

Distribution limited

SC-87/CONF.004/2  
Paris, 15 June 1987

UNITED NATIONS EDUCATIONAL  
SCIENTIFIC AND CULTURAL ORGANIZATION

CONVENTION CONCERNING THE PROTECTION OF THE  
WORLD CULTURAL AND NATURAL HERITAGE

BUREAU OF THE WORLD HERITAGE COMMITTEE  
Eleventh Session  
(Unesco Headquarters, Paris, 23-26 June 1987)

Item 4 of the Provisional Agenda : Tentative lists of  
cultural and natural properties received since the tenth  
session of the World Heritage Committee

1. In order to enable the Committee to appreciate within the widest possible context the outstanding universal value of each property nominated for inclusion in the World Heritage List, each State Party has been invited to submit to the Committee a tentative list of the cultural and natural properties situated on its territory, and which it is considering nominating for inclusion in the List during the next five to ten years. Since 1985 ICOMOS has not examined the nomination of cultural properties by States which have not submitted such a tentative list. New States Parties are systematically invited to present their tentative list of cultural and natural properties as soon as possible.
2. Since the 10th session of the World Heritage Committee, the Secretariat has received tentative lists of cultural and natural properties from Bolivia and the People's Republic of China. These lists are also attached herewith.
3. Three lists drawn up during meetings organized by ICOMOS for the harmonization of tentative lists of cultural property of certain regions are attached for easy reference, namely : the tentative list drawn up by North African Countries (November 1985), the list covering a number of French-speaking African Countries (1987) and the outline tentative list examined during the meeting of North European Countries (May 1986). These lists are not to be considered as the tentative lists of States Parties as defined by Article 11, paragraph 1 of the Convention, as long as the concerned States have not officially declared that they should be considered as such as concerns the properties situated on their territory.
4. A recapitulatory list of States Parties which have submitted tentative lists is also enclosed.

LISTE INDICATIVE DES BIENS CULTURELS ET NATURELS  
QUE LA BOLIVIE ENVISAGE DE PROPOSER  
POUR UNE INSCRIPTION SUR LA LISTE DU PATRIMOINE MONDIAL

BIENS DE VALEUR CULTURELLE

1. LA VILLE DE POTOSI

Potosí n'est pas seulement une ville américaine de l'époque coloniale de la vice-royauté du Pérou (XVI<sup>e</sup>-XVIII<sup>e</sup> siècles) où l'on trouve de nombreuses et fort belles églises, mais ce fut également le centre industriel le plus important de son temps.

A son apogée, au XVII<sup>e</sup> siècle, la ville comptait 160000 habitants et 13500 *mitayos* (personnes astreintes au service de la *mita*, ou travail obligatoire, provenant de diverses provinces de la vice royauté) s'y rendaient tous les ans, accompagnés de leurs familles, soit près de 60000 personnes liées au travail des mines, auxquels s'ajoutaient d'autres indigènes qui se consacraient au service domestique, au commerce ou à d'autres activités.

A l'époque, la ville était dotée d'une infrastructure industrielle minière qui consistait en une série de barrages appelés *lagunas* (lagunes), au nombre de 22. Aujourd'hui, 5 d'entre elles fournissent de l'eau à 80000 personnes au moins.

Lorsque tout le système fonctionnait, on obtenait un débit capable de mettre en mouvement 140 *ingenios* ou raffineries du minerai, c'est à dire 140 centres de broyage et d'élaboration pour le raffinage du minerai d'argent. Jusqu'à présent, les études concernant ce site ont permis de détecter et de retrouver les restes plus ou moins conservés de 20 de ces *ingenios*.

Actuellement, grâce à l'aide du gouvernement espagnol, la restauration de l'un d'entre eux est mise en oeuvre. Il s'agit du plus grand et du mieux conservé, connu sous le nom d'*ingenio del Rey*, dont la structure traverse la ville de haut en bas. Les barrages se situent dans la partie haute de Potosí, appelée Kari Kari, alors que le lit de la rivière artificielle divise la ville en deux: la zone espagnole d'une part, la zone indigène d'autre part, où se situe tout le complexe minier dont la forme culmine avec l'*ingenio del Rey*.

C'est à proximité de cet ensemble que s'ouvre la grande entrée de la mine royale. Plus au sud, l'on trouve le site de Tarapaya: ce sont des eaux thermales probablement originaires d'une zone volcanique. Il s'agirait sans doute d'une zone récréative ou de détente au sein de la ville.

L'Institut Bolivien de Culture (IBC) a l'intention de réhabiliter cet ensemble unique en son genre, tant pour le tourisme que pour le patrimoine national.

Les travaux de l'*ingenio del Rey* ont déjà été entamés. Les fouilles ont permis en premier lieu la détection de l'aqueduc, c'est à dire de la conduite d'eau qui traverse la ville, qui, par endroits, a la forme d'un véritable aqueduc avec des arcades en pierre. Par ce biais, l'eau parvenait jusqu'à une grande roue mûe par un système hydraulique, dans laquelle étaient fixés de grands maillets qui servaient à moudre le métal. Une fois pulvérisé, il passait dans des *huayras* où il était réchauffé puis mélangé à du mercure.

Ce processus d'amalgame permettait de séparer les impuretés du minerai pur qui, à ce stade de l'opération, était coulé en barres. Enfin, on le frappait à l'Hôtel de la Monnaie (Casa de la Moneda) de Potosí. Il existe donc des fours de cuisson, une prise d'eau, des roues et l'infrastructure d'un moulin, inhérents à un modèle de complexe minier.

Il est probable que la plupart des décès de travailleurs miniers n'aient pas eu lieu dans la mine à proprement parler, sinon dans le cadre du travail du *huayrado*, où les émanations de gaz du mercure sont particulièrement toxiques puisqu'elles

empoisonnent l'atmosphère et attaquent les os. La difficulté posée par le contrôle de ces émanations rendait l'opération dangereuse pour les travailleurs.

Le projet de restauration de cet ensemble est au premier rang des préoccupations. Il s'agit simplement de compléter les éléments déjà existants, de remettre les roues en état de marche (certaines d'entre elles servent aujourd'hui de poutres dans des maisons), afin que petits et grands puissent se rendre compte du fonctionnement de l'industrie minière de Potosí.

Ces éléments nous permettent de connaître ce que fut la capacité économique de la ville aux XVI<sup>e</sup>, XVII<sup>e</sup>, et XVIII<sup>e</sup> siècles, ainsi que sa technologie minière qui la mit, à l'époque, à l'avant garde de l'exploitation de l'argent.

C'est pourquoi l'on prend la décision de présenter ce monument à l'UNESCO puisqu'il a contribué au sort de l'humanité. L'argent de Potosí, exporté vers l'Europe, a pu d'une certaine manière, changer le cours de l'histoire économique européenne. Sans la découverte de cet important gisement argentifère, le sort des colonies espagnoles et de la métropole eurent certainement été différents.

## 2. LE SITE ARCHEOLOGIQUE DE TIAHUANACU

Ce centre cérémoniel pré-incaïque situé à proximité de La Paz et du lac Titicaca, daterait, selon les estimations faites au C.14, de l'époque qui s'étend de 600.av.JC. jusqu'à 800.av.JC.

Il se compose de deux grandes constructions. Le corps principal est doté d'une pyramide artificielle appelée Apakana, qui constitue une enceinte religieuse entourée de pierres et de grands piliers monolithiques, à laquelle on accède par un escalier d'un seul bloc. Cet édifice mesure 140m. de long sur 120m. de large; en face de lui, une cour souterraine s'étend sur



un carré de 25m. de long. Sur l'édifice nommé Kalasasaya s'élève la Porte du Soleil, taillée dans un seul bloc de pierre, et dont une réplique se trouve au Musée de l'Homme, à Paris.

