THE SMALL HOUSE OF TO-DAY

BY
WALTER GROPIUS

Home building is in the midst of a transition from the slow practice of handicraft to the industrial methods of standardized manufacture. Mr. Gropius, a prominent figure in European architecture, and founder of *The Bauhaus,* at Dessau, Germany, gives a clear exposition of the new planning and building methods. Although he writes from the standpoint of current practices in Germany, many of the things described are readily adaptable to this country; particularly many units of standard manufacture, that are limited in their employment only by the ingenuity and resourcefulness of the designer.

THE immense scarcity of dwellings in Germany after the war has stirred up all the different branches of the building trade, architects, engineers, contractors, and official departments, to give renewed and thorough consideration to the great problem of dwelling house construction from a social, technical, and economic point of view. The old methods were broken through, and as a result a great change took place in the general aspect after the first post-war decade. Above all, *views have changed.*

CITY BUILDING

The rapid increase of international traffic and means of communication, the penetration of space and time resulting therefrom, the growing freedom of individuals to move from place to place all over the world—in fact, we have fallen back into semi-nomadic ways of living—are about to efface the line of demarcation between city and country. Modern man needs contrasts for stimulation and recreation. The longing of city dwellers for the country and of country people for the city is an elementary one and wants to be satisfied with increasing insistence as progress goes on. The growing technical development neutralizes the strongest of the contrasts, carrying city improvements out into the country and bringing some of the charms of Nature back to the city. By this time the leading intellects both in Germany and the rest of Europe call for a wide and straggling city, flooded with sunlight and, above all, provided with ample spaces of *verdure;* the industrial and commercial quarters to be separated from the residential parts through the systematic use of modern means of communication. The countryman uses machines in the operation of his farm and begins to shorten the distance to the town by the use of the automobile, telephone, and radio. Accordingly, modern city builders aim at establishing a closer connection between the opposed poles of city and country with the aid of all the technical improvements, and covering all available spaces on the ground and the house-tops with verdure and thus making the enjoyment of Nature's verdant charms a daily rather than a mere Sunday experience of the city dweller.

LOW, MEDIUM HEIGHT, AND HIGH HOUSE CONSTRUCTION

The views as to the ideal type of dwellings—whether detached one family houses surrounded by gardens, or apartment buildings of medium height (2-5 stories), or big high houses (with from 8 to 15 stories)—clash in vehement conflict with each other. This fight about the type of dwelling is essentially of psychologic origin, hence subject to panicky reactions, as shown by the passionate fight against the old tenement houses in Germany. In proportion as one side of the reciprocal need for city and country respectively fails to be satisfied—especially in large cities—the fight for compensating factors, such as homes with gardens, breaks out with increased intensity.

In addition to adequate food and heat, the proper health and growth of human beings absolutely depends upon *ample sunlight, fresh air, and facility to get outdoor exercise.* Undoubtedly these three cardinal demands on a good dwelling are better met by a one family house than by the

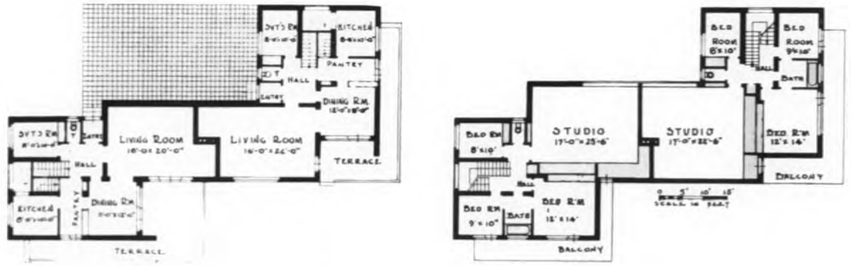
Lucia Moholy

SINGLE DWELLING HOUSE, AT DESSAU, GERMANY
WALTER GROPIUS, ARCHITECT

Above is a general view of the house showing the entrance side. The walls are "Jurko" blocks of slag, sand and cement, built on stamped concrete foundations. Lintels are reinforced concrete; roofs are used as terraces

