to be chosen for the new town. The collectivisation of agriculture, based on industrialisation, guarantees the supply of foodstuffs from the neighbourhood, leading to considerable reduction in costs for transport. That means it will be necessary to illustrate the possibility of erecting grain silos, warehouses, storehouses, elevators, slaughter-houses, etc.; their connection with the corresponding agricultural districts, keeping in mind the zoning of these districts into vegetable, horticultural, stock farming, dairy districts, etc. In this section it will also be necessary to take into account existing districts and future development. The research has to establish the anticipated consumption of foodstuffs by the population and the necessary organisation.

Besides the new town's rôle as an industrial centre, it will be important to determine whether it might play a part as an administrative centre. Frequently old towns lose their importance, their administration-functions being transferred to newly-developed towns. Naturally the question will be settled by Government decision. Nevertheless, the Government must be informed, in order that suitable provision be made in the event of the new town being proclaimed an administrative centre.

Further information concerns cultural life, having in view existing cultural institutions, and since these are generally not sufficient, the planners must point out how the requirements of the new settlement and of their surroundings can be satisfied.

The possibility and even necessity of erecting nursing homes and of establishing health resorts belongs to a still further sphere, where the scope of activity of existing institutions has to be determined and that of future ones has to be provided for.



NOVO-SIBIRSK, U.S.S.R.

The junction of the Trans-Siberian and Turksib railway is being developed as a major Siberian industrial centre for 300,000 population. Note the provision for satellite communities for workers' housing.

● INFORMATION CONCERNING TRANSPORT.

If a new town is planned in an undeveloped district, a case which happens not too seldom, information is required concerning railways, roads, waterways, and airlines in the districts adjoining the new one. In this information the planner will point out how far existing transport is developed, its capacity and what the plans are for future development during the next five to fifteen years. Naturally existing structures serving transport will be considered. And in order to avoid later complications it is essential to show on the map not only the position of existing areas and their transport services, but also those contemplated for future development. It might be mentioned in this connection that the question is of particular importance on account of the large areas required.

● DEMOGRAPHIC INFORMATION.

This means a description of the new population which will supply the labour power for the new industry. In general, the existing population, if there is one, has to be carefully described. Their influence on the character of the new settlement might be of great importance. Where people coming from other districts are concerned, highly qualified workers and specialists, for instance, those districts must be characterised. If census figures are available they will be used, providing information about sex, age, social position, profession, nationality and national peculiarities of these people. Further data about increase in population, birth-rate, mortality and the prospect of future extension of employment is of great importance. Lastly, a consideration of the rôle to be played by temporary and permanent workers respectively has to be included in this analysis.

● INFORMATION CONCERNING GEOLOGY AND HYDROGEOLOGY.

It is impossible to detail this aspect of the work. Generally, I should say, research will be done in the following way :

Determining geological sections through the territory.

Determining the safe load at different points of the future area.

Determining high water level.

Determining sub-soil water level.

Characterising regulation of water areas and of water courses.

Defining future green areas.

● INFORMATION CONCERNING CLIMATE.

In the description of the climate of the district one has to produce data concerning the latitude and longitude, showing a general characterisation of the climate as belonging to the groups of continental medium, sea, or even arctic or tropical climate. Keeping in mind the enormous extension of the U.S.S.R., it must not be surprising that there are all these possible variations.

In addition, the following data is necessary: the seasons and their sequence, stressing any peculiarities.

This data is important for the general type of buildings, intended green areas, etc.

Data about temperatures, meaning the average annual and the average monthly temperature in air and in water, highest and lowest temperature, the number of days with frost and of those with thaw, per month. These figures give indications for the construction of external walls, for the calculating of heating, insulation, etc. The number of rainy, foggy, cloudy and sunny days, the duration of sunshine in hours, separately for every season, is required.

According to these figures buildings may have to be faced in different materials. For instance, in the case of figures concerning humidity and atmospheric pressure; they are important in judging the healthiness of the climate, and will possibly show the necessity of providing more green areas which increase the humidity content of the air. Annual and monthly figures con-

cerning snow and rain, height of snow cover, thickness of ice on rivers and other water areas gives a clue for the selection of roof construction and their necessary pitch, equipment of roads and their drainage. Further data is to be collected concerning strength, velocity and directions of winds. Graphically these figures are indicated in the seasonal and annual compass card. With the aid of the compass card the best situation for the settlement can be found; that means the situation must be chosen so as to avoid the unhealthy smoke from industrial sites and its harmful effect on residential areas. The compass card also plays an important rôle in the planning of streets and green areas and also in the design of buildings with regard to wind pressure. In order to decide to what depth foundations have to go it is necessary to know at what depth the soil will be free from frost. The same applies to pipes laid underground. Special attention has to be given to the question of "eternal ice" in the north of Russia, where the specialist is confronted with the task of designing schemes for industries, and also for residential settlement, under arctic conditions.