Le second groupe, connu sous le nom de Puma Punku, est formé par une grande plateforme de pierre taillée et les restes d'une construction de pierre dont les éléments les plus grands mesurent plus de 4m. de long sur 3m. de large.

Cet ensemble est partiellement fouillé et restauré. Les travaux sont réalisés par l'Institut National d'Archéologie (INAR), qui dépend de l'IBC.

### 3. LA VILLE DE SUCRE

Capitale actuelle de la Bolivie, et siège de l'Audience de Charcas durant la colonie espagnole, cette ville jouit d'un charme irrésistible.

Son université, dont les bâtiments existent encore, forma bien des héros de l'Indépendance de Bolivie comme de l'Argentine. La ville, qui compte actuellement 80000 habitants, est en bon état de conservation et abrite quelques églises du XVI<sup>e</sup> siècle comme San Fransisco, au plafond de style arabe. Il y a près d'une vingtaine d'églises de style baroque.

La ville monumentale dépend de la Municipalité, de la Corporation de Développement du Département (CORDECH) et de l'IBC.

#### 4. LE VILLAGE DE COPACABANA

Ce village, situé sur une péninsule en bordure du lac Titicaca, ainsi que les îles du Soleil et de la Lune, forment un ensemble archéologique d'origine inca.

Le plus important des sites est le palais que fit construire l'Inca Tupac Yupanqui sur l'île du Soleil, ainsi que le lieu de retraite des femmes dans l'île de Coati ou de la Lune.

A Copacabana même, le sanctuaire de culte catholique érigé en 1614 est un chef d'oeuvre de l'art baroque métis; retable doré, sculptures et peintures de valeur, inclusions de céramique en font un monument exceptionnel.

Il dépend de l'INAR et de l'IBC.

#### BIENS DE VALEUR NATURELLE

##### LES SALINES ET LE VILLAGE DE CHIPAYA

Cette région située à 4000m. d'altitude sur le niveau de la mer, à proximité de la Cordillère Occidentale qui sépare la Bolivie du Chili, offre un paysage merveilleux dans une région encadrée par de nombreux volcans éteints qui, aujourd'hui encore, sont l'objet d'adorations.

Au pied de l'un d'entre eux, le Sabaya, on trouve des tombes en forme de tours, antérieures à l'époque inca. A proximité s'érige un village colonial doté d'une église de style baroque.

A 30 kilomètres de là, le village de Chipaya a conservé le tracé urbain précolonial. Toutes les constructions y sont rondes et tournées vers l'est, vers le soleil levant.

December 1986

Tentative List of properties which the People's Republic of China  
is considering nominating for inclusion in the World Heritage List

---

1.	The Confucian Temple, Kong's Residence, and the Kong's Woods	1
2.	The Sakyamuni Pagoda at Fogong Temple	5
3.	The Anji Bridge	7
4.	Foguang Temple	10
5.	Yungang Grottoes	14
6.	The Tonglushan Ancient Copper Mines in Daye	19
7.	Yongle Gong (The Yongle Taoist Temples)	22
8.	Yin Ruins	25
9.	Dujiangyan	29
10.	Longmen Grottoes	31
11.	Shennongjia Nature Reserve	33
12.	Dongzhai Port Nature Reserve	38
13.	The <u>Alligator Sinensis</u> Nature Reserve	41
14.	Poyang Nature Reserve	44
15.	Lijiang River Scenic Zone at Guilin	47
16.	Huanglong-Jiuzhaigou Scenic Zone	49
17.	Mount Huangshan Scenic Zone	52
18.	Mount Emei Scenic Zone	54
19.	Lunan Stone Forest Scenic Zone	56
20.	West Lake Scenic Zone in Hangzhou	58

THE CONFUCIAN TEMPLE, KONG'S RESIDENCE, AND THE KONG'S WOODS

THE CONFUCIAN TEMPLE

The Confucian Temple is located in the County Seat of Qufu County, Shandong Province. The old city wall is on its south, while the Kong's Residence is on its east. It was the venue for holding memorial ceremonies to honour Confucius in past dynasties.

Confucius (551BC - 479BC) was named Qiu, styled Zhong-Ni, and was a thinker, politician, pedagogue at the end of the Spring and Autumn Period (770BC - 476BC), and founder of the Confucianist school. One year after the death of Confucius, Lu Ai Gong (King Ai of the Lu Kingdom) rebuilt the former three room residence of Confucius into a temple "to offer sacrifices and hold memorial ceremonies every season and year". The Confucian Temple has now become a huge group of ancient architecture as a result of reconstruction and extension done through the dynasties since the Western Han Dynasty (206BC - 24AD).

The Temple compound is divided into nine sectors. To the front, there are Lingxing Men Gate, Shengshi Men Gate, Hongdao Men Gate, Dazhong Men Gate, Tongge Men Gate, Kuiwen Ge Pavilion, and Shisan Yubei Ting (Pavilion of Thirteen Imperial Steles). From Dacheng Men Gate on, the layout branches into three parallel sections. The middle section consists of Xing Tan Alter, Dacheng Dian Hall, the East and West Houses, Qin Dian Hall, Shengji Dian Hall and others. The eastern section consists of the Former Residence of Confucius, Shili Tang Hall, Storage Room for the Sacrificial Vessels, Lu Bi Wall, Well of the Former Residence, Chongsheng Ci Ancestral Hall, the Family Temple and others. The western section consists of Qisheng Wang Dian Hall (for holding memorial ceremonies to honour the parents of Confucius), Jinsi Tang Hall (for playing music), and the Storage Room for Musical Instruments. There is a total of 466 halls, houses or rooms in the entire compound which runs more than 1 kilometre from north to south, and occupies an area of 327 mu (218,000 square metres) surrounded by a wall with watch towers at the corners. Pines and cypresses stand solemnly within the compound, and the beams and pillars of the halls and rooms are engraved and magnificently decorated. The earliest of the steles in the Temple can be traced to the Han Dynasty (206BC - 220AD), while the latest were done in this century; they were written in various types and styles of writing and calligraphy, with sizes ranging from barely one to several foot tall. The subject matters of the steles range from records of paying homage to the Temple, repairs of the Temple, eulogies, epitaphs, to poetry, model calligraphy,

and portraits, etc. More than 2,000 pieces make up this exceptional forest of steles. Following the founding of the People's Republic of China, several major refurbishing projects were carried out on the main structures of the Temple, and three exhibition halls were set up for the steles of the Han to North and South Dynasties (420 - 581), stone portraits of the Han, and stone inscriptions of the Yuhong House model calligraphy.