Below are the plans of the first and upper floors. The ground floor is flat living space on an even plane; the upper story contains only a spare room, servant's room, and an electrically equipped laundry. Precise arrangement of working processes; no waste of time nor effort. Closets and shelves are definite parts of the building; they are either built into, or form, the walls

Lucia Moholy Photos



DOUBLE HOUSE AT DESSAU
WALTER GROPIUS,
ARCHITECT

Above is the eastern view with the bedroom windows. Notice the corbelled balconies, often more economical than when supported on pillars. At the left is the southern view

The plan contains one large room on each floor for each apartment, the other rooms being small, but efficient. The plan of one apartment is a reflection of the other, turned 90 from east to south

torbidding upper floor quarters of crowded tenement houses. Yet the utter wretchedness of such highly improper living quarters is not due to the type of the large tenement house with several stories; the blame lies with legislation which surrendered the erection of such dwellings to speculative interests without requiring any social safeguards. Big apartment houses, planned and designed with a sense of responsibility and erected on wide green lawns at ample intervals, can equally meet those requirements of sunlight, fresh air, and facility for outdoor exercise, and at the same time they may be made to offer a great variety of other advantages to people living in cities.

In selecting the proper type of dwellings in cities the decisive criterion is the *highest attainable degree of usefulness* for townspeople, and that, in turn, depends on the inclinations, the profession, and the purse of each individual.

A one family home with garden offers to its occupants more rest and greater privacy, recreation and outdoor exercise in their own garden, less difficulty of watching over the children; it costs more to build, requires more time for housekeeping, lies farther out, and promotes permanent settlement.

In big apartment houses the occupants have the advantages of short distances, central devices facilitating housekeeping and social events; it offers difficulties in watching over children outside the apartment on account of the vertical distance, but on the other hand is economical and promotes public spirit.

Apartment houses of medium height (3 to 5 stories) have the drawbacks of small intervals between blocks, little sunlight, inadequate spaces of verdure and insufficient areas for outdoor exercise. On the other hand, many-storied apartment buildings give much better access to the air and sunlight and afford a maximum of green lawns where especially the children can give free rein to their inclination for noisy playing. Besides, it is more favorable with regard to the distribution of cost and the central devices serving hygienic and housekeeping purposes.*

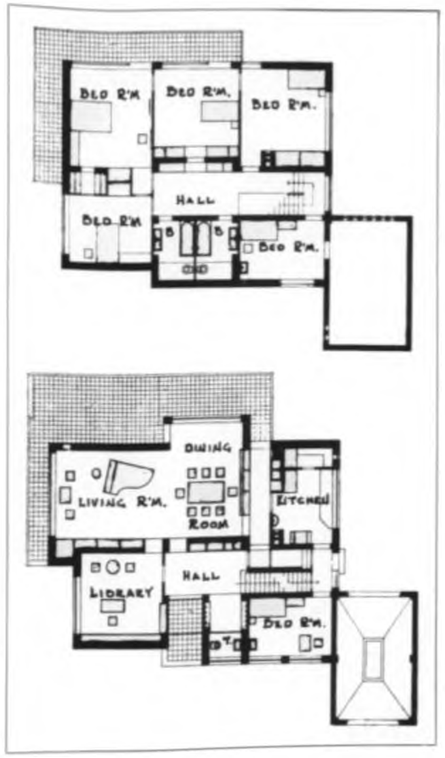
THE ONE FAMILY HOUSE WITH A GARDEN

Low house building, therefore, is no panacea for the healthful city, although it will doubtless continue to be a very important type wherever economic conditions and the available space favor its use. In Germany, however, the building of detached one family houses has declined. This is due not only to the financial straits of post war times but also to a changed view of life on the part of the modern city population, since on account of the greater freedom in moving about many people even among the well-to-do classes prefer quarters in an apartment house with modern appointments to living in their own homes. Nevertheless the rise in the construction of dwelling houses in Germany has specially benefited the development of home property, to which these lines are particularly devoted. The house built for occupancy by its owner continues to maintain its place as an important type in the evolution of German dwelling house construction.

