建筑学专业 英语阅读文选

SELECTED ENGLISH ARTICLES FOR ARCHITECTURAL STUDENTS

同济大学 编

上海外语教育出版社

理工科外语丛书

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内 容 提 要

本书课文摘自七、八十年代英美建筑书刊，其内容力求兼顾建筑学专业的各个方面，如建筑历史及理论(第一、四、六、七、十五、十六篇)、民用及工业建筑设计(第二、三、五、十、十一、十八、廿篇)和建筑技术（第八、九、十二、十三、十四、十七篇)等，书后附有详细词组、词汇表，切合大专院校建筑学专业学生及各设计、工程技术单位的从业人员使用。

选 编 说 明

本书是根据1979年，在南京召开的全国高等院校“建筑学”专业讨论会上，各校所提出的迫切需要专业英语读本的要求和精神而进行选编的。会上指定由同济大学建筑系和外语系主编，清华大学建筑系和外语教研室主审。

本书主要供学完教学计划中所规定的二年普通英语课程后的“建筑学”专业学生使用。学习方法根据会议精神以自学为主，每周安排教师进行课堂辅导2学时，以两学期为限。具体措施各校可根据自己的实际情况来决定。

本书亦可供设计和工程技术等单位的建筑专业人员学习英语时参考。

本书限于篇幅，仅从英美书籍杂志中，选取了不同风格和建筑类型的文章20篇(附图28幅)。建筑一门学科范围极广，所选篇数涉及面尚不够宽，类型比率亦不匀，是本书不足之处。

本书在选编过程中，曾将所选各篇原文某些内容略加删节，然后按难易程度，先后编排，以利学习。

本书没有逐篇加以注释，但在书后印有总词组和词汇表，供读者查阅。各条释义不局限于选文中的意义。可能有些词汇学生在一二年级已学到，但所学释义与选文中用意不完全相同，因而有必要仍将其列出，以便学生在自学时查阅及思考。

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本书得到上海外语教育出版社的大力支持和热情协助，谨在此表示诚挚的谢意。

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目　　录

Contents

(1)

Pagodas

The word pagoda denotes a tower-like building constructed either of marble, stone, glazed and unglazed bricks, wood, iron or bronze. It is generally understood that the influence of the Indian Stupa was the origin of these buildings. Since a considerable intercourse between India and China was kept up by common Buddhist religious interests, there can be no doubt that certain types of pagodas at any rate are of Indian origin.

Some of the earliest known examples were in wood, and the pagoda of Hokaiji near Nara, Japan, which is of square plan, was of Chinese design of the Tang dynasty, suggesting that it is not impossible that the real origin of T'ing pagodas was just a simple rectangular building with an additional storey added for effect, and then perhaps more added until a tower-like shape was achieved. In this type of construction the roofs are gradually set further back until the top roof is considerably smaller than the bottom one. The twin pagodas at Ch'uan-Chow are constructed in granite and are of the T'ing type. That is to say they are constructed with a number of orders or T'ing, which consists of base, column, entablature and roof, one on top of the other. These forms are directly derived from wood construction, but have in these cases been strengthened to accord better with the use of stone.

Nearly all types of pagoda are now octagonal in plan, a natural evolution from the square when designing a tower. At Ch'uan-Chow the stone pagodas, which were built before the middle of the thirteenth century, conform to this plan. They are in five storeys, each storey diminishing in width while simultaneously each order is reduced in height.

Whilst this evolution from the wood forms was taking place, it would appear that from the earliest times brick pago-

das were built, such as at Ling Kuang Ssu near Beijing, which was built in the seventh century. It was an octagonal brick tower with thirteen roofs each corbelled out in brick and resting directly on the roof below, the tower diminishing to a width at the top of about half the base.

It should be noticed that pagodas always have an odd number of roofs in accordance with the Chinese theory of numbers.