#### THE KONG'S RESIDENCE

Originally called the Residence of Yansheng Gong (Lord Propagating the Sage), it stands east of the Confucius Temple and has been the official mansion and private residence of generations of Yansheng Gongs. Confucius has been highly revered by the emperors of the dynasties ever since Han, and his descendants were very much well cared for and given preferential treatment. Descendants of Confucius were conferred titles of Si Jun (Lord of Rituals) and Guannei Hou (Count of Guannei) during the Han Dynasty; given title of Wenxuan Gong (Lord of Civil Propagation) during the years of the Tang Emperor Xuan Zong's reign (713 - 742); in the 38th year of the Song Dynasty Emperor Ren Zong's reign, the 46th generation descendant of Confucius, Kong Zong-Yuan was conferred the title of Yansheng Gong which became hereditary during the reign of the Song Dynasty Emperor Hui Zong. In the Ming Dynasty, Yansheng Gong was rank A1, the highest among civil officials. Descendants of Confucius originally lived in their former residence, which was called Xifeng Zhai (Hereditary Conferred Residence), during the Bao Yuan years of the Song Dynasty (during Emperor Ren Zong's reign, from 1068 to 1040), a new residential quarters was built, and, after the new title was conferred, named the Yansheng Gong Residence. In the 10th year of the Ming Emperor Tai Zu's reign (1377), another new residence was built east of the former one, and extended and reconstructed during the reign of the Ming Emperor Shi Zong (1522 - 1567). The present scale of the Residence is the final result of various reconstructions and extensions through the course of the Ming and Qing dynasties, and occupies an area of about 240 mu (160,000 square metres), with 463 rooms and halls divided into nine compounds which are laid out in three parallel sections. The eastern section is where the family temple is situated, and also consists of Baoben Tang Hall, Tiao Miao (Hall of the Ancestors), Xin Citang (New Ancestral Hall), Yiguan Tang Hall, Musi Tang; it also includes Lan Tang Hall, Yushu Tang Hall, and Jiuru Tang Hall where imperial commissioners were welcomed, and workshops, among which is a distillery. The western section consists of Hong'e Xuan Room, Zhongshu Tang Hall, and Anhuai Tang Hall where the Lords of Propagating the Sage studied and passed their leisure hours; the North and South Hua Ting (Flower Hall) were where ordinary guests were received. The main body of the

Kong's Residence is the middle section which has official offices, including the County Magistrate's Office, the Kong Clan Head's Office, etc. at the front, residential quarters in the middle, and the Kong's Residence Garden at the rear. The Kong's Residence is most spacious and richly furnished.

Kent at the Kong's Residence are records and files from the 13th year of the Ming Emperor Shi Zong's reign (1534) to 1948. More than 9,000 volumes of these documents have been collated since the founding of the People's Republic of China. The subjects of the documentation range from succession of titles, the genealogical tree, lawsuits, rents, temple administration and records of rituals, to financial accounts and business, etc., reflecting some aspects of the politics, economy, thought, and culture in ancient China; there is also some invaluable information concerning peasant uprisings. The Kong's Residence also houses great numbers of historical relics, the most outstanding being the "Shang Zhou Shi Qi" (Ten Vessels of the Shang and Zhou Dynasties), also called "Shi Qi" (Ten Sacrificial Vessels), which are exquisitely styled and decorated. They originally belonged to the Imperial Court, and were awarded to the Kong's Residence in the 38th year of the Qing Emperor Qian Long's reign (1774). The Kong's Residence also has a collection of dresses, weapons, utensils, ornamentation, etc., from the Yuan Ming, Qing and other dynasties, among which the Qi Liang Guan (Seven Bridge Crown) from the Yuan is the sole one in China.

#### THE KONG'S WOODS

The Kong's Woods is also called Sheng Lin (Woods of the Sage), and is located 1.5 kilometres north of the County Seat. According to historical accounts, "Confucius was buried north of the City Lu (presently, Qufu), on the banks of the Si River". Initially, the cemetery occupied only 1 qing (6.7 hectares); through the course of the 2,400 years since then, descendants of Confucius and clan members were mostly buried here, and the emperors of the various dynasties continuously awarded burial land to the clan, causing the area of this clan cemetery to reach 3,000 mu (2 square kilometres) in the Qing Dynasty, with a surrounding wall long 7 kilometres. The towering old trees here are mostly Chinese pistache, but there are also some several dozens of species, such as cypress, Chinese juniper, oak, elm, glossy privet, and others. It is said that the disciples of Confucius each brought trees from their own home land to plant here, thus bringing such a great variety to this ancient artificial forest of more than 20,000 trees.

Tombs, graves, and steles stand almost everywhere under the trees, the tombstones themselves making up another sort of a forest. The Zhu Stream cuts across the Woods, and five ceremonial halls stand near the bridge which crosses the Stream. Further on, there is the Eastern Zhou Cemetery, within which are the tombs of the three generations -- Confucius, Kong Li, and Kong Ji, together with the Kai Ting Pavilion, Zhubi Ting Pavilion, and other structures. After the founding of the People's Republic, a round the Woods highway has been constructed to convenience visitors; along the highway, stand the tombs of many well known descendants of Confucius, and stone inscriptions by various renowned scholars of the past.

THE SAKYAMUNI PAGODA AT FOGONG TEMPLE

The Sakyamuni Pagoda at Fogong Temple is located northwest of Ying County, Shanxi Province, completely made of wood, it is therefore called the Ying County Wooden Pagoda. The total height of the pagoda is 67.31 meters. It is the only pure wooden pagoda extant in China. The largeness of the pagoda; the exquisite craftsmanship manifested in its construction, and the 900 years of preservation makes it not only the highest among the extant wooden architecture in our country, but also among ancient architecture in the world.

The Sakyamuni Pagoda at Fogong Temple was built during the 2th year of the Liao Emperor Qing Ning's reign (in 1056) by a monk called Monk Tian, who built it by collecting donations under the order of the emperor. At that time the pagoda was the main architecture at the temple, located in the central front part of the temple. Behind it was the hall of the temple. The entire layout of the temple keeps the old style of putting the pagoda in the main position. During the 3th year of the Yuan Emperor Ying Zong's reign (in 1323), when the Emperor passed by Ying County on his way to the Wutai Mountains, he visited Sakyamuni Pagoda. The Ming Emperor Cheng Zu climbed the Pagoda on his way during his northern expedition in the fourth year of his reign (1406), and wrote a plaque "Beautiful and Miraculous Pagoda". When the Ming Emperor held a banquet and enjoyed himself at the Pagoda in the 3rd year of his reign (1508), he left an inscription "The Miracle of Heaven", which is still hung below the eaves of the third and fourth floor of the Pagoda now.

The ground floor of the Pagoda is octagonal with a diameter of 30.27 metres, which is the largest among ancient pagodas. Five floors are detectable from outside the Pagoda, whereas the lower four floors each has an additional hidden floor within, thus the Pagoda is actually nine floors high. The ground floor has overlapping eaves and additional steps. The first floor of the Pagoda has a gate opening to the south. Facing the gate is a statue of Sakyamuni which is about 10 metres tall, at the top is an exquisite caisson, and there are six portraits of Buddha on the wall. On the both sides of the gateway are murals of Vajrapani, Uranus, and disciples. The three paintings of Buddhist devotees on the upper door frame are most exquisite. All these statues and murals are of a Liao Dynasty style.

There are two pairs of wooden stairs at the southwest of the first floor, but only one pair for each of the other floors.



From the second to the fifth floor, each contains statues and platforms. On the second floor, the platform is square on which stand one Buddha and four Bodhisattvas. On the third floor, the platform is octagonal, very exquisitely made, on which stand four Buddhas. On the fourth floor the platform is square, on which stand one Buddha, two Bodhisattvas and two Disciples. One Bodhisattva rides on an elephant, the other on a lion. The original Kasyapa Buddha among the elephant servant and the two Disciples have been damaged. On the fifth floor the platform is also square, on which stand one Buddha and eight Bodhisattvas. The original appearances of the statues have changed through frequent alterations and additions by later generations. Among them, the original Liao Dynasty style of the Buddha and the seats of the two Bodhisattvas on the first floor and the statues of Samantabhadra on the fourth floor, however, are still retained.