MODERN PRINCIPLES

According to the new view about a dwelling to come up to present day requirements, the dwelling house should no longer resemble something like a fortress, like a monument with walls of medieval thickness and an expensive front intended for showy representation. Instead it is to be of light construction, full of bright daylight and sunshine, alterable, time-saving, economical and useful in the last degree to its occupants whose life functions it is intended to serve. Man and the various functions of his life at home—living, sleeping, eating, cooking, bathing, washing—are reinstated as the basis determining the type and appointments of the house, the biologic principle is paramount. The *value* of the house *as a place to live in* is placed foremost and is measured by the degree of success the builder attains in reducing the onerous features of every day life to a minimum and enabling the occupants to lead an easy and practical life meeting every requirement—in fact, a "beautiful" life at home—at the least possible cost of space, material, and building expense. The criterion is the ratio of expense to living value, not the degree of empty outward appearance that has been attained. As a true building spirit, drawing its inspiration from what is elementary, is gradually awakening, a change is taking place in the conception of what is beautiful. During the preceding period architecture—the art of building—was absorbed in a sentimental, esthetically decorative view which aimed at the imitation of past period styles through the perfunctory use of motives and ornaments put on the body of a building without having any inner connection with it. In this way the buildings became bearers of lifeless outward decorations instead of being living organisms. The living connection with progressive technical art, its new building materials and new construction, was lost in this decline, the architects, failing to master the supreme technical possibilities, became meaningless and conventional and the art of creative building slipped from their hands. This formalistic tendency, which was reflected in the rapid suc-

*EDITOR'S NOTE: This formulation of his views on low, medium height, and high house construction has been summarized and communicated by the author in his report to the 3rd International Congress for New Building Methods at Brussels in October, 1930. The Congress accepted these views with an overwhelming majority.



cession of the various "isms" of the past decades, has now come to an end. A new substantial building tendency was developed with the realization that an organic creative idea, being rooted in the entire social community and its life, must combine all fields of human creation to a uniform end—that it must begin and end in the building. The result of this changed and deepened spirit and the modern technical means available to it is a different building type, which does not exist for its own sake but is determined by the peculiar nature of a building and the "*functions*" it is intended to perform.

The past epoch of formalistic development reversed the self-evident principle that the nature of a building should determine the technical means to be applied, and the latter, in turn, determine the shape of the building. That epoch overlooked what is essential and primary for the sake of the outward form and the means of producing it. The modern creative spirit, which is slowly developing, goes down again to the bottom of things: To create a house which will serve its purpose well, its essential nature is first investigated. The research into "functions" and nature of a house is subject to mechanical, static, optical, and acoustic limitations as well as to the laws of

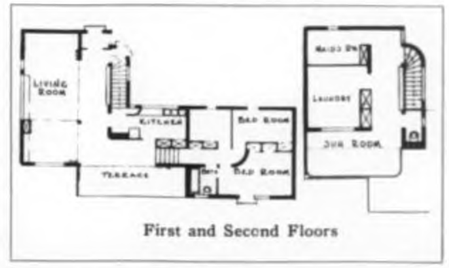
House at Berlin-Zehlendorf, Germany. Walter Gropius, Architect. The plans show clear separation of living, sleeping and housekeeping parts. The house is built of stuccoed brick, with structural tile floors, and steel double windows. Below is a garden view

proportion on which the "beautiful" effect depends. Proportion is a matter of the realm of spirit; construction and materials are its bearers, with the aid of which it reveals the genius of its creator. It is determined by the particular functions of a given house, and through it the latter is imbued with the "tension," a spiritual life of its own, as it were, beyond the utility value of the house.

The face of the modern dwelling house—as shown in the pictures herewith—is not the product of some modernistic fads on the part of a few architects, but it is the logical result of the required functions of the house, on the basis of modern technical means available for the constructive task of producing such functions. The changed form of expression is as logical a transformation as that of the old-time coach into a modern automobile or that of the old-fashioned stove into a heating device of our time.

The disparity between the segregated private life at home and the productive life during the work in the office or on the street is due to the anti-progressive force of inertia which prevents us from overcoming old-accustomed notions about the shapes of things surrounding us, which notions we are more ready to discard as a matter of course and without sentimental inhibitions in the case of purely technical creations like machines. The man of this technical age needs uniformity of means and expression in *all* spheres of creation. He needs a dwelling house which in its shape, technical perfection, and useful effect is in keeping with his automobile and his well organized working place. He takes pride in creating forms of his own, born in his time, with modern means which are *superior* to those of our ancestors. The modern dwelling house, created by the genius of our own time, is apt to strengthen the self-reliance of its occupants and to establish harmony between body and soul. Just as we would not think of crossing the street, attired in the style of Louis XV instead of wearing our modern suit, even so we wish to see our home freed from unnecessary ornaments and meaningless trash which takes up valuable space. We got tired of the arbitrary application of past period styles and, having replaced fancy by the rule, we are now using clear, concise, and simple forms for the obvious expression of our home life.

What, then, constitutes "the modern beauty" of the dwelling house? *Opened walls* letting in plenty of daylight, fresh air, and sunshine. *Light structure*, which tends to neutralize the effect and appearance of the burden of life by its buoyancy. *Clearly defined, simple forms* devoid of imitations and trifling fancy lines. *Harmonized proportions of all the building parts. Complete satisfaction of every material and psychic requirement;* for archi-

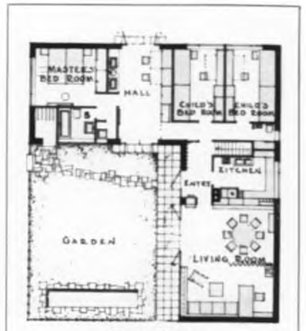


First and Second Floors

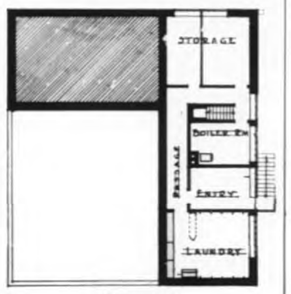
Lasser

House at Stuttgart, Germany. Adolph Rading, Architect. Practically *one* living space on the same level. By means of moving walls, the living room can be either subdivided or enlarged, and in summer can be opened widely to the terrace. At the right is a southern view, showing the very open character of the dwelling

Basarke



First Floor

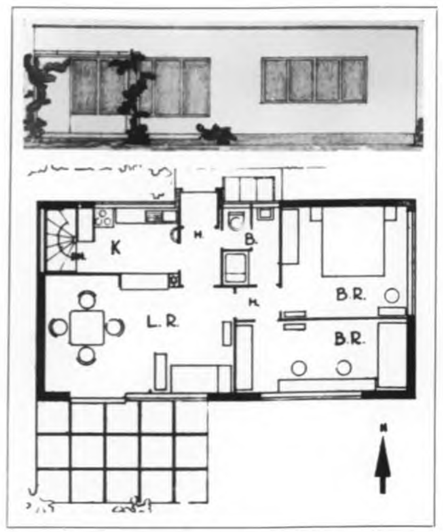


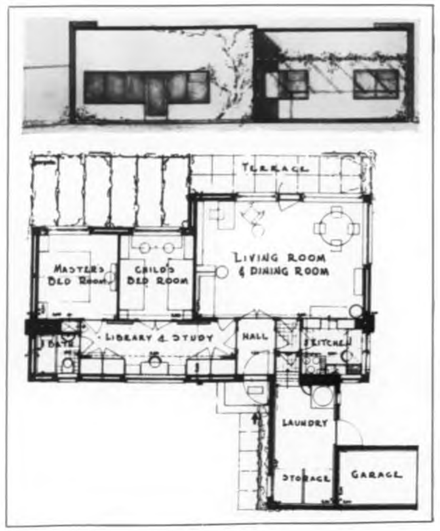
Basement

THREE PRIZE-WINNING SMALL HOUSES FOR A SINGLE FAMILY

These houses each took the First Prize in their respective classes in the *"Bauwelt"* competition for small, one family houses, held in Berlin, Germany, in 1930. They show the intense application of the machine-made unit to small house planning. Each is designed for greatest possible comfort and utilization of space and the most rigid economy of detail

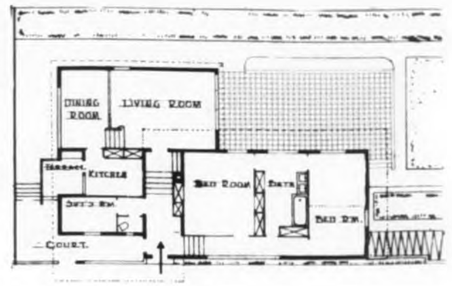
Above is the winner in the 25,000 mark class. Hans Richter, Architect. Below at the left was in the 8,000 mark class. Dirk Gascard and P. M. Canthal, Architects, and the one at the right placed first in the 15,000 mark class. Walter Schulze, Architect. (1,000 marks is equivalent to $240.00)





Lesser

House at Stuttgart, Germany. Richard Dockert, Architect. A one-story dwelling with a slight difference in level between the sleeping and living parts. The construction consists of wooden walls and ceilings on concrete foundations; low-priced, practical



tecture is not exhausted as a means to attain certain ends, unless we regard our psychic needs for harmonized space and proportions of the building parts, in the absence of which space looks lifeless and disorganized, as ends of a higher order.

ELEMENTS OF STRUCTURE

More than ever before the technical building development is now influenced by the classic law to attain a *maximum of effect with the least possible means*. The rapid development of the technical means promotes a tendency to *loosen up building materials, save material, space, weight, and hauled load*. New industrially improved building materials are competing with those provided by Nature and are about to get the better of them. These new building materials—steel, concrete, glass—have rendered it possible to erect wide-spanned, amply lighted rooms and buildings at a great saving of structural material while the building materials and methods of former times were inadequate for that purpose. The essential characteristic of the modern building method consists in dividing the different functions of the enclosing walls of buildings. In other words, the practice of erecting the entire walls as supporting parts of the house, as used in the old-time brick building, has been discarded and instead the load of the whole building is shifted to rest exclusively on the supporting skeleton structure of steel or concrete, which results in a saving of supporting material, while the walls between supports are constructed in a manner which merely affords protection against atmospheric conditions—heat and cold—and disturbing noises. With a view to saving a maximum of weight and hauled material, the tendency is to use thinner building units of high-grade material, such, as for instance, light concrete units or building plates of other materials, in the construction of those parts of the walls which do not support but merely enclose space. These space-saving steel and concrete constructions of rapidly increasing boldness, which aim at the progressive reduction of the bulk of supporting structures by means of highly refined calculation and supreme perfection of the quality and strength of materials, consistently lead to the enlargement of the openings in the walls, through which the daylight may freely enter the rooms which are closed against the weather. The former window, cut out of the wall supporting along its whole length, is consistently supplemented by the continuous window sheet, which is merely subdivided by pillars and has come to be a typical feature of the modern dwelling house.

The flat roof has superseded the old tiled or slated sloping roof, because its advantages have

been recognized. They are: clear, rectangular rooms in the attic instead of the practically useless dead angles below the sloping roof. No wooden frame work and roof trusses where fires start so easily. The space on the roof can be utilized in many ways (as play-grounds for children, gymnastic sports). Improved facilities for the erection of annexes and superstructions on all detached sides of the cubic building structure. No areas of resistance to the wind, hence a reduced number of necessary repairs. No gutters or wastepipes and connections of perishable zinc sheeting. The existence of the modern air routes confronts the builders of dwelling houses with the new demand to give proper attention to the bird's-eye view aspect of the buildings. The creation of roof gardens with walks and plants is an efficient means of transplanting some of Nature's attractions into the stony city desert. The bird's-eye view of the cities of the future with their gardens on terraces and roofs will give the air passenger the impression of a large garden. The area of green ground which is lost by the erection of buildings is regained on the tops of the flat roof. The flat roof also favors a more freely developed ground plan.

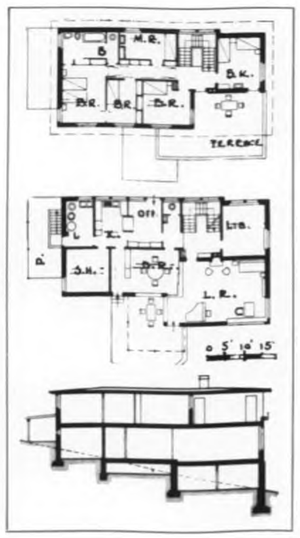
THE GROUND PLAN

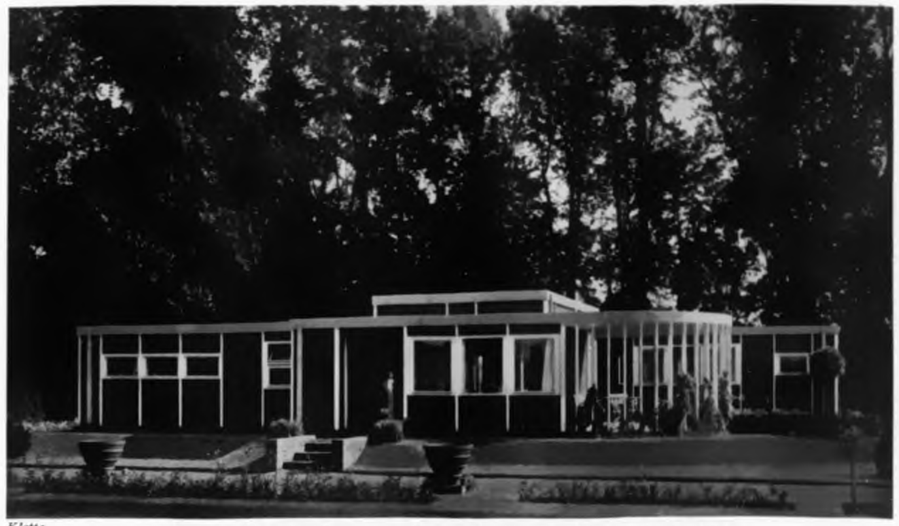
The ground plan of a dwelling house is a geometrical projection of its spatial idea—the organizing plan for moving within the house. The elevation, facade, is the result of that plan and not the starting point of the house design. Hence no artificial symmetry, but a free functional arrangement of the succession of rooms, short, time-saving passages of communication, moving space for the children, clear separation between the living, the sleeping, and the housekeeping parts of the house, and finally proper utilization of the ground and especially the sunny aspect. The bedrooms need morning-sun (facing east), the living rooms should have southern or western light, and the north side is left to storerooms, kitchens, staircases, and bathrooms.

The size of the various rooms, with the exception of the principal living rooms, may be safely reduced, if required for reasons of economy, in favor of enhanced home comfort. The increasingly difficult problem about domestic servants compels measures vitally affecting domestic life and is of decisive importance for the proper organization of the home. Organization and technical improvements are called upon to save the housewife from wasting her strength in household drudgery instead of keeping it available for her own mental and intellectual development, for the proper education of the children, and for her calling. The natural measurements of the human body, its movements and functions determine the limits for the minimum sizes of rooms and furniture, but the manner of using the home has undergone a change in the course of time. Present day life is different from that of our ancestors, social and family conditions have changed. The position of modern women in industry and trade, more unsettled conditions and the great scarcity of available dwellings make definite demands on the

House at Kilchberg, near Zurich. R. Steiger-Crawford, Architect. The building is on the side of a hill overlooking a lake. An extension of the flat-pitched roof shelters a living terrace on the second floor clear separation of living, sleeping and housekeeping parts with little space wasted. Good utilization of the ground

Erban





Klette

House at Leignitz, Germany. Hans Scharoun, Architect. The building is erected with a patented timber construction in standardized units

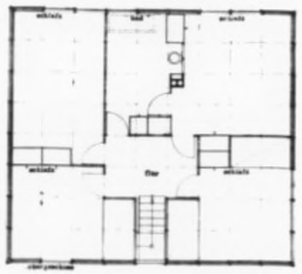
average German family, which have to be met, and in view of these circumstances it would seem preposterous if we were to imitate past social conventions and habits of life which were based on entirely different conditions. Daily life going on smoothly and without friction, while not an ultimate aim in itself, is nevertheless indispensable for any one who wants to attain a maximum of individual freedom and independence. A groundplan which is carefully balanced with great refinement results in a saving of time. Therefore, the standardization of the usual functions of every day life, which is aimed at in the modern groundplans for houses, does not by any means tend to enslave and mechanize the individual, but on the contrary it takes unnecessary burdens from life and thereby adds to its freedom and unlimited enjoyment. Such aid in meeting the duties of home life is afforded only by a dwelling planned in a way which makes suitable use of even the smallest particle of space and provides a maximum of home comfort at minimum cost through well considered arrangement of the available room and the application of ingenious and highly refined devices which mechanize the greatest possible number of different manipulations.

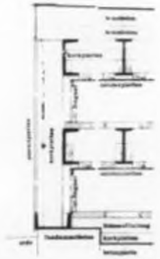
THE STANDARD

The most primitive aim in national economy is directed towards satisfying existing needs more economically, i.e., at less expense of money, labor, and material by means of steadily increased organization. This tendency led to the use of machinery, to division of labor and to rationalization, which measures are absolutely indispensable to national economy and have equal importance for the building trade as well as other fields of human activity. In the last analysis all mechanization can only follow the one purpose of lessening the actual labor which must be performed by the human individual to provide the necessaries of life, in order that he may save time and keep some of his mental and manual strength available for improved performance. If mechanization were an aim for its own sake, human nature in its fulness would be stunted and the individual—the indivisible—would degenerate into a divisible being. Here are the roots of the struggle between the old handicraft tradition and the new culture of the machine age. The modern time is about to develop a new organic working unit from handicraft work and machine work. The result of this rationalizing movement is the standard. Dwelling house building is one of the fields where the conception of the standard is beginning to get firmly established. Undoubtedly standardization, if consistently carried out in house building, would result in tremendous savings, which cannot even be estimated at present.

The standard is no obstruction to cultural development, but on the contrary it is one of its underlying conditions. It comprises the selection of the best and separates what is elementary and above the individual from peculiarly individual

Losser Photos





HOUSE AT STUTTGART, GERMANY
WALTER GROPIUS, ARCHITECT

The house was built entirely by the "dry mounting process," eliminating all building moisture. It is planned in reference to steel Z-bar skeleton on concrete foundations. The distance between supports—about 3' 6"—is used as a module. The walls are built of pressed cork sheets, about 3" thick and lined with sheets of asbestos board. Steel double windows are used
Above is a view of the finished building; the center shows the plans and the steel skeleton in place. At the left is a detail of the wall construction

features. The story about the individual being outraged and grievously injured by standardization and typification dwindles into nothing when we look back into history. At all times the standard, the type, has been a mark of civilized social order.

Nowadays most of the prospective purchasers of automobiles do not think of getting one "made to order." Here it is quite evident that only serial production, which is standardization on the basis of numerous typified parts, has rendered it possible to create a relatively perfect yet low-priced product. There seems to be no reason why dwelling houses should not be built on similar principles of rationalization, especially as proofs of the cheapening and improving effect of this method have been furnished in many other fields. A dwelling house is a typical group product, a unit of the larger groups, the street, the city. The uniformity of this "cell" within the whole body of the city should be externally expressed. The necessary variation will nevertheless be provided by the difference in sizes and, besides, competition is bound to bring about the coincident development of different types varying in shape. The best cities of past times show conclusively that the beauty and definite clearness of the whole body of a city is enhanced as standardization is carried out and typified buildings are multiplied. The standard is in all cases an ultimate and most mature result derived from the agreement of positive solutions by different individuals. It is the common denominator of a whole period. A unification of building elements has the wholesome consequence that dwelling houses and cities will again bear a common character; it is the hallmark of cultural elevation. By wisely limiting the buildings to a few standard types their quality will rise and the prices be lessened, and in this way the whole social level is bound to be raised. A proper sense for tradition will not look for what is capricious and stands aloof but for the common features, the standard, which is able to satisfy many people, is most substantial and best in quality. Such a wealth of substance requires the application of novel and strong means, the use of which can only be made worth while through multiplication.

The former character of the building trade as a handicraft is gradually being modified into an industrial one. A steadily increasing volume of the work done in the temporary workshop on the building site is being taken over by the permanent workshop—the factory. The seasonal character of the building business with its drawbacks for employers and labor, and for the whole national economy as well, is gradually yielding to operation all year round. In the same measure as the modern building materials have been produced, the quality and properties of which are superior to those of the natural building materials, the house building methods are approaching the economical industrial processes to an ever increasing extent. We are nearing the goal of taking apart the building structures, which are no longer made on the building site, but are produced in series by machinery in factories, so that—like the toy building boxes of the children on a large scale—the parts can now be assembled on the building site in variable combinations according to the dry mounting

Köster

House in Berlin, Germany. Luckhardt and Anker, Architects. A view of the rough structure. An example of steel framing applied to a dwelling which is similar to that used in office buildings. Walls are made of pumice-concrete plates, stuccoed outside and either plastered or faced with wall board on the inside

process, irrespective of the season and weather conditions. (See Page 276.) The completely appointed dwelling house, furnished from stock in substantial, fireproof construction, will be one of the principal products of the industry in the future. All the parts of the building structure, beams, wall plates, windows, doors, staircases, fittings, etc., will be typified. *The standardization of the parts does not put any limits on individual creation of the whole structure. The duplication of parts and like building materials in the various building structures tends to convey an impression of ease and order* similar to the effect of the uniform modern clothes. In exactly the same way sufficient latitude is left to individual peculiarity to manifest itself, yet everything bears the characteristic features of our time. Greatest possible typification combined with greatest possible variation.

The building method according to the dry mounting process on an industrial basis has the better prospects in every respect. The greatest enemy of house building, and one affecting it economically, is moisture caused by the weather or water on building site. This is the main reason for the fatal drawbacks of the old building methods: Parts to be built in failing to fit because of stretching and warping, unforeseen jobbing work, loss of time and interest by delayed drying. The dry mounting process eliminates building moisture and the building parts, being produced on machines with mechanical exactness, assure a proper fit, fixed prices, and short building times which can be exactly determined and guaranteed. Through the use of high-grade, industrially produced building parts the weight and bulk of the building is reduced while its stability and insulating capacity is increased, so that a one-family house which can be taken apart and re-assembled on the building site—including walls, ceilings, roofs, parts of installation equipment—can be hauled on a few auto trucks from the factories to any building site and there be re-assembled and mounted in the shortest space of time irrespective of the season and weather conditions.

The advantage attained by these rationalized methods of dwelling house building is twofold, since they are more economical and at the same time raise the standard of living. Many things which are regarded as luxurious today will be standard requirements in the dwelling house tomorrow.

THE GARDEN

Probably the strongest attraction of the one family house is the garden for the occupant's own use. It enhances the "living value" of the house and is practically an extended living room. This quite naturally determines the geometrical subdivision of the parts of the garden immediately adjoining the house and being, as it were, plant-enclosed rooms in the open air. Among the virtues of the modern architect are his efforts to provide dwelling houses with a maximum of green vegetation and to cover even roofs, balconies, and terraces with plants. Growing trees and plants interwoven on and between buildings, with vistas opened and shut out, assure pleasant effects of the contrast between plants and building forms, soften and enliven schematic monotony, bring building and man together, and give a realization of scale.

The roof of a one-family house in Berlin, Germany. Luckhardt and Anker, Architects. The living value of a house may be further enhanced by the use of the flat roof as a place of rest and enjoyment

Köster