EARTH SHELTERED ARCHITECTURE IN CHINA

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中国建筑学会窑洞及生土建筑调研组
天津大学建筑系 主编
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编者的话

当前全世界都在探讨节能建筑以及建筑如何保护和利用自然环境，"冬暖夏凉"的黄土窑洞和生土材料的房屋，引起了国际建筑界的注意。中国的传统生土建筑反映了中国广大黄土地区的风土民情和环境特色，在中华民族的发展史上，古代、近代和现代都起过重要作用。生土建筑是勤劳智慧的劳动人民认识自然、利用自然、改造自然的杰作，是名副其实的节能建筑。

《中国生土建筑》图册是由中国建筑学会生土窑洞调研组和天津大学建筑系共同编写的，其中大部分图片均由调研组提供的。限于编写水平，这本图册尚不能全面描述中国传统生土建筑的概貌。使长期以来在中国作为贫困象征的"寒窑土屋"变为一种现代化的文明建筑，这是当代建筑师的光荣职责。编写中，得到建筑学会黄新范、任致远同志的支持帮助，在此表示感谢，并对天津大学黄为隽、魏挹澧、刘小宜、史唤玲、费麒麟诸同志顺致谢意。

编者　荆其敏　兰　剑　宋海亮

1985年2月于天津

FOREWORD

Energy saving architecture and architecture which takes advantage of the natural environment is being studied all over the would. Cave houses which are cool in the summer and warm in the winter, and houses made of earth material are being paid much attention to by international architecture circles. Traditional chinese earth building represent the local conditions customs and environment characteristics of the vast loess regions. In the history of China, earth buildings played an important part in ancient and contemporary times. Earth building is the remarkable work of the industrious and ingenious Chinese people in understanding and taking advatage of the natural world. They are the best energy saving buildings in the world.

"Earth Shelted Architecture in China" is compiled by the earth building reserch group of China Architecture Society and the Architecture Department of Tianjin University Most of the photographs were offered by the reserch group. This book gives only a general picture of traditional Chinese earth shelted architecture. We hope that the "earth cave" which is a mark of the poor in the history of China will endure and become a part of modernized architecture. It is a task of contemporary architects to pursue its improvement.

We wish to acknowlege the following people for their valuable contributions to this work : Huang Xinfan, Ren Zhiyuan, from China architecture society. Huang Weijun, Wei Yili, Liu Xiaoyi, Shi Huanling, Ant hony Vacchione from Tianjin University.

author : Jing Qimin. Lan Jian. Song Hailiang.

February. 1985.

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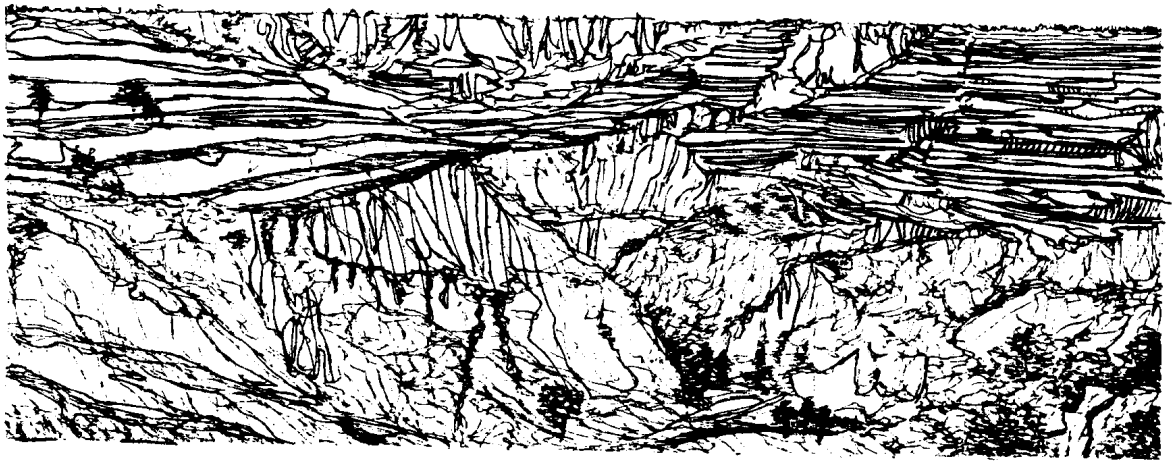
1 生土建筑的起源
ORIGINS OF EARTH BUILDINGS

生土建筑技术和未经焙烧的原土是人类最古老的建筑技术和材料，犹如石器是人类最古老的工具一样。生土建筑至今仍广泛用于中国广大的黄土地区。中国的考古发现，人类祖先最初采用穴居的形式。由于有上千年对土的特性了解，使人类由天然的石洞迁入土穴居住。1954年开发了大约6000年前靠近西安的半坡村原始部落遗址。4000年前人们为了防御，发展了夯土技术，最有名的是夯土筑造的城墙。进而有了人工制品烧制的坯砖以增加墙的强度。

现代节能与环境设计的重要性使地下建筑受到建筑师和规划设计师们的关注，近年来中国传统的生土建筑更引起人们广泛的研究兴趣。

Soil building technology is of very ancient origin and is still widely used in the vast loess regions of China. Here the unbaked clay, adopted as building material is as ancient as paleolithic tools. Archological finds in China have clearly shown how our ancestors who after living for thousands of years in natural rock cave dwellings emerged to live in earth carved dwellings, in the process they acquired knowledge about the characteristics of different soils. Since 1954 five excavations made at the 6000 year old Ban Po village near XiAn have brought to light interesting features of primitive society. About 4000 years ago the technique of rammed earth construction was developed for building defense ramparts. The best example of this type of construction is probably the famous Great Wall. Stone masonry and kilnburnt bricks were added during later dynasties for further strength.

With the emphasis today on energy conservation and environmental design, subterranean architecture has drawn much attention from architects and planners who have already begun to study traditional Chinese earth building technology.



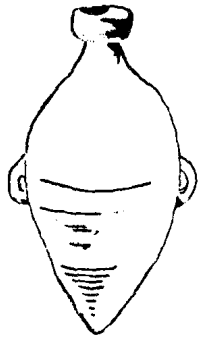
上图　黄土高原
ABOVE: LOESS PLATEAU

下图　西藏高原
BELOW: PLATEAU OF TIBET

六千年前的半坡村
BANPO VILLAGE 6000 YEARS AGO

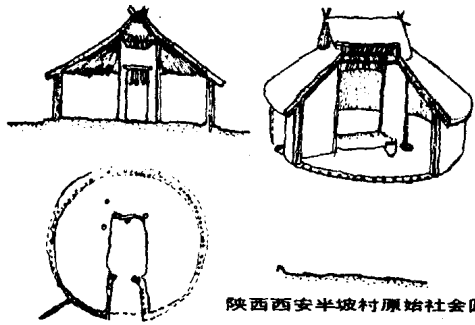
Archeologists tell us that man first lived in caves several million years ago

考古学家证实，人类在几百万年以前最先在洞穴中居住



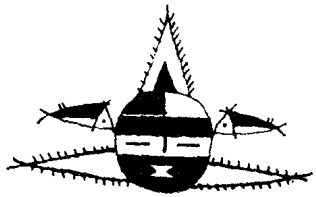
吸水瓶

An amphora



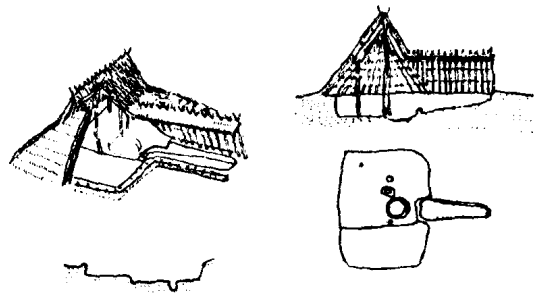
陕西西安半坡村原始社会圆形住房

Ancient dwellings in Banpo, Xian. Circle plan



人面鱼身图

Painted with fish and human face design



陕西西安半坡村原始社会方形住房

Ancient dwellings in Banpo, Xian. Square plan

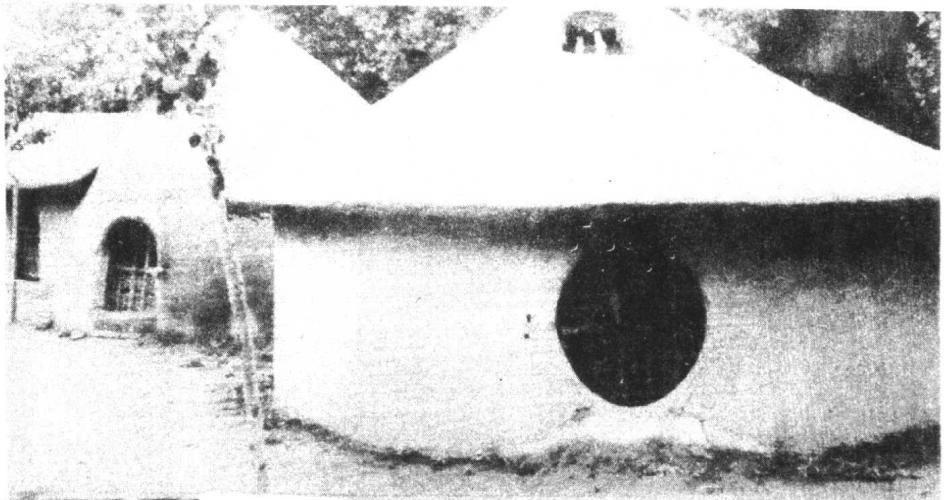
西安半坡村原始公社

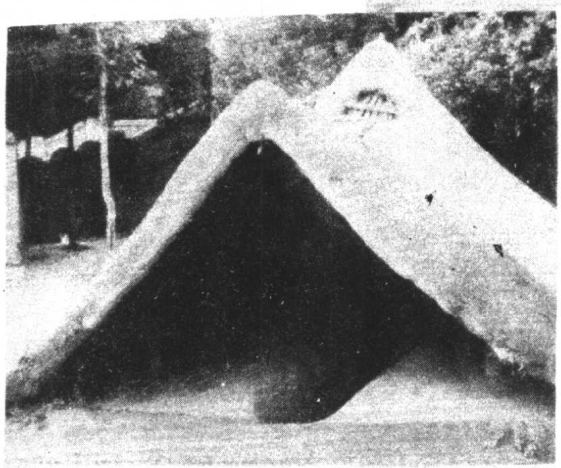
ANCIENT VILLAGE IN BANPO, XIAN.

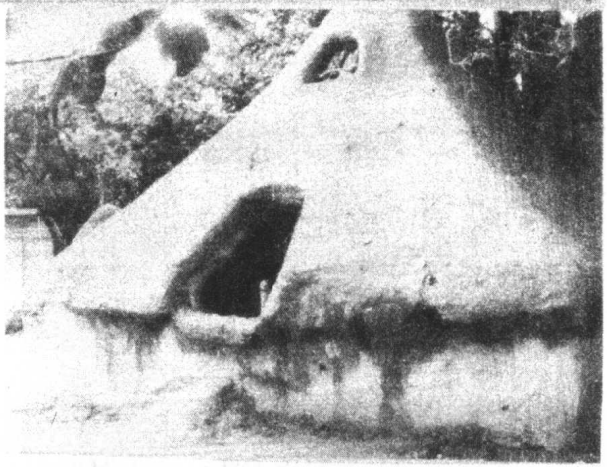
半　坡　村
BANPO VILLAGE

The history of "earth sheltered architecture" is as old as the human race.

"生土建筑"的历史和人类的历史一样久远



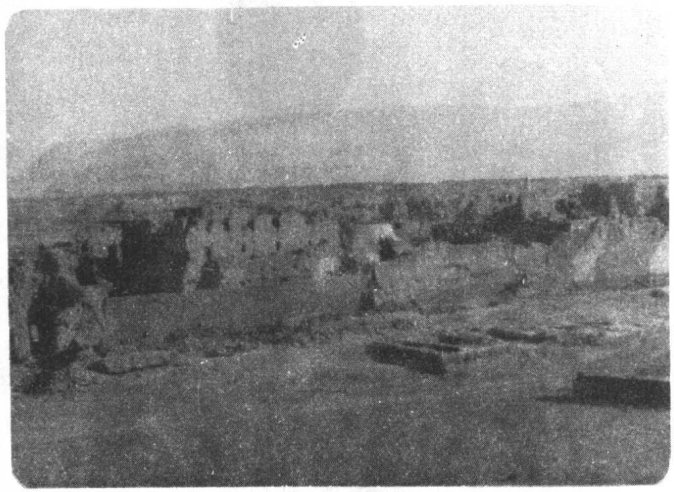


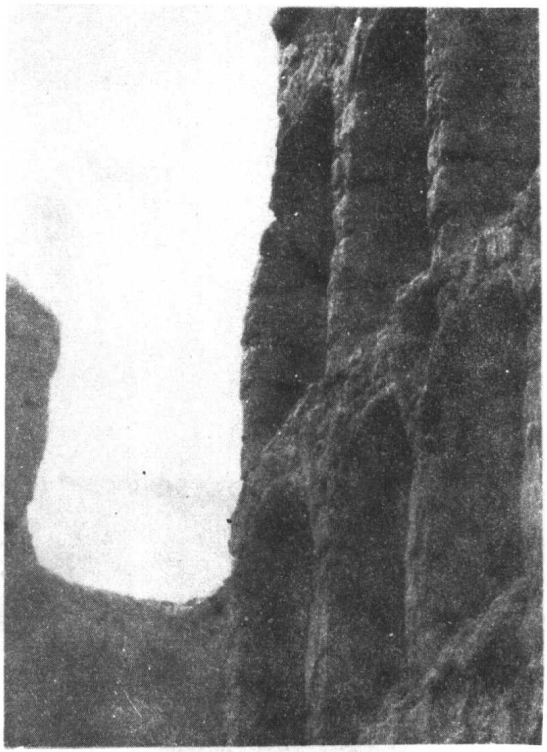


高　昌　古　城
ANCIENT CITY OF GAOCHONG

The wall serves as protection from war and savage attack

古代避免战争和猛兽的袭击

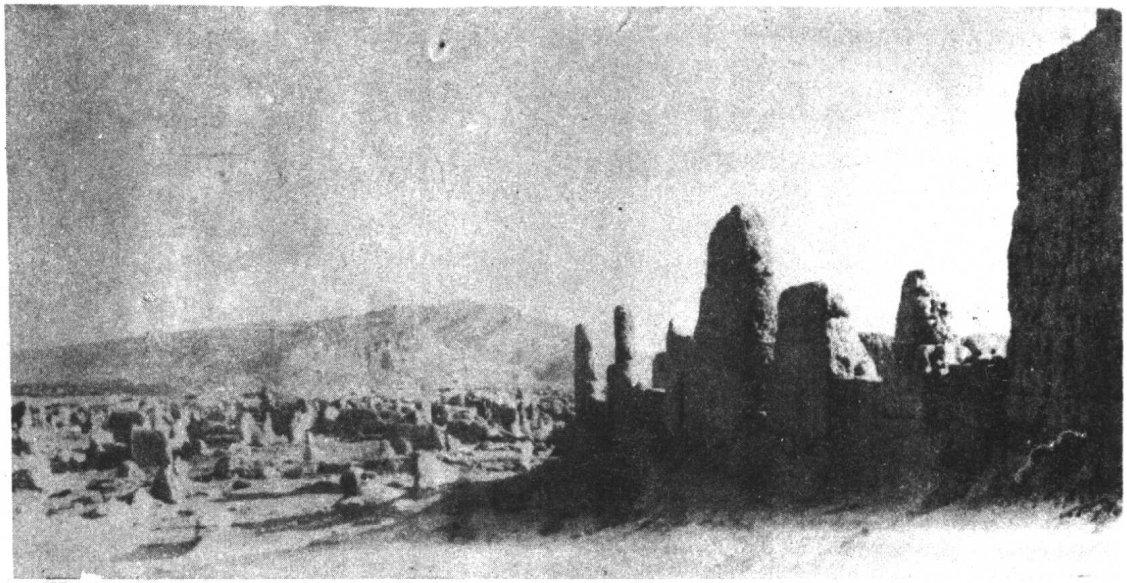


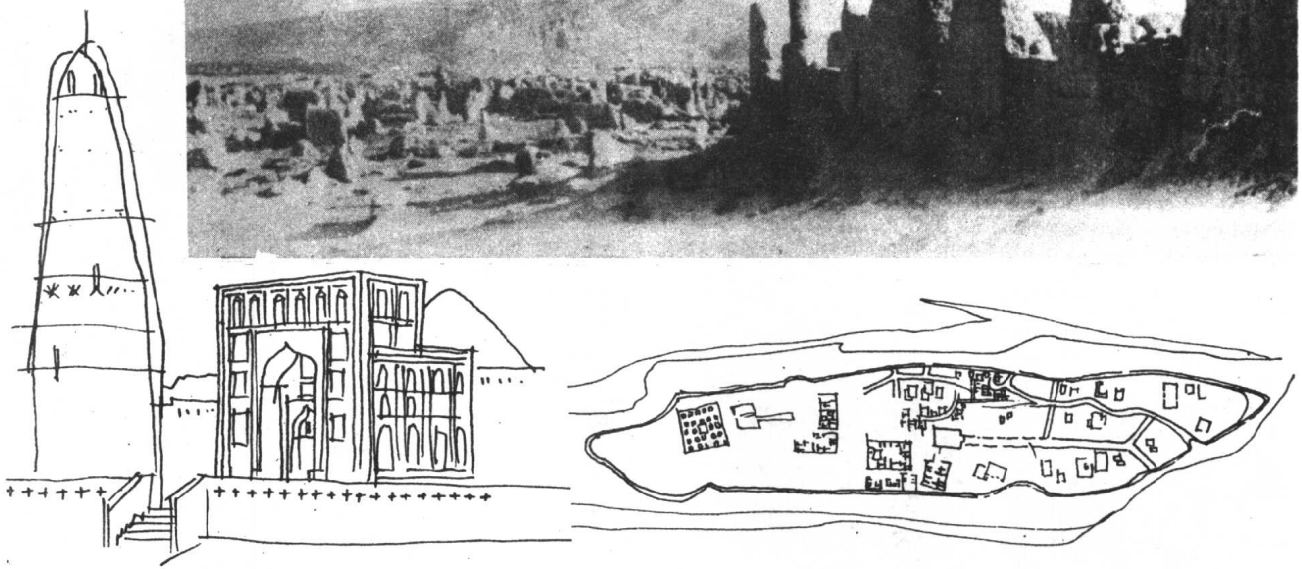


1500年前丝绸之路上的高昌古城

THE CITY OF GAOCHANG WHICH IS ON THE SILK ROAD 1500 YEARS AGO.