On the exterior of each floor of the Pagoda, there are wide seats and balustrades. People can walk outside the Pagoda, circuit around it, and have a bird's-eye view of the entire Ying County, Heng Mountain, and Sanggan River.

The wooden Pagoda has survived many trials of strong earthquakes through the past thousand years. It was recorded in an ancient document that during the Yuan Emperor Shun Di's reign, an earthquake lasted seven days, but the Pagoda stayed intact. In recent years, the Pagoda has been touched by earthquakes in Xingtai and Tangshan, Hebei Province, and Helingerm Inner Mongolia; the Pagoda, however, did not suffer any damage. This shows that the Pagoda has strong resistance to earthquakes, and also reflects the achievement of wood architecture in ancient China.

After the founding of the People's Republic of China, the People's Government assigned many experts to make surveys and study the Pagoda, and carried out many reinforcement and maintenance projects on the Pagoda. A group of important and valuable historical relics were found in 1974 when the Pagoda was refurbished, among which are a picture of gathering medicinal herbs and Buddhist scriptures -- originals from the Liao Dynasty. The scriptures are Liao Dynasty hand-written copies and wood-block prints, some are over 30 metres long, some came from very early times -- the 8th year of Tong He (990), 21st year of Tong He (1003), 10th year of Xian Yong (1071). All are rare relics both at home and abroad, not only valuable for the revision and collation of Buddhist scriptures, but also of great significance to the study of the history of the development of printing in ancient China, and the history of cultural development and exchange within a multi-national country.

## The Anji Bridge

The Anji Bridge at Zhaoxian County in Hebei, also known as the Zhaozhou Bridge, spans the Jiaohe River. It is a large one-arch stone bridge built in the period of Daye (605-616) of the Sui dynasty (581-618). Over 1,380 years, it has withstood nine fierce wars, eight major earthquakes and innumerable floods. It stands today, firm and in unscathed magnificence.

The abutment of Anji Bridge is built by laying stone in five layers. The abutment and the foot of large stone arch is connected by iron pillars (6cm square) supported by large stone.

The Anji Bridge is singular in design and structure and graceful in appearance. The span of the arch is 37.4 metres; the rise from the chord-line to the crown a mere 7.23 metres; the ratio from the span to the height of the arch is not more than 5:1, making the height of the of the bridge far less than the radius of the arch. The entire bridge proper is within the arch itself, a very practical type of bridge. The gradualness of the arch is advantageous for both pedestrian and vehicle traffic. The Anji Bridge is admired in China and other countries for its balance and stateliness. Its single span was unequalled in its time.

According to practical survey, the structure of the An Ji Bridge, made up of 28 component arches placed side by side, is 50.82 meters long and 9 meters wide, with a gentle slope to facilitate traffic.

It has two minor arches at each of its two spandrel, which help lighten the weight of the main body, provide spillways for the water in time of flood and lend added majesty and grace to the bridge itself. (each of these twenty eight component arches measuring about 25-40 cm, placed parallel to each other. The brilliance of the bridge engineering involved is best shown by the two small holes at either end of the arch spandrel. This was in contradistinction to the usual practice of filling the spandrel with earth, and created the world's first spandrel arch bridge. Dispensed with all filling between the arch ring and the deck, An Ji Bridge engineer connected them only by vertical pillars or a reticulate construction of concrete members.

The Anji Bridge is a successful example in bridge engineering that fully displays the advantages of spandrel-arch construction: The weight of the bridge is reduced and filling material saved; its subsidiary arches allow greater passage of water in flood season; It is more

elegant in appearance than filled spandrel arches. Its structure conforms with the principle of modern mechanics so as to be always most favourable utilized under its own weight and its traffic load. The spandrel-arch structural technique, first applied in the Anji Bridge ushered in a new era in the history of stone-arch bridge building. All stone material are from the nearby counties such as Huo Lu, Zhan Huang and Yuan Shi. All are limestone, blue and white, firm enough to resist pressure, and very beautiful. Each stone 70-109 cm long, about 1 ton weight.

This monumental structure and particularly its finely-carved ballustrade have been highly eulogized by many poets and writers famed in the history of China. It was not until 1952 when the bridge was undergoing repairs that the panels of the ballustrade were recovered from the mud in the river-bed. Not a few Sui dynasty cultural relics were also unearthed from the mud. This panel had been praised by poets of the Sui and other dynasties.

Among these stone panels with dragon design, each of which carves dragons of different kinds: dragon with strange animal head, a couple of dragons twining one another, two dragons facing their forelegs. In addition, of various poses: all of the dragons are moving from place to place, the tail of dragon are erecting upward crossing its backleg. The ancient artisans cut deeper to create planes of many planes levels, so that the entire panel design stands out beautiful and even. Flower, leaves, water, wave current are executed to suggest the sacred feeling around the dragons. They are masterpieces of ancient Chinese artisams.

Among them, there are also stone panel with other patterns such as dou gong, bracket set; roller leaf design; flood dragon, a mythical creature capable of invoking storm and floods; watching pagoda pillar in different appearances.

The arch bridge has the longest history in bridge engineering in China. Of the stone arch bridges in China, the Anji Bridge (Zhan Zhou Bridge) may be mentioned as master work. Highly individual in style and standing elegant, Anji Bridge truly exemplify the ancient arch bridge.

in China. It is built by the master mason Li Chun of the Sui dynasty. Li's designing proceeds from actual conditions. Owing to the fact that the Bridge is located in the lower reaches of the Jiaohe River he projected a subsidiary arches allowing greater passage of water in flood season. He planned a stone-arch bridge because of the non-decaying and pressure-resisting properties of the stone. However, with the demand for larger spans and consequent increase in the weight of the bridge itself plus that of the traffic, the strain fell on the arch in a more complicated manner. To cope with this, master Li Chun created a new type of stone structure, an outstanding example of which is the above mentioned stone bridge: the Anji Bridge- Zhouzhou Bridge.

After the founding of the People's Republic of China, the Anji Bridge was undergoing complete repairs after which the Bridge looked quite like the original. The Anji Bridge is now magnificent, a favorite sightseeing spot in Hebei Province.

## FOGUANG TEMPLE

The Foguang Temple is located on a slope of Mt. Foguang 32 kilometres to the north east of Wutaixian County, amidst a grove of trees. Construction began during the Northern Wei dynasty (471-499) and the most famous of its halls, the Hall of the Great Buddha, is in a style unique to the Tang dynasty. It is the oldest wooden structure now extant. The hall stands on a high platform and consists of seven bays and measures 32 metres in height from the platform surface to the top of the ridge-end ornament. This magnificent wooden structure is decorated with murals of faces and figures. Foguang Temple was damaged in 845 during the Fifth Year of the Reign of Wuzhong of the Tang Dynasty and rebuilt in 857 by Emperor Xuan Zhong of the Tang dynasty. Since it has undergone renovation and reconstruction throughout the long history, so that only the existing primitive and simple and hexagonal Zha Shi Pagoda (Founder of Buddhism) dates from the Northern Wei dynasty. (In 845, Emperor Wu Zhong abolished Buddhism and burned down Buddhist temples including the Foguang Temple. After Xuan Zhong succeeded to the throne, the first thing he did was to restore Buddhism and rebuild Foguang Temple, also known as the Temple of Buddha's Halo.