Pagodas were the delight of the Chinese landscape-architects, and were located in a variety of different situations. They were often in early times built adjacent to a temple or monastery, as works of religious enthusiasm. However, the Chinese were very fond of erecting pagodas on hill tops or mountain slopes, and they were placed so that they were axial with the entrances to a temple or palace, and could be seen through the main gateway at the end of the vista. Pagodas or stupa were sometimes built in the shape of enormous bottles of the "cherry brandy" type placed on high sculptured bases such as the "Marble Pagoda" at Wutaishan, Shansi, or at Beijing, erected in 1781 by Ch'ien Lung in memory of a P'an Ch'en Lama who died here. This type of design would seem to be a direct Indian importation and not connected with the Chinese pagoda proper.

Pagodas were also constructed of coloured glazed bricks and tiles often of bright yellows and greens, as the pagoda near the Jade Spring by the Summer Palace. This follows the usual tradition of imitating wood construction. The bright colours of these pagodas which never lose their tone with age, but always appear new, are especially delightful in winter months when the whole landscape turns brown. However, some pagodas are constructed of iron — such as the iron pagodas of Shensi and Hupei. The latter material is of course quite unsuccessful as it soon rusts away, and is also too unsympathetic and hard to appear attractive.

(2)
Cooperative Farm Community

Spatial Planning

Site: The Chandler unit of the Arizona part-time farms is situated near the small town of Chandler, Arizona, about 20 miles south-east of Phoenix, the capital of the state. It is in the agricultural district of the lower Salt River valley. The ground is flat and prior to artificial irrigation was a cactus-covered desert. The climate is very dry; in summer the temperature reaches 120°F., while in winter it drops to 36°F. The colony consists of 4 blocks of living quarters each containing 8 houses and 2 garages each to take 4 cars, a community centre and a cooperative farm (4). The main road of the colony joins the Phoenix-Chandler highway. The blocks of houses are set at an angle to the road and at right angles to the direction of the prevailing wind for cooling purposes. (*fig.* 1)

Programme: The floor areas of the houses have been kept as small as possible for reasons of economy. The rooms, however, have been kept reasonably large by grouping together certain parts of the plans. Ground floor: front entrance, combined kitchen and living room with way out to the garden, toilet with lavatory basin, shower and W. C., by the front door and store cupboard under the stairs. First floor: covered sleeping balcony for the children and parents' bedroom. The wall between the two rooms consists of wardrobes and double doors which are left open in summer for ventilation. The part of the garden adjacent to the house is laid out as a sitting out space while the rest is a kitchen garden with a fruit

tree and fruit bushes set along by the wire fences. Each sitting out space has a Lombardy poplar (13) to give shade to both house and garden. The free spaces in between the blocks of houses are set with Bermuda grass. Each house has a small store placed in the two garage blocks (7) at the ends of the house blocks. The garages are open. Most of the farmers have a car to reach their daily work which in some cases is a considerable distance away. (*fig.* 2)

Technical Considerations

The "Adobe" system of construction was selected because it is economical, fire-resisting and gives good insulation. This system is well known in the district and the local labourers are quite familiar with it. As these buildings were put up partly with the intention of finding work for the unemployed the system proved very good because the larger part of the building cost went in labour. (See detailed description of the "Adobe" system.)

Windows: Ground floor: single glazed wood framed windows. First floor: two heights of externally opening top-hung windows. The lower height is solid and is filled in with a panel of plywood (7). This lower panel is kept closed in winter and when open in summer it lets in air without admitting the direct rays of the sun. The upper part of the window is glazed with "Celloglass" (9) which consists of wired cellophane and lets through 90 percent of the ultra-violet rays. A wire screen (8) is placed behind this part of the window to keep out insects. The first floor overhangs the ground floor to shield it from the direct light of the sun. The roof is given an overhang for the same reason. The trees are systematically set out to give further protection from the sun. The rooms on both ground and first floors are crossventilated to keep them cool and on the ground floor near the garden entrance there is a very simple piece of apparatus for cooling and humidifying the incom-

ing air (5). The air is drawn into the house by a small fan through a filter consisting of wood shavings kept continually wet. The cooled air passes through the larder into the living room. Heating and cooking, etc.: the house is heated by a gas radiator producing a good circulation of warm air. Gas radiator and gas cooker burn natural gas supplied by the neighbouring town. Hot water for the shower is supplied by a gas geyser. Internal equipment: cupboards and doors constructed of wood in the traditional manner of the district. The kitchen is equipped with a refrigerator and a stainless steel sink. Electric lighting. (*fig.* 3)

Aesthetic Aspect

How far practical reasons of climate have been allowed to determine the general architectural effect is best seen in the south fronts of the blocks where the main wall face is set back. The horizontality of the blocks is relieved and stabilised by the evenly spaced counterforts which project some considerable distance from the wall face. Both in the general architectural effect of the buildings and in the whole layout of the site the simplicity of methods and materials employed has been frankly

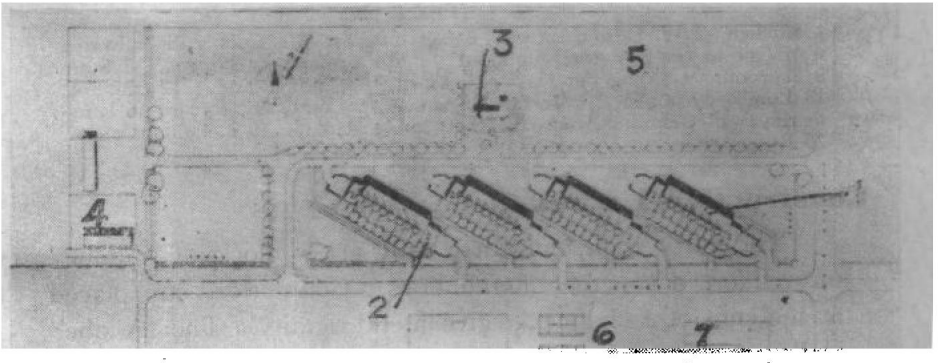

fig.1 Site plan 1:2000 1 Row houses 2 Garages 3 Community centre 4 Farm buildings 5 Allotment gardens 6 High school grounds 7 Chandler high school

admitted. Colours: The buildings are painted cream both inside and outside. The low external plinths are painted earth colour to hide rain splashes. The front doors are painted various bright colours and give accents of colour to the whole design.

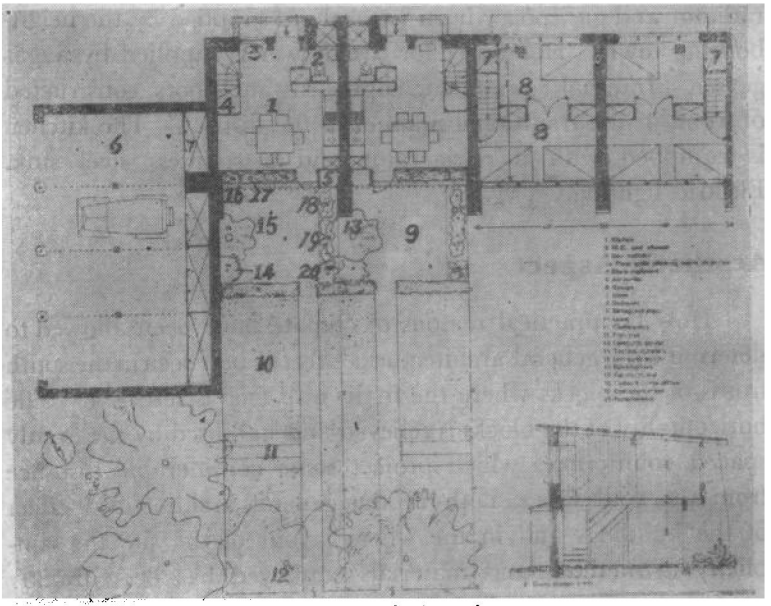

fig. 2 Typical plans

1 Kitchen 2 W. C. and shower 3 Gas radiator 3 a floor grille allowing warm air to rise 4 store cupboard 5 Air cooler 6 Garage 7 Store 8 Bedroom 9 Sitting out place 10 Lawn 11 Clothes-line 12 fruit tree 13 Lombardy poplar 14 Tecoma capensis 15 Lombardy poplar 16 Rosemarinus 17 Geranium, red 18 Cistus lad. maculatus 19 Conqulqus cneor. 20 Rosemarinus

Constructional Details

The party walls and north walls are of blocks of "Adobe" on reinforced concrete foundations. Counterforts are placed at the ends of each block to give lateral rigidity. The "Adobe" walls are rendered externally with cement rendering on expanded metal and are plastered internally with gypsum plaster. The ground floor is constructed of reinforced concrete on stone

hardcore the D. P. C. being a layer of asphalt impregnated fibreboard finished with a cement screed. The first floor, the roof and the external south wall are timber construction. The first floor is finished with tongued and grooved deal boards laid on a boarded subfloor. The boards of this subfloor are laid at 45° to the floor joists and at 90° to the boards of the subfloor of the adjoining houses. By this method longitudinal rigidity is given to the whole block. The roof is boarded and finished with aluminium painted corrugated iron. The 4" space between the boarding and the corrugated iron is filled with redwood bark for insulation.

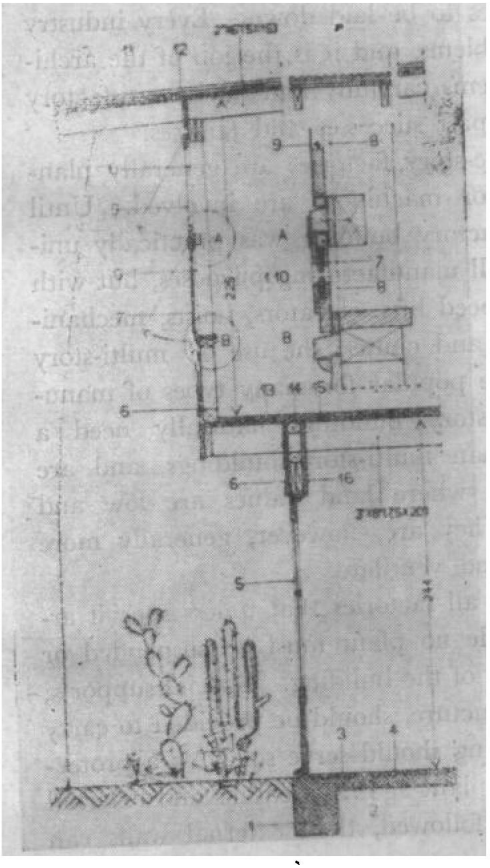

fig. 3

External wall section 1:50

1 Foundation
2 Reinforced concrete slab
3 Cement screed
4 Asphalt-impregnated fibreboard
5 External door
6 External weather boarding
7 ¼" Plywood panel
8 Wire insect guard
9 "Celoglass" glazing
10 Corrugated iron sheeting
11 Redwood bark insulation
12 Diagonally laid boarding
13 T. and G. flooring
14 Building paper
15 Diagonally laid subfloor of boards
16 Internal wood lining

(3)
The Design of Manufacturing Buildings

Introduction. The planning of the manufacturing area of an industrial unit is governed by the type of plant used, the nature of the product to be manufactured and the manufacturing process involved. As these factors vary with every industry and even in different branches of the same industry, it is impossible for any hard and fast rules to be laid down. Every industry has its own particular problems, and it is the job of the architect to examine the problems carefully and devise satisfactory solutions, in the light of past successes and failures.

Single-story Building. Single-story factories are generally planned where heavy goods or machinery are involved. Until recently the single-story factory building was practically universal in this country for all manufacturing purposes, but with the development of high-speed lifts, elevators, hoists, mechanical and gravity conveyors and chutes, the use of multi-story buildings has become more popular for many types of manufacturing process. Single-story buildings naturally need a much greater site area than multi-story buildings, and are therefore most economical where land values are low and ground space plentiful. They are, however, generally more expensive to erect, heat and ventilate.

It should be a rule in all factories that unless special arrangements have been made no plant must be suspended or connected to the framework of the building. Special supports, independent of the main structure, should be provided to carry plant, and the actual building should serve solely as a protective skin for operatives and plant against weather and external conditions. If this rule is followed, then external walls can