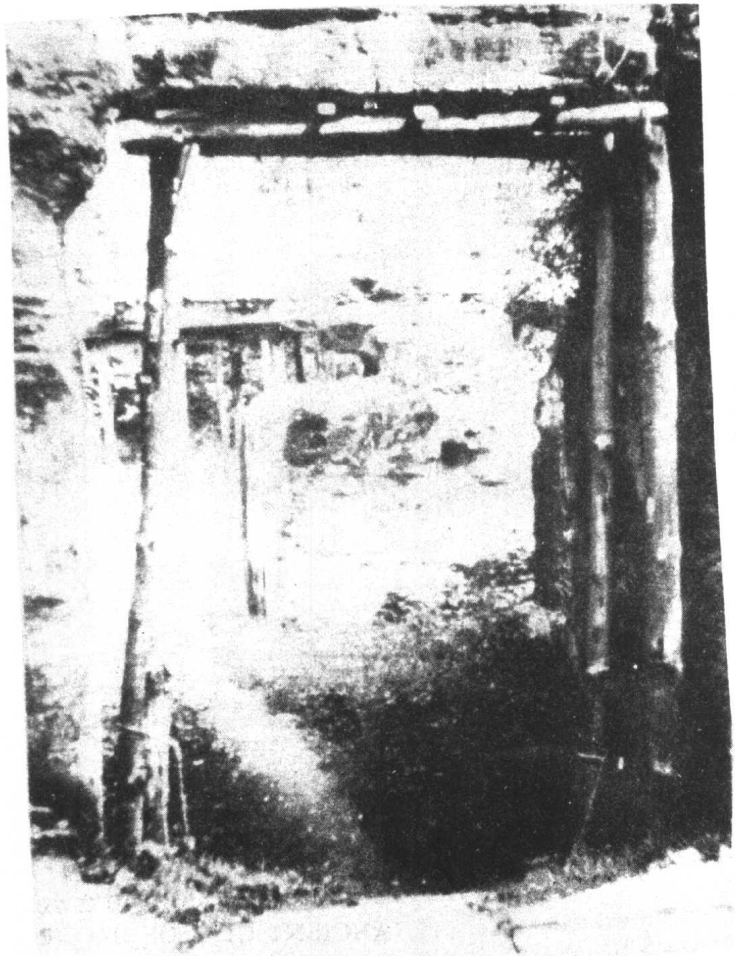
吐魯番苏公塔
AMIN MOSQUE TURFAN

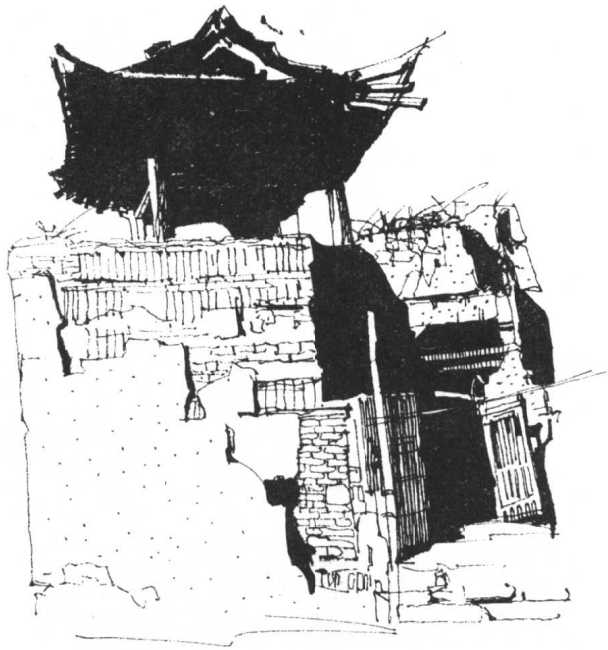




交河古城
ANCIENT CITY OF JIAOHE

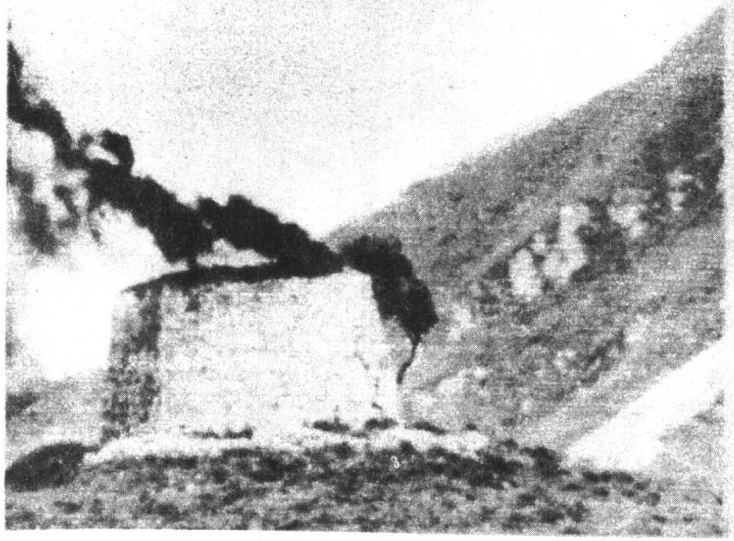
镇江焦山清代炮台遗址
RUINS OF BATTERY QING DYNASTY, ZHEN JIANG