The temple of Buddha's Halo included: the Hall of the Great Buddha (the Eastern Hall), the Wenshu (Skt. Manjusri) Hall, the Shanmen Gate (Lokapala), the Hall of Kasyapa, Wan Shan Tang Hall, Xiangfeng Huayu Building, wing-rooms and grottoes. All are masterpieces in ancient Chinese architecture. Now there are many Tang Dynasty statues, murals of faces and figures, stone (round or hexagonal) pillars with Buddhist inscriptions, inscriptions of Chinese calligraphy and white marble sculptures. Accompanied by the Wei and Tang dynasties stone sculptures, tombs, pagodas in and out of the temples they have been treasured in and out of China.

The Hall of the Great Buddha, the main building, was built in the Tang Dynasty. It's plain and solemn in shape. On the gates and beams there are still many inscriptions by the people of Tang and other dynasties. According to the inscription on the stone pillar in front of this hall and inscription on the wall inside the hall, the Hall of the Great Buddha was built in 857. As mentioned

in the last paragraph , the hall stands on a high platform and consists of seven bays with a total space of 677 square metres. Massive brackets are used under the eaves. The various parts are so well-proportioned as to give the whole structure and appearance of grandeur and solidity. The brackets, the beams and the caissoned ceiling in the hall are neatly constructed and gracefully designed , so that these structural parts serve also a decorative purpose. This hall is , indeed, a supreme work of art. It is a representative work of the Tang wooden framework architecture.

In the hall, there is a spacious platform with three Buddhas and some attendants and consecrate Bodhisattvas on it. Sakyamuni is in the middle and two disciples beside. The other two Buddhas are Maitreya and Amitabha, Manjusri riding a lion is on the right and Samantabhadra on an elephant on the left. In the ends of the altar stand two giant Skt. Lokapalas. All of these statues are well proportioned and simply moulded. Although they were repainted by the other dynasties, the sculpture style of Tang Dynasty can still be seen on them. In the south of the Buddhist altar, a statue of a middle-aged woman of Tang Dynasty, who was the benefactor of rebuilding the Hall of the Great Buddha, was vividly carved, with a serious and noble manner. The murals greatly remained in the Hall are mostly related to the religion. A long mural about 450cm long and 66cm high are divided into 3 distinct groups. In subject matter the wall paintings of the central group centre on Jataka , fables and tales about the previous existence of Sakyamuni , containing murals of Skt. Avalokitesvara, Mahasthanaprapta and Bodhisattvas . The other groups on both sides centre on Skt. Manjusri and Skt. Samantabhadra followed by worshipping Bodhisattvas , Skt. Lokapala and Apsaras in the form of marching to a meeting. Donators are found on both sides, the northern ones in monk dress, the southern common . Technically speaking, these three groups of murals are as important as those of the Dunhuang Grottoes. The wall paintings back of the statue of the Main Buddha depicted Skt. Lokapala , Skt.apsaras, dragons and monkey. The images were depicted with light and forceful strokes followed the style of Wu Daozi, something like his picture entitled "Combing the Hills ". They also have a unique style of their own. They are the only earlier mural in the existing Chinese wooden framework

architecture.

Another hall is Wenshu (Skt. Manjusri) Hall, the architectural feature of which is less pillars were used. This is a model of ancient reducing-pillar buildings. Built in 1137 during the 15th Year of the Reign of Tian Hui of the Jin Dynasty, it is in the form of singleeaved hip-roof type, measuring 7 bay in width, 4 bay in depth. It has an elegant yet dignified appearance which marks it as the rarest specimen of ancient Chinese wooden architecture. On the top of the hall there is a glazed pagoda. The whole tower has a simple but dignified appearance in beautiful color. It was built in 1351. The feature of the Jin architecture is unusually represented here. The inclined bracket set for Pu Zhuo under the eaves are especially large which is another feature of Liao and Jin Dynasties architecture.

In the centre of the Temple of the Giant Buddha is the statues of Skt. Manjusri and his six attendants in handsome complexion. These Jin Dynasty relics are well decorated. Carved on the lower part of the walls of the entire are the Five Hundred Luohan dated from 1426-1435 during the Reign of Xuan De of the Ming Dynasty.

In front of the Temple of the Giant Buddha is a Tang Dynasty stone pillar pagoda inscribed with sutras and "the 11th Year of the Reign of Da Zhong" when the Temple of Giant Buddha was constructed. The other stone pagoda shape with sutras stands in the yard within the temple gate dated from 877 in the Fourth Year of the Reign of Qianfu of the Tang Dynasty. Pagoda is important part of Foguang Temple complex. On the left side of the Temple of the Giant Buddha is a two storeyed hexagonal structure pagoda. It is built entirely of brick. Inside the building, the upper is solid, the lower part hollow. Its pillar is decorated with Indian styled lotus flower.

Popular known as Zhu Shi Pagoda, it evidenced the cultural exchange between India and CHINA AND DATED FROM Northern Wei or Northern Qi.

By the side of the Fo Guang Temple there are six Tang or Jin Dynasty tombs. The 1,230-year old Wugou Jinguan Pagoda was built in the period of Tian Bao Reign of the Tang dynasty. The lotus throne upon which the Buddha sits is painted with white lime and covered with colored picture and lotus flowers in dark red and yellow color. It is the only specimen among the existing styles of temples. Besides, a similar form once appeared in the Dunhuang Grottoes paintings of mural.

Relics of Foguang Temple is the cream of Tang's flourishing Buddhist culture and art. It is a treasure house of our national culture. Foguang Temple has been opened to the public.



## YUNGANG GROTTOS

Yungang Grottoes are located 16 kilometres to the northwest of Datong at the foot of Wuzhou Hill in Shanxi Province. They stretch for a whole kilometer from east to west. The existing 53 important grottoes contain a total of over 51,000 large and small statues. Yungang Grottoes are one of the largest ancient Chinese grottoes and the well-known major treasure troves of art in the world.

According to historical records, the Grottoes were built some 1,500 years ago, in the Northern Wei dynasty. The Emperor Wen Cheng, an adherent of Buddhism, accepted the suggestion of the eminent Monk Tan Yao and undertook the execution of the five grottoes (the existing Grottoes 16-20), later known as "Tan Yao Grottoes". Hewn out of cliff-side of Wuzhou Hill, they are in a honeycomb pattern. The project got underway around 460. Within four decades, other main grottoes of Yungang were completed. According to the inscriptions and artistic style of Yungang Grottoes, construction of most of the grottoes was completed between 460 and 494, before the Northern Wei regime moved its capital to Luoyang.

Themes of the Yungang Grottoes. In subject matter they centre on Buddhist statue. They are a treasure house of ancient Chinese Buddhist arts.

The walls of the grotto are covered with sculptures of Bodhisattvas, Buddhas, flying fairies, disciples and so on. The varied postures and facial expression of these sculptures are exquisite to behold. The caves—graceful and refined, followed the heritage of the Chinese timber architecture. The Jataka stories or Buddhist legendary stories are serial carvings in relief. Of these beautiful sculptures, the most captivating is a group of sculptures. Some play flutes, others beat

drums. Then there are those playing the pipa, a four-stringed lute. Every figure appears alive and vigorous, all attention on the music.

Sculpture of the Yungang The sculptural arts of Yungang Grottoes carry forward the good traditional styles of the Qin and Han dynasties.

These sculptures also preserve some of the foreign influence, including Buddhist art depicting musicians in attendance on Buddha. These artists left a precious legacy for later generation. The highly decorative sculptures not only give evidence of the cultural exchange between China and the foreign countries and their friendly intercourse but also offer valuable materials for the study of ancient Chinese history, sculpture, architecture, music, religion and others.

Over the centuries, nature and man caused much damage to the Yungang Grottoes. At least fourteen hundred Buddhist statues were stolen and shipped out of the country by plunderers. Not a few of those that remain are missing heads and limbs.