● CARTOGRAPHIC MATERIAL AND AIR PHOTOGRAPHY.

Occasionally it might happen that the district chosen for economic development is not yet surveyed, where, for instance, hardly any human beings have lived previously. In such cases it is definitely necessary to start at the beginning on a survey of the whole area contemplated for development. The cartographical material necessary to carry out the town planning scheme consists of a certain number of maps drawn to different scales in the metric system. For instance, the district map showing all existing and future residential areas and also all existing and future industries might be to a scale of 1:50000 (1/4000"). To a scale of 1:10000 or 1:5000 (1/800" or 1/400") a map might be drawn showing a site plan of the factory and the districts of the area probably to be chosen for the town, roads, railway lines, existing green areas, etc. Of course, contour lines, all 1—5 metres, will be included. Another map will be to a scale of 1:2000 (1/160"), the contour lines will be given in 1 metre intervals. And that map will be used for the actual town planning scheme. The maps on which the schemes for single elements are drawn, and which are used for showing sections of streets and pipelines, will be to a scale of 1:500 or 1:1000 (1/40" or 1/80"). It is of great value to make a model of the whole territory which is to take the future town. Very clever models are made out of single plywood sheets, cut according to contour lines, sometimes of cardboard.

The importance of photography from the air for the town planner is generally recognised, and increasing use is being made of this method. Of course this research must surmount many difficulties. The material that can be supplied is insufficient in many cases and almost non-existent in the case of some new and undeveloped districts. It is then necessary to work on hypothetical figures which approach as near as possible to realities. The probable course of development must be anticipated and analysed—planned economy on broad lines.

● THE ECONOMIC PROBLEM.

As a result of research and collection of all material the problem of the settlement will be stated. In order to correlate the scheme with the uniform system of economy existing in the U.S.S.R., the regional planning must be considered in which, for instance, the necessity for developing a new industrial area will find its explanation. Of course, these regional plans are executed by another special office. The ideal case is that in which the regional planning scheme is finished before the town planning scheme is started. The regional planning indicates the best means of economic and industrial development in proportion to the importance of the district and gives information about several questions mentioned before. As far as provision is made in the regional planning for the new industrial area, the latter, including the new town will be correlated to the total system of national

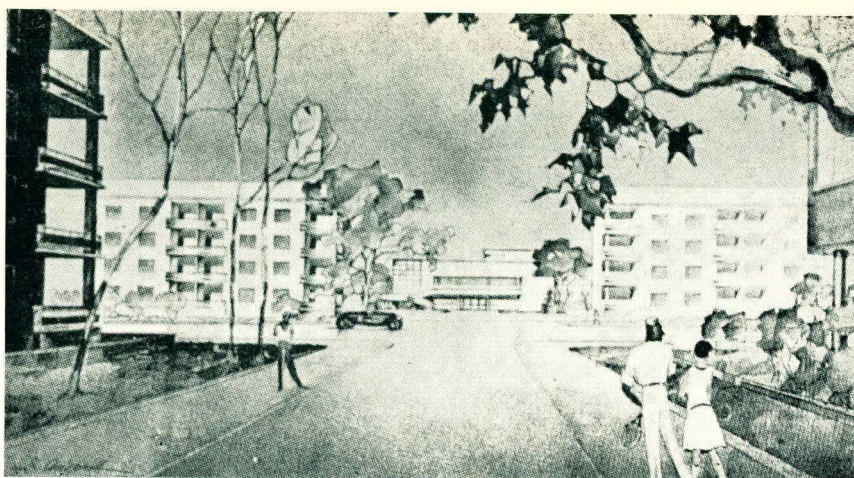
economy in the U.S.S.R. The first thing to be done in order to illustrate the problems is the calculation of the future population. For that purpose all demographical data will be used and analysed, giving in the final result a fairly accurate figure. It would go too far to give a detailed account of the methods of calculation. Based on the number of population, the intended density of population must be decided. The meaning of density as a technical term differs from our interpretation. One differentiates between three terms for density. There is the number of inhabitants per 1 hectare of the whole residential area, then the number of inhabitants per 1 hectare of residential block, generally including all internal areas; finally the number of inhabitants per 1 hectare of built on area of residential block, taking into account only the actual flat buildings. Another criterion which determines the quality and particularly the economy of a scheme is the compactness of the network of streets expressed in the proportion of running metres of street per inhabitant. Naturally conditions of ground and contours play a decisive part. Similar figures are gathered regarding the different mains, green areas, etc. I mentioned above the importance of the workers' budget. All information gathered, in that respect, will be used to illustrate the problem of distribution of goods by shops and magazines.