钟　　楼
BELL TOWER

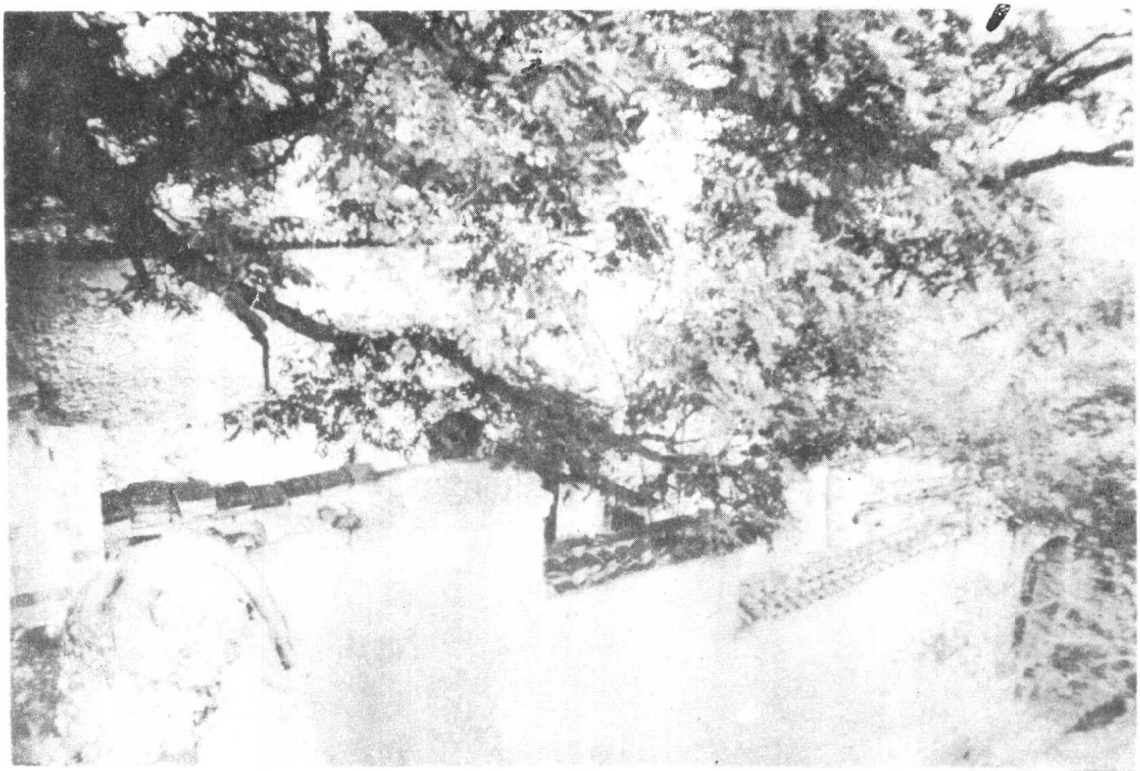
长城嘉峪关
GREAT WALL, JIAYUGUAN



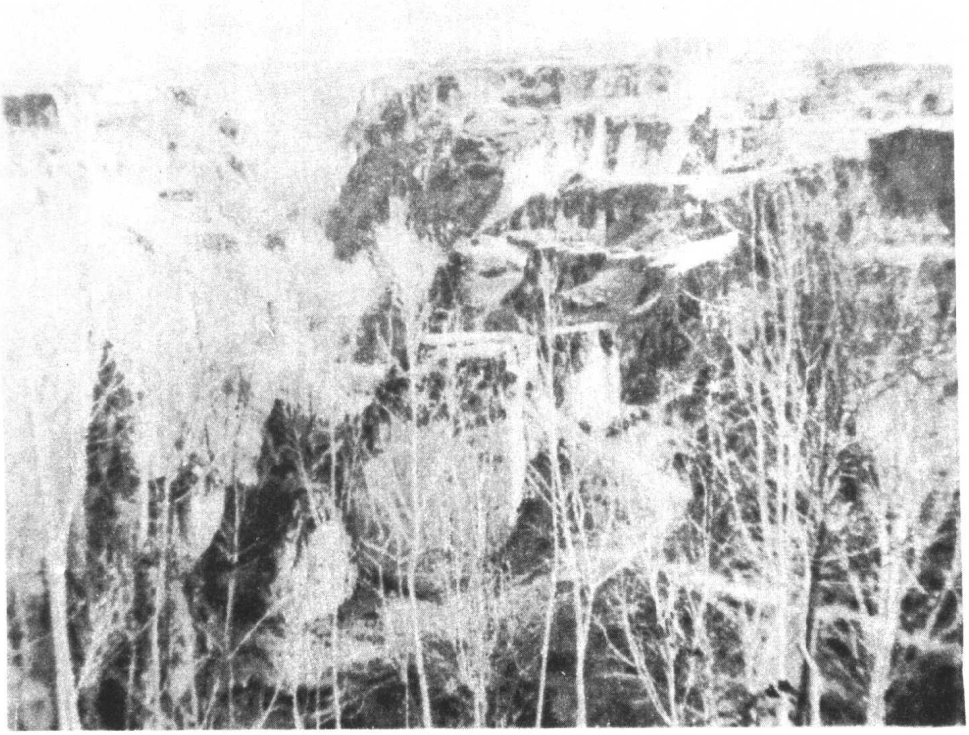
长城　嘉峪关　烽火台
GREAT WALL　JIAYUGUAN GATE　BEACON TOWER

寓于大自然中
HARMONY WITH NATURE

延安中组部办公室
OFFICE BUILDING IN YANAN



和大地相联系
BUILDINGS INTERGRATED WITH THE NATURAL TERRAIN



甘肃庆阳
QINGYANG, GANSU PROVINCE

和大地相联系

BUILDINGS INTERGRATED WITH THE NATURAI TERRAIN