After the founding of the People's Republic of China in 1949, the People's Government has done much to renovate and protect this precious art relic. Cracked caves and statues have been reinforced and chemical means are being tried out to deal with weathering, trees planted in and around the area, research work are carried. Under special preservation of state, the Yungang Grottoes are now magnificent, a favorite sightseeing spot in Shanxi Province. Two natural ravines cutting into the face of the cliff divide the caves into three groups, which have been numbered consecutively. There are four eastern grottoes, nine central grottoes, and forty western grottoes.

#### Eastern Group

Grottoes 1-4. Each has a pagoda of several storeys in its center. A rectangular pagoda pillar of two storeys stands in the center of Grottoe 1. A statue of Maitreya stands at the back. Most of the Buddha figures surrounded are weathered and peeling off. On the flanks of the door are the profiles of Vimalakirti and the God of Wisdom. Sculptures of Sakyamuni's life done in serials on the lower part of eastern wall have been preserved rather intact. In the center of the No. 2 grottoe, there is a rectangular pagoda of three storeys each of which has four sides. On each side carved three niches in the shape of pavilion. Five storeyed small pagodas were carved in stone. All

provide useful data for the study of Northern Wei architecture. The grand project of the No.3 grottoe has not completed during the Northern Wei dynasty. The giant Buddha with a plump face and mild countenance and flanked by two Bodhisattvas sits in the rear room. According to their art and style of sculpture, they are probably sculptured by the early Tang artisans. Grottoe 4 was heavily weathered and peeled. A chronological record inscribed "The Reign of Zheng Guang of the Northern Wei Dynasty" appear on the Southern wall above the door. It is the existing latest inscription of the Yungang Grottoes.

#### Central Group.

Grottoes 5 and 6 are twine grottoes. Having a front room and a rear room, Grottoe 5 is known as the "Grotto of Sakyamuni", a magnificent grottoe covered with green tiles. In the centre is a seated, serene but not formidable Sakyamuni. The statue is as high as 17 metres. It is the largest giant Buddha among the Yungang Grotto statues. All of its walls are decorated with niches with seated Buddhas. On the two flanks of the arch door there are Buddhas in relief sitting under bodhi trees. The ceiling are covered with beautiful flying Apsaras. Grottoes 5 and 6 are unique in that they have five four-storeyed wooden pavilions in front of them. These pavilions were renovated in the Eighth Year of the Reign of Hong Zhi of the Qing Dynasty in 1651. Grotto 6, the largest and the most exquisitely carved and designed, is the best among the Yungang Grottoes and the representative one. Upon entering it a visitor will notice a two-tiered square stone pagoda in the centre, about 15 meters in height. Into each side of each tier of the big niche of the supporting pillar are housed the seated Buddha, reclining Buddha, cross-legged Maitreyas, Sakyamuni facing Prabhutaratna. Especially attractive are the 20-odd carvings in relief on the lower parts of the east, west and south walls and the four sides of the supporting pillar, depicting the life of Sakyamuni from his birth to his attainment of the Nirvana. The Jataka stories in relief cover the entire walls of the twine Grottoes 7 and 8. Some of the paintings in Grotto 8 <sup>portrays</sup> the Kumarajiva with five heads and six arms riding a peacock; others shows the subject of

Mohesva Heaven. They are exceptional examples among Yungang Grottoes. Grottoes 9 - 13 were later got their name of Yungang Five Flowers Cave" from the renovation of painting all the figures and sculptures in

these grottoes. The beautiful and spectacular statues and sculptures are wide-ranging in subject matter. They offer valuable material for the study of ancient Chinese art, history, calligraphy, music and architecture. For example, on the upper section of the Eastern wall in Grotto 11, an inscription recorded that 95 statues were carved in 483 the Seventh Year of the Reign of Tai He of the Northern Wei Dynasty. It proves useful for the study of Yungang history. The atmosphere of Grotto 12 is made lively by sculptures of fairies dancing on the ceiling and walls. Of these, the most captivating perhaps is a group carved on the northern wall. Some play flutes, others play the string instrument. Then there are those playing the PaiXiao, a cluster of bamboo pipes ranging from 16 to 20 in number. These sculptures shed much light on ancient Chinese musical instruments and their use. Grottoes 16-20 are the five earliest grottoes constructed during the Northern Wei dynasty. After Emperor Wen Cheng succeeded to the throne, first thing he did was to restore Buddhism and sent monk Tan Yao to Yungang as a supervisor to construct the above-mentioned five grottoes, later known as "Tan Yao Grottoes". They are oval in shape and each contains a statue of Buddha 13 to 16 meters high. The most spectacular of the five is Grotto 20, where a giant Buddha sits. As its front walls have collapsed, the giant Buddha is seated cross-legged underneath a blue sky. The giant Buddha, with thin lips, a high-bridged nose and long ears over his broad shoulders, is 13.7 metres in height. It is a representative work of Yungang Grottoes. The statues in Grotto 18 are masterpieces in the whole Yungang Grottoes. In its centre is a tall standing Buddha, 15.5 metres in height. It is dressed in a Buddhist vestment with a dignified countenance. The four figures standing around it have an elegant and pleasant manner. Particularly noticeable is a smiling goddess with a bottle in her hand, carved on the upper part of the eastern wall. She leans slightly forward, with lively eyes. Another Buddha is clothed in a stone robe on which the sculptor had carved a thousand tiny Buddhas, whose varied postures and facial expressions are exquisite to behold. The statue of a strong man is sculptured between the right arm and the right leg of the giant Buddha. This marvellous layout not only creates a lively, additional figure but also gives support that has prevented Buddha's right arm,

from being broken for more than a thousand years.

#### Western Group

Grottoes 21-53 and others not numbered, most of which constructed after the Northern Wei regime moved its capital to Luoyang in the Nineteenth Year of the Reign of Tai Ho of the Northern Wei Dynasty in 495. Most of them are middle or small sized and small niches. Caves with several tiered pagoda, four wall and three niches, four wall and two niches caves were very popular types. During this period, the design of niche lintel and curtain carvings became more and more complex. In short styling during this period is different from that of the earlier time. Statues of Buddha shaped slender. Flying Apsaras on the ceiling appeared more natural and unrestrained than that of the earlier time. They reflected that the Buddhist was becoming accustomed to the Chinese style day by day and approaching to the artistic style of the Longmen Grottoes. Yungang Grottoes has been opened to sightseers.

THE TONGLÜSHAN ANCIENT COPPER MINES IN DAYE

The Tonglüshan (Mount Vedigris) Ancient Copper Mines is in Daye County, Hubei Province. It is the largest and longest mined among the ancient copper mines as yet unearthed in China.

According to the county annals of Daye from the Qing Dynasty, Tonglüshan "has a flat top, with many huge rocks facing each other: following rainfalls, vedigris shows, like snowflakes and scattered beans, on the ground and rocks, and it is named thereby."

The peculiar configuration of the mountain, together with the lustrous vidigris seen everywhere, must have attracted the miners of past times to come here and seek their fortunes. Today, there are more than 400,000 tons of slag left behind by ancient smelting on the surface of the ground here, while under the ground, there is a network of ancient pits. The remains of the various types of furnaces for the smelting of copper here is a record of the scale and level of technology reached in ancient copper production in China.