● THE SOCIAL AND SOCIOLOGICAL PROBLEM.

The character of the different classes of buildings is of the greatest importance, and it is one of the most difficult problems which must be solved. Economic and social life to-day is so different in the U.S.S.R. from that anywhere else that new ways must be found, based only to a limited extent on experience. Of course, there cannot be a uniform solution of the problems of housing, but according to the habitus of different nationalities and to the stage of progress reached by different strata of nationalities the solution must be different. Sometimes transitional forms must be found, as is the case for nomads who become settled.

During the several stages of economic and technical reconstruction and development, the norms for dwelling area per inhabitant could be steadily increased. This figure is the starting point for calculation and design of housing, but it must not be understood to be a uniform norm. The figure will be higher in the case of highly qualified workers, brainworkers, inventors, artists, etc. There are several elements which are combined in special units, called housing combines. These comprise apartment houses, which are the usual form of dwelling, quite similar to our blocks of flats as regards the plan of the single flat; restaurant, crèche, kindergarten, public centre, laundry, etc. The number of inhabitants of such a combine is usually about 1,000, a figure which stands in a definite relation to the other elements, but particularly to crèche and kindergarten, where the children of corresponding age groups stay during the day. The age for crèche children is limited to three years, approximately 7% of the population, and that of kindergarten children is from three to seven years, also approximately 7%. The size of these institutions is the result of the necessity of having them situated as near as possible to the dwellings, as well as satisfying the methods of education which require a sub-division into several groups of children, about 15 children to a group in the case of a crèche and 20 to 25 in the case of a kindergarten. Naturally these groups cannot be indefinitely added. There should be not more than four to six groups combined in one crèche and three to four in a kindergarten. Since these percentages of the different age groups are known, we are able to determine with sufficient accuracy the total number of inhabitants of a housing combine, if it comprises one crèche and one kindergarten; which will come to about 1,000.

The whole method of the town planning system makes it necessary to include all functions of living. So we have as an example the problem of nutrition, distribution of foodstuffs and other goods. The complete distribution of provisions, for instance, will be shown, starting with the collective



ZAPOROZHE, U.S.S.R. Perspective of type of building now proceeding in Russia

farms for local produce, railway and similar storage for imported foodstuffs, going on to the network of trade, to the food combines for industrial manufacturing of foodstuffs, the kitchen factories, to restaurants, luncheon rooms and coffee houses, to schools, crèches and kindergarten, to nursing homes, to provision shops and finally up to the kitchens of the single flats. In a similar way one has to proceed in illustrating distribution of other goods, the system of workshops of all kinds which serve the daily requirements of the population.

Another problem, the solution of which is of great importance, is that of education. Generally we can find the same principles as anywhere else. The lower the age of children the nearer they must be kept to the parents. On the other hand, children of the same age must be brought up together because the mutual educational influence of children on one another is considered as important for a healthy development.

It is a matter of course that for all children without any exception provision must be made for school education. I am not able to go further into the matter—it would necessitate another lecture by a person more competent in that subject. My intention is only to point out that the town planner and his collaborators have to make themselves acquainted with the principles of education and must include in their scheme all types of educational institutions ranging from elementary schools to universities.

Similarly the problem of sanitation and hygiene must be solved, starting with the smallest unit, the small medical centre serving a housing combine, and proceeding to the nursing homes, sanatoria and health resorts.

Another subject is fire stations, garages, communal and similar services comprising public baths, laundries, the distribution of barber shops, etc. Special attention has to be given to cultural institutions and physical culture. The principle of planning is just the same as pointed out for other institutions. We find the smallest unit provided for the housing combine or the whole residential block in the form of a public centre and an area sufficiently large to provide for sports grounds for the use of the inhabitants of the block. The next unit is the district club for the whole town district, which comprises cinema, public library, public reading rooms, one or more assembly halls, and club rooms for several purposes. In the main centre of the town we find the so-called palace of culture, a building similar to that mentioned before, only larger, since it has to serve the whole population. The last type of building appears only in the building programme of large industrial towns.

Similarly the distribution of areas for physical culture starts with the residential block. We find within the block areas allotted to kindergarten which are near the apartment houses; well situated for daily use. Besides there are ample sport facilities near all buildings, for the education of school children and adults. There are sports grounds to be provided near the district clubs, the service zone of which need not be calculated as for daily use by the inhabitants of the district. Finally, a stadium must be provided for large towns for all types of sport, where matches and contests will take place.

In conclusion in the description of these aspects, I should mention the importance of buildings for administration and similar purposes. Their distribution and their size depends on the character and size of the settlement and, to a certain extent, the function of the Soviet Constitution. I might just enumerate the buildings referring to that group. They are buildings for government, trade unions, party, court, post office, telegraph and telephone buildings, broadcasting houses, savings banks, etc. After having decided all these problems separately within their limits, the planner is faced with the problem of correlating them in a uniform composition. He must find a mean between centralisation and decentralisation, separately for every aspect, and again for the whole scheme. The decisions must be based on the principle of giving the best service equally to all residents by placing these services as near as possible to the respective inhabitants. In doing that all requirements of the economic system of the complete scheme must be considered.

Only the graphical solution of the problem makes it possible to determine how far all requirements have been considered. That refers to the whole question of the planning scheme, which, in its final form, appears as the solution of a great number of economic, social and sociological, technical and architectural problems.

● THE TECHNICAL PROBLEM.

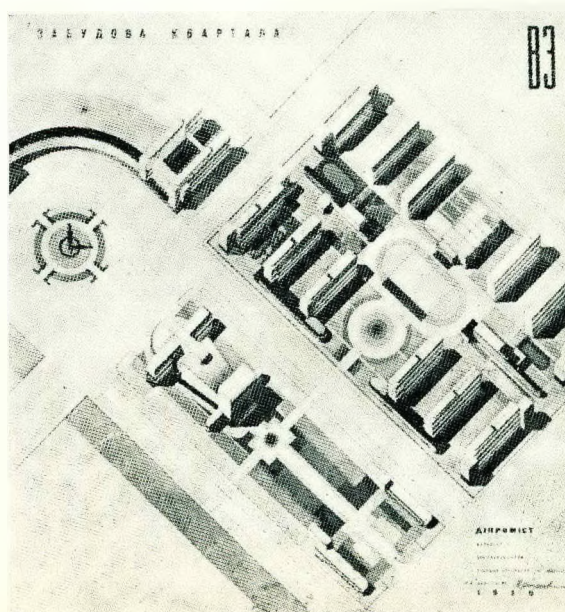
Selection of Building Materials and General Construction.

This aspect cannot be treated here. In its general implications it is the same as anywhere else, and in its particular problems the variations throughout the area of the U.S.S.R. are such that it is impossible to say anything of general validity.

Selection of Territory for Settlement.

In the present case we are dealing with an area in the neighbourhood of an industrial site; that means the selection of the industrial area is very definitely connected with that for the new town. Naturally there is much more than only the considerations concerning the industry which determine this selection. There are, for instance, the considerations of the health of the future population, an aspect which might come into conflict with the purely economic and industrial viewpoint. In such a case there cannot be any doubt that the health of the future population must be the decisive factor,

A SCHEME FOR SLUM
CLEARANCE IN RUSSIA
The drawing shows a residential
block complete with dwellings,
sports grounds, schools, etc.



even if considerably greater cost is involved in developing a suitable and satisfactory residential area. So we see that it will be best to decide on the selection of residential and industrial areas at the same time. There are certain qualities which represent definite advantages for a territory; for example, if it is dry, there being a little stream, if there are trees, a small forest or a lake near by.

Conditions existing in the U.S.S.R. make it possible to include natural beauty of surroundings in the considerations concerning the selection of a residential area in relation to the whole scheme. In the case of the residential area being situated on a river, the industrial zone will be situated further down the river. In that way industrial waste water would not be of any harm. If there should be several factories along a river, it might be better to place the residential areas somewhere else, particularly if an analysis of the waste water shows that it contains harmful matter. Based on the compass card, no residential area must be situated in such a way that prevailing winds carry unhealthy smoke from the factories into or over the settlement.

The complete separation of industrial from residential areas has advantages which cannot be sufficiently stressed, particularly if we look at conditions existing in other countries. No railway lines serving industry can interfere with the quiet of residential quarters. The separation excludes any nuisance caused by the noise of machinery, and fire or an explosion in a factory will not endanger the settlement. Finally I pointed out that harmful effects of industrial waste and waste water on ground or water used by the population can be avoided. Between industrial and residential areas a protective zone should be provided. These zones are to be thought of as green areas, if possible even water areas, and if there are no trees, or not sufficient trees existing, provision must be made for planting in order to make the protective zone effective.

According to their character there are three categories of industry, for which the respective zones of protection are a minimum of 2 km. ($1\frac{1}{4}$ miles), 250-500 m. (yards) and 50 m. (yards). That means the width of this zone varies according to the possible harmful effect which the respective industries might have on the population in the town. As a further criterion for the selection of a residential territory may be considered the possibility of satisfactory connections between future main roads and the approach to the factory; the possibility of including the municipal main roads into the general network of State roads; the possibility of making satisfactory connections with the railway and efficient communications between town and agricultural districts, which must guarantee the supply of foodstuffs to the town.

The decision on the selection of an area will be in the form of a decree, with a supplement consisting of a map showing the area and a report by several local bodies.

● DIMENSIONS OF AREAS.

Generally: no gigantic towns, no accidental growth. Steady proportion between economically proved industrial development and corresponding residential areas. There are certain standards for the calculation of the area necessary for the new town. The whole territory is composed of several zones: there is the actual residential area consisting of a number of "residential blocks," areas for roads and for public buildings. Within these areas the sites for administrative buildings should be placed, sites for schools, hospitals, theatres, concert and assembly halls, warehouses, etc. By that means it will be possible to show approximately the boundaries of the area required. The calculation of the complete area is based on that of several main groups, such as residential, administrative, civic and municipal services, and green areas. The calculation of the residential area is based on the density intended for the respective residential blocks, and in that area are included the plots for crèches, kindergarten, restaurants, sports grounds and

roads in so far as they only serve the respective blocks. Approximate figures in percentages show the following sub-division in an actual residential block:

Residential area proper	70-75%
Internal roads	10-15%
Special green areas	10%
Internal areas for general use	5%
Total	100%

In proportion to the area of the whole town the residential area will be approximately 50-60%. These figures are, of course, only to be taken as a guide. In applying them, extensions according to increase of population must be allowed for.

● THE GENERAL SCHEME.

I do not think it is necessary to go into details about town planning in the past. We all know the typical features of the several types, beginning with the old days up to present times, which produced more or less standardised features according to economic conditions. But I shall try to give you an impression of the new types of towns that are being designed and built in Russia to-day.

There is no intention of using any one of the known town planning systems as a general form, whether it be the chessboard, radial ring or combined system, though in most cases a system similar to the first mentioned will be best if properly adapted to local conditions.

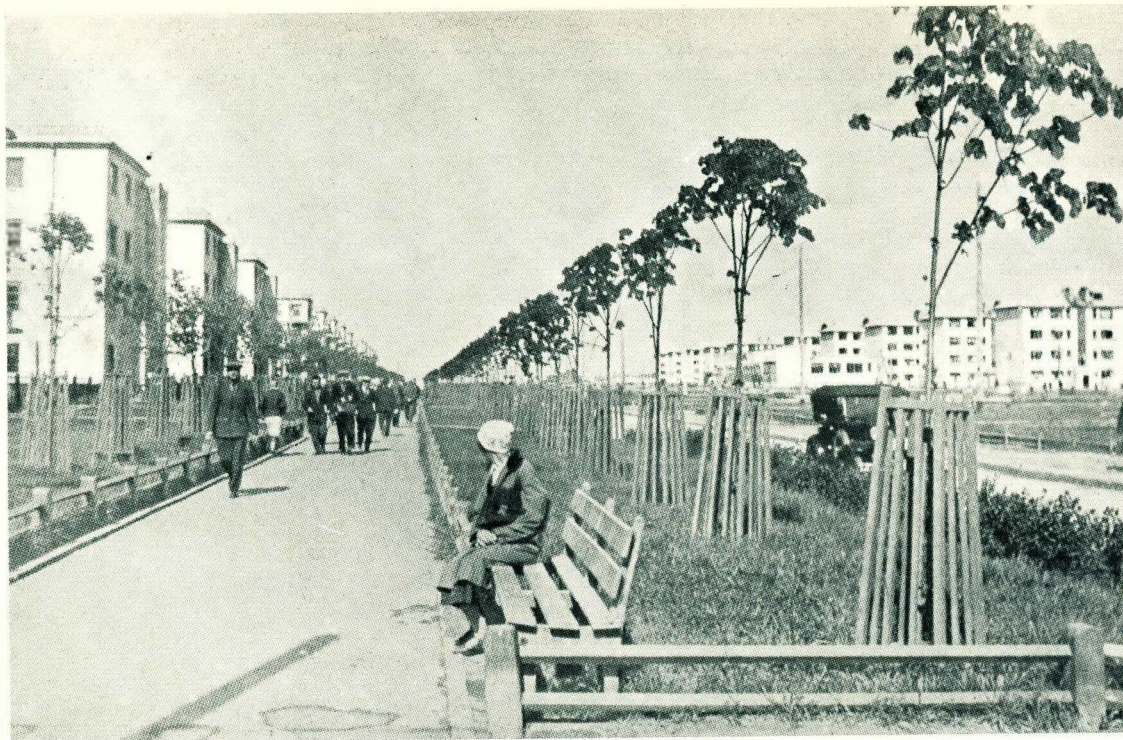
Definite factors are taken as starting points: The best connection between industrial and residential areas and public centres; connection with railway station, harbour, airport, etc. Satisfactory outline of residential blocks, relief of the territory with regard to the sewerage and drainage schemes. Insolation, that is, the influence exerted by the sunrays, ventilation of streets and of the whole town, and prevailing winds. Conservation of existing roads, green areas, etc., as far as possible or desirable.

That means that there are several functions which must be fulfilled. The difficulties arising in the case of a town being built on a slope will be overcome first of all by designing the streets in the right way. They must not exceed a certain maximum angle, internal residential streets being allowed a steeper gradient than thoroughfares.

According to their importance there are different types, and it is in the nature of good planning methods never to mix these types.

The first type is that of main streets or thoroughfares serving the main transport; for instance, the street connecting town and factory, which, of course, can be rather short in the case of the protective zone, being only 50 yards wide. If that is the case, mechanical transport between town and factory can sometimes be saved, the industrial area being within walking distance from the residential quarters. Another group of streets are residential streets connecting residential blocks with main streets. The third group consists of internal streets within the blocks. There is no need to give details about design and construction of these streets because they are, from a technical point of view, the same as anywhere else.

But I would like to point out the considerable advantages of a systematically planned network of streets. The width of every street is in strict accordance with the expected traffic to be served, and that applies also to the elements of the street, namely, roadway and footpath. At the same time, all mechanical transport is planned, and subsequent enlargements of streets are avoided. There is no difficulty in providing ample space for temporary parking. This economy in the distribution of street areas, which should not exceed a certain percentage of the whole area, simplifies the question of street lighting, maintenance, underground piping, etc., and brings the price for all these items down. In systematic planning there is no difficulty in arranging for equal distribution of green areas, trees and grass.



GORKI. A view in an industrial housing community, with its well-spaced buildings and wide streets.

One of the most interesting things in town planning in the U.S.S.R. is the actual residential block. It is here that a great number of questions arise concerning the individual life of the single inhabitant, family life and life within the society. The best solution must be found for the housing accommodation proper, for certain amenities and a variety of services. The character of the settlement will be influenced in its expression by the nationality of the occupants and their habits, by climate and geographical position, by landscape, character of territory, building materials and construction, and specially by the size of the settlement and its importance. A residential block is not the result of some "clever surgery" by a one-sided qualified surveyor, but it is the result of systematic consideration relating to the number of people to be housed, the density of the population of the blocks, etc. Generally it can be said that the whole area of a residential block might be approximately 8—10 hectare (20—24 acres), the density being at least 250—300 people per hectare (100—200 per acre). In some districts where smaller towns or villages are to be erected, and where wood or other highly inflammable building material are used, it is a measure of safety to reduce the size of these blocks considerably.

The outline of the residential blocks determines the system of residential roads which are subordinated to the system of main streets. Not more than 25—30% of the area of a residential block may be covered by buildings, which is a guarantee for the creation of healthy housing conditions. The dwellings, almost always blocks of flats, in new towns usually from four to eight storeys high, are arranged in different ways along or across the outlines of the block, leaving ample area between them; sufficient insolation, ventilation and light being guaranteed. If flat blocks are situated on the external area

of the block, we find inside these, areas for crèches, kindergarten, small public centres, sometimes to be connected with the block-restaurant. The blocks where schools are situated must have easy connections with the respective residential quarter they are serving—not more than walking distance. Any dangerous crossing of traffic lines must be avoided.

The remaining internal areas will be used for green areas, recreation and sports grounds for the sole use of the occupants of the particular block.

It might be of interest to give a survey of the housing elements of which a settlement is composed. As the smallest unit we consider the flat or apartment, similar in design to the type of flats we know here. The next unit is the apartment house or block of flats. The marked difference, compared with flat buildings here, is the fact that no flats are ever faced on to back or internal areas. The block-plan is usually an elongated rectangle.

A certain number of apartment houses form a housing combine, comprising accommodation for approximately 1,000 residents, having a crèche and a kindergarten to serve the whole unit. Several housing combines make up a residential block. The number of residents in such a block will range from 2,500—5,000 and even more, according to the density and number of storeys. The town district which comprises from 30,000 to 40,000 inhabitants is the combination of 8—15 residential blocks. As the last unit we have the whole town consisting of a certain number of town districts.

● ZONING.

If the population of a planned town would exceed say 50,000—60,000, the area would be sub-divided into several districts of approximately 25,000—30,000. That is, of course, not only an administrative measure, but the whole scheme will assume a corresponding appearance, the single districts being designed with a view to finding a solution in an economic and an architectural sense. Equally satisfactory—the administrative centre will represent the focal point in form of a separate quarter in the composition of the single district. It is quite typical and, I think, remarkable, that the principle of co-ordinating planning excludes any confusion between the several zones, residential, administrative public buildings, buildings for educational purposes, etc. Within the whole system every type of building has its definite place according to its functions and, based on these considerations, planners and architects are faced with the problem of giving to that ideal the best possible expression. That expression will be found in getting good connections between district centre and corresponding residential blocks, the architectural feature being either a square or a boulevard, where public and administration buildings should be placed. It might also be the case that such a square or boulevard is connected with the main street leading to a factory. As a result, it can be gathered that the streets leading to the industrial area are generally given at least the same importance as any other main street within the town.

These portions of the town which I have tried to describe are, of course, only a part of the scheme. To complete the description of the whole I have to include all remaining zones which serve the settlement as a whole. It appears to be clear that special districts for administration, factory school, nursing homes, nutrition combine, etc., which have to serve the whole town, can be provided only for large industrial settlements. In the case of a town of 30,000—40,000 one nursing home and one factory kitchen, that is a factory where meals are manufactured on a large scale, will certainly be sufficient, even if they also serve rural districts in the next neighbourhood. It will not be without interest to illustrate the consideration deciding the place given to the different districts within the town plan. Because of the importance of the factory or combine, the administration district has to be situated not too far from the main approach to the factory. There are the offices for administration, trade unions, and Communist Party, which occupy the public buildings forming the administration centre and the offices of these



UNIVERSITY CITY, MOSCOW. A group of completed apartment buildings

bodies, the work of some of which is carried on within factories and should be as near as possible to the factory approach. That is why the best solution will be to place all these public buildings within a separate quarter between residential and industrial areas. The situation of these buildings along a part of the main street to the factory or around a square at the beginning of that street is certainly a very effective solution, the architectural and ideological and not the geometrical centre of the new types of town. That effect, and the importance of the architectural idea, will be increased if additional buildings such as theatres, concert halls, cinemas, departmental stores, etc., complete this area. In the case of larger towns, it would be unsatisfactory to have this last type of building in a central position only. According to the size of the town, the single residential districts have to be provided with additional buildings serving cultural and other needs. Buildings for industrial education, school buildings, laboratories, workshops, and the areas belonging thereto will be placed in a district near to the industrial area, for instance, within the protective zone.

The area for nursing homes and similar buildings is included in a district separated from the main traffic but still easily reached from other districts, and where district dispensaries and institutions for prophylactics are proportionately distributed to serve the respective residential blocks. The district of warehouses which are outside the town must adjoin the railway, and good connexion with the adjoining system of streets serving magazines and shopping centres is essential. Similar considerations concern the nutrition combine.

Great importance is to be given to the areas for physical culture, which, together with the recreation grounds, the so-called Park for Culture and

Recreation, will be another main feature of the town. There, provision is made for all kinds of sport, and during the last few years when parachute jumping became very popular, towers were erected in these districts.

The town planner designing the scheme for such a green area will be particularly pleased if there is any existing water resort giving him a chance of providing facilities for water sport and to develop a number of beauty spots. But also in the case of this district the principle will be applied which makes provision for additional district buildings for towns exceeding a certain size. These physical culture districts, too, will be situated within easy reach of the people they serve.

It was my intention to point out the principle of zoning which is not to be considered as a belated attempt to bring order out of chaos. But this principle is one of the most essential ideals on which planning work is based. We can see how the whole town planning scheme is the result of an economic, technical and architectural correlation, where a certain number of different districts, belonging to different zones, are allotted their place within the whole scheme according to their economical, social, technical and architectural functions.

From the economic point of view it should be borne in mind that no valuation of ground, as is the case in other countries, need be taken into account in Russia. The economy of these schemes lies in the savings achieved by the systematic approach to the problem.

And now I would like to say a few words about the sequence of graphical work in the planning office. The first thing is to establish the approximate boundaries for the new territory. The next step is the plan of the system of main streets. Following this, the extent and situation of the residential zone, the designs for typical residential blocks, and their situation within the residential area, and the system of residential roads must be determined. In the case of large towns, sub-division of the residential area into single districts and the distribution of district centres becomes necessary. The most interesting work lies probably in correlating all these different elements, resulting in the final scheme.

It should be added here that in consequence of the described procedure we are able to estimate fairly accurately the whole cost for the town by adding together all the different items. The specialist faced with that task can base his work on many years' experience collected in the special literature relating to town planning in the U.S.S.R.

The final scheme, besides the papers shortly described in the first part of my lecture, will be illustrated by several other graphical representations to a smaller scale. There is first a map showing where the new settlement is situated within the district in question. The next map shows relations between the new town district and adjoining districts. Then there are several graphical sheets showing clearly the schemes for water supply, sewerage, sanitary services, education, administration, nutrition, nursing, cultural institutions, municipal services, transport, physical culture, green areas, etc. Some of the maps show the effective sphere of service of the different institutions, schools, parks, restaurants, etc.

Generally it will be possible to show two or even three schemes on the same sheet, without impairing the clearness of the single schemes. It is also usual to give illustrations to certain statistical data, and finally it should be added that the compass card must be shown on all schemes.

This method of extensive illustrations to the scheme, both written and graphical, facilitates the examination by the controlling bodies. I might just mention here that in principle the methods applied for industrial and regional planning are the same. The example of an industrial town should only be considered as one type of new settlements, certainly the most important. But the planning is of course equally extended to settlements of administrative and rural character.

From all I have said in the course of this lecture it can be concluded without exaggeration that no earlier period, when new towns or parts of them were founded, or when towns or parts of them were rebuilt, gave such enormous possibilities to town planners, architects and their collaborators as they do now for these men in U.S.S.R. I think their boldest dreams are now being realised in Russia, dreams which former generations would have waved aside as Utopian, and which still may seem so, if we think of the legal, technical and economic limitations within which the town planner has to grope his way in other countries.

I am sorry I cannot give you any figures concerning the enormous extent of the work of town planning and reconstruction at present done in the U.S.S.R. But you need only keep in mind that there are hardly any districts which are not involved in the economic construction or reconstruction of both European and Asiatic Russia, and it will be clear to you that the amount of work done already and to be done in the future has kept, and will keep busy, hundreds and thousands of specialists. In consequence of building works carried out on a large scale, building technics and building industry which were not so long ago on a very low level, are now developing very fast. Housing shortage and similar features of to-day will disappear in consequence of completion of huge housing and other planning schemes. What is being done to-day in America or, say in Ancara, is in principle an attempt to repeat what town planners did in the old days, the scope of the work being restricted to public buildings or small areas.

We may or may not agree to some ideas in new town planning schemes worked out in the U.S.S.R., and there will be sufficient points which give the specialists reason for criticism. But generally I think that the principles of Russian town planning, the great interest shown by the masses of all working people for their new architecture and town planning, and lastly the importance attached to it by all authorities, are guarantees that in not more than ten years the U.S.S.R. will have the healthiest and best planned towns in the world.

I am afraid that much of what I have said may have been elementary and self-evident. But the road that leads from human knowledge to a practical application of this knowledge is a long and difficult one. What is remarkable and new about town planning in Russia is just the fact that one has evolved a method based on facts and experience, a method which corroborates specialised research into a uniform, scientific solution of the complex problem. It is this fact, I think, which gives the guarantee of ultimate success.

The illustrations of this paper are from the publication "City Planning: Housing," Vol. III, by Werner Hegemann, which will be reviewed in our next issue.

P R O F E S S I O N A L N O T E S A N D N E W S

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