Since 1973, archaeologists have excavated the Tonglüshan Ancient Copper Mines, and found several hundred shaft pits (including inclined and blind ones) of varying structures and methods of support and bracing, coming from different dynasties, about one hundred large and small drifts, eight vertical smelting furnaces from the Spring and Autumn Period (770BC - 476BC), seventeen smelting furnaces from the Song Dynasty (960 - 1279), and more than a thousand pieces of tools and articles of daily use.

C14 tests on the mine supports and wooden handles of the unearthed tools, in addition with the identification of the unearthed relics provide basis to determine that the Mines were excavated through quite a long course of time -- from the Western Zhou (11th century BC - 771BC), to the Han Dynasty (206BC - 220AD).

The ancient mine pits are mostly found in the kata-rock strata and alterative strata in the wall rocks of granodiorite and marble. The ore bodies are mostly exposed or near the surface. Due to oxidation and secondary enrichment, segments of the kata-rock strata are enriched with minerals such as native copper, cuprite,

malachite, and others. The grading of the ore found in one of the ancient pits here, Lao Long, shows a twelve percent of copper and thirty percent of iron.

Ancient tools, such as wooden mallets, rakes, bronze axes, adzes and pick-axes were found in the earlier pits. At the end of 6th century BC, iron casting and forging were invented, and forged pig iron was widely employed in production. In the pits of the Warring States Period (475BC - 221BC) and Western Han Dynasty (206BC - 24AD), along with the wooden tools, iron tools, such as iron axes, hoes, chisels, rakes, hammers, etc., took over the role of the bronze ones. Without any modern power driven machinery, the brilliant workers of those times used just simple bronze, iron, wooden and stone tools to excavate pits and shafts that reached more than 50 metres deep, and found initial solutions to a series of technical problems such as support and bracing, ventilation, drainage, illumination, etc., by efficiently employing systems of combining vertical and inclined shafts with drifts.

The pitshafts excavated prior to the Warring States Period were generally smaller and more shallow, with depths ranging from 20 to 30 metres, and sections of about 60cm. Spaced mortise and tenon jointed frames were used for the supports and bracing, with some of the frames made into spear-shape in order to prevent movement of the headframes. Wood boards were used as dorsal laminas, and the upper parts of the drifts were also covered with boards, forming a kind of a ceiling.

Depths of shafts dating from the Warring States to the Han Dynasty reached 40 to 50 metres, most having sections of 80cm x 80cm, with some vertical shafts even larger. The largest drift was 1.6 metres high and 1.95 metres wide. Lapped frame supports were used for the bracing of the shafts, while slender sticks and bamboo mats were used in covering the shaft and drift walls. Lumber used to support the larger drifts were thicker and larger, tow logs with branches would be used as vertical prisms, with cross beams and gallows timber on top, and ground beams at the bottom. The inclined shafts were ladder-shaped extending along the vein of the mine, with drifts on the sides for the extraction of the ore.

In ventilation, natural wind was produced by utilizing the difference in atmospheric pressure caused by the difference in level of the various pitheads,

and controlling the air flow by shutting certain abandoned drifts to let the wind follow the direction of excavation, down to the deepest worksites.

The drainage problem was solved simply by employing a system of water troughs to first drain the water into a pit, and then lifting the water out of the shaft with buckets.

The ancient slag pile-up is spread out in a very wide vicinity of Tonglúshan, in some places as thick as 3 metres, and is estimated at about 400,000 tons. Of the several dozen original smelting sites, only three have as yet been excavated. The unearthened smelting furnaces of earlier times are all of the vertical type, constructed with rammed quartz sand, kaolin, and other refractory materials. Upon excavation, parts of the furnace shafts had already collapsed, while the lower parts were in good condition. The restored furnaces are about 1.5 metres high, hollowed under the bottom, probably, to protect against moisture and for heat preservation. The chambers were shaped oblong with an area of about 0.2 square metres; horn-shaped wind gaps were found at the tops of the furnaces with diameters of about 5cm; and, arched tapping were opened at one side of the furnace chambers to tap the molten copper and let out the slag. Unearthed together with the furnaces were charcoal and stone anvils and balls for pulverizing the ore. The copper content of the coarse copper chunks found beside the furnaces and the copper ingots unearthed from around the shores of Lake Daye is higher than 93 percent. Found together with Furnace No. 6 were also malachite ore. The ancient slag is in fragmentary form with a copper content of only 0.6 percent, giving proof to the rather high level of smelting technology in those times.

Pottery utensils used by the miners and workers at the smelting sites from those times were also unearthed.

The Tonglúshan Ancient Copper Mines are very old, and were the longest exploited. It is estimated that about 8 - 10 tons of copper were altogether produced from this site. It is the crystallization of the wisdom of the ancient Chinese people, and evidence of the developed mining and smelting technology in ancient China. Its discovery and excavation has provided invaluable information for the studies in the history of ancient Chinese mining and smelting, attracting great attention and interest from scholars in this field. Currently, a museum has been set up and opened at Site No. 7 of the remains of these ancient mines.



## YONGLE GONG (THE YONGLE TAOIST TEMPLES)

The Yongle Gong (Yongle Taoist Temples), originally called the Chunyang Wanshou Gong (Temples of Pure Masculine and Longevity) is now located east of Longquan Village, 3 kilometres north of the County Seat of Ruicheng County, Shanxi Province. The former Yongle Gong was located to the south of the County Seat, within the deluged area of the Sanmenxia Reservoir, and removed entirely to the present location in 1959.

The Temples are magnificent in scale and spacious in layout. According to Taoist scriptures and the steles within the Temples, the former location, Yongle Town, was the birth place of Lü Dong-Bin, one of the Taoist "Eight Immortals". After Lü's death, his fellow townsmen made his former residence into a memorial hall. Towards the end of the Jin Dynasty (1115 - 1234), with the popularity of the legends about Lü Dong-Bin, the number of his worshippers gradually increased, and the memorial hall was extended into a Taoist temple. In the 3rd year of the Mongolian Emperor Tai Zong's reign (1231), the temple was destroyed by fire. At that time, Qiu Chu-Ji and some other leaders of the Quan Zhen Sect of the New Taoist religion were much favoured by the Court, and the founder of their Sect, Lü, was highly revered and worshiped; one year after the fire, Lü was conferred the title of "Tian Zhun" (Heavenly Saint), the temple was upgraded to that of a "gong" (palace - temple), and a Taoist official was entrusted the management for the construction of the Temples under Imperial order. Fifteen years later, in the 3rd year of the Yuan Emperor Shi Zu's reign (1262), the main edifice was completed: the Longhu Dian (Dragon and Tiger Hall) was completed in the 36th year of Shi Zu's reign (1294); the painting of the walls of San Qing Dian (Pure Trinity Hall) was finished in the 2nd year of the Yuan Emperor Tai Dingdi's reign (1325), and the murals in the Chunyang Dian (Pure Masculine Hall) were completed in the 25th year of the Yuan Emperor Shun Di's reign. Altogether, 110 years were spent in the construction, a period almost as long as the Yuan Dynasty itself. Although minor refurbishing of the structures and repainting of the murals were performed through the course of the Ming and Qing dynasties, the integrity of the artistic style of the Yuan was quite well preserved.

The main edifices of the Temples are five: the Main Entrance of the Temples, Wuji Men Gate (also called Longhu Dian -- Dragon and Tiger Hall), Wuji Dian Hall (also called San Qing Dian -- Pure Trinity Hall) Chunyang Dian (Pure Masculine Hall, also called Huncheng Dian Hall and Lü Zu-Dian -- Founder Lü's Hall), Chong Yang Dian Hall (also called Ximing Dian Hall and Qi Zhen Dian -- Hall of the Seven Disciples), all vertically lined on the middle axis. With the exception of the Main Entrance, which is a Qing Dynasty structure, all the others are from the Yuan Dynasty. This group of Yuan Dynasty architecture preserved some of the traditions in Song and Jin Dynasty architecture, with some renovation and creation of its own.

The Wuji Men Gate, or, Longhu Dian (Dragon and Tiger Hall), was the original main entrance of the Temples, and is similar in style to that of the Guangsheng Temple in Hong Dong and other Yuan Dynasty buildings. The stone lion and horned beast in front of the structure are lifelike and vigorous, and are masterpieces of stone sculpture; the two dragons on both ends of the ridge of the roof are mighty and awe-inspiring, the work of superb craftsmanship.

The murals are contained in the rear part of the Hall, with subjects of god officials, god marshals, town gods and village gods, etc., many carrying weapons, dignified and full of prowess. Although partly damaged, the vitality of the murals is still there.

The most major edifice in the Temples is the San Qing Dian (Pure Trinity Hall), also called Wuji Dian Hall, which is the shrine of the Founder of Taoist Trinity. This magnificent and spacious hall stands on a high foundation and is the highest of the structures in the Temples. The caisson here is exquisitely engraved, and the dragons at the bottom are especially beautiful. The painted decorations on the various parts are perfectly kept, and the combination of engraving with painting is most exceptional. The Hall is roofed with tri-coloured glazed tiles of yellow, green and blue; the roof ornaments are peacock blue glazed curled dragons which are most brilliant. The 400 square metres mural, all painted in 1325, is about gods paying homage to the Founder of Taoism, and is rigorously composed, quite vivid, and has a very wide breadth.

Chunyang Dian (Hall of Pure Masculine) is also called Lü Zu Dian (Founder Lü's Hall), and stands north of the San Qing Dian Hall. This is the shrine of Lü Dong-Bin, and the name comes from the Taoist title of Lü's -- Chunyang Zi (Pure Masculine). The Hall stands on a platform, is exceptionally spacious,

and is connected with the San Qing Dian Hall and Chongyang Dian Hall by tall corridors. The exquisitely engraved caisson stands in front of, and hides the beam frame. The murals on the walls of this hall, a total of 52 pictures, tell the legend of Lü Dong-Bin.

Chongyang Dian Hall is also called Ximing Dian Hall or Qi Zhen Dian (Hall of the Seven Disciples), and is located at the rear of the entire Temples compound. This is the shrine of the Taoist Quan Zhen Sect leader Wang Chong-Yang and his seven disciples, thus its name. The murals on the walls of this hall are about the legends of Wang Chong-Yang, and are similar in nature to those in the Chunyang Dian Hall.

The murals in the halls of Yongle Gong are exquisite paintings from the Yuan Dynasty, and cover an area of 960 square metres. They are rich in subject matter, and are masterpieces of art, providing important reference for the study of the social situation during the Song and Yuan dynasties, and the history of the development of Taoism.

## YIN RUINS

Extending about sixkilometres from east to west, fourkilometres from south to north, the Yin Ruins, covering an area of 24 square kilometres, at Xiaotun Village in Anyang County, Henan Province was discovered as the site of Shang Dynasty culture. This is the world famous late Shang Dynasty capital : the Yin Ruins.

In the late 14th century B.C. Pan Geng, a Shang king, moved his capital further south in Henan province. The new site was on the banks of a smaller river, the Huanhe, and 2.5 kilometers northwest of Anyang. The new capital was called Yin. From this, the last 273 years of the dynasty are known as the Yin dynasty. After Yin was conquered by the Zhou dynasty, Yin was desolate and uninhabited. Hence, named Yin Ruins.

It was not until 1928, that actual excavation at Xiaotun was begun. During the last seventy years, archaeologists found a wealth of rammed-earth building foundations which were believed to be the remains of a palace and ancestral temples of Yin times. The Yin excavations unearthed also a great many cultural relics at dwelling sites and tombs. They included pottery, bronzes and articles of jade, stone and bone, pieces of carved ivory and more oracle bones with inscriptions. There were also skeletons of humans and domestic and wild animals. A vivid picture of the history of Chinese slave society, the Shang dynasty which could not be learned from historical records or the oracle bone inscriptions began to unfold. Fifteen seasons of important excavations were carried on before the founding of the People's Republic of China. As a result of the excavations, north of the Xiaotun Village, a large number of rammed-earth palace foundations were found. Excavation was resumed in 1950 after the founding of the P R C. Ever since that time, many seasons of excavations have been made which yielded new discoveries.

56 palace remains were subsequently excavated, most of which are rectangular shaped. Among them, the bigger one covering an area of 400 square metres. Situated due south and north, or due east and west. Rammed-earth palace foundations - 2 metres thick. A great number of stone foundations and a bronze foundry were unearthed. They reflected the relative sumptuousness of then architecture.

The excavation in 1950 began with a large tomb at Wuguan village. Extending 14 metres long from south to north, from east to west 12 metres wide, this square shaped tomb contains a wooden coffin made of integrated wood. The chamber is surrounded on all sides by rammed-earth forming a two layers platform. 79 remains of people who had been immolated or buried alive with the tomb occupant were discovered in this tomb. In addition, there buried 27 horses, 11 dogs, 3 monkeys, 1 deer and 15 other animals. There are many sacrificial pits south of Wuguancun. In 1976, 250 sacrificial pits were discovered over an area of 5,000 square meters in the eastern part of the burial ground around Wuguan and Houjia villages. 191 were excavated. All were arranged in neat rows, each containing eight to ten decapitated skeletons. (Heads were buried elsewhere). A total of about 1,200 skeletons were identified. According to identification: most of them are the male sex aged 15-35. There are two rows of pits, in each of these ten or more tomb many skeletons of female sex were excavated. Another row of over twenty pits buried children, mostly aged ten or so, some are even little babies who had milk tooth. According to oracle bone inscriptions, the number of human sacrifices varied according to the person. Over 1,000 men were sacrificed and buried alive to "accompany" the dead Yin Emperor and pit were dug to bury the victims on the spot after the ceremony. Hundreds of men were sacrificed occasionally and excavated from large tombs.

The Yin Dynasty social economy was based on agricultural production. The tomb furniture and implements unearthed in Yin Ruins indicate that the Yin people have begun to use bronze farm tools but most of their farm instruments are made of stone, wood, bone and cowrie. Oracle bone inscription reveals grain, broomcorn and millet have been planted. The abundance of wine vessels indicates agricultural production have been developed to a riper stage. The discovery of abundant remains of house animals indicates that hunting was fairly developed. A similiar records of the appearance of tens and hundreds of sacrificial oxen, sheeps, pigs and dogs also reveals this fact. The oracle bone inscription also reveals hunting during the Yin period such as attack by car, following by dogs, burning hill, arrow shooting, net capturing, laying traps and other methods. The finds of a great number of different kinds of fish, deers, tigers, river deers, leopards and beers also reflected the development of hunting during the Yin period.

Not a few remains of workshops for manufacture bones , jades, stone wares and bone objects are found in the Yin Ruins. It shows that Yin's handicrafts has developed to an independent stage breaking away from agriculture.

The magnificence of the bronzes unearthed attests to the high level attained by the smelting and metallurgy as well as casting of bronzes of the Yin dynasty. The famous Si Mu Wu rectangular ding, cooking vessel, height 1.33 metre, weight 875 kilograms, with beautiful kui dragon design and glutton motive is the heaviest bronze found in China. Striking finds were made in 1976 in the tomb of Lady Hao, wife of King Wu Ding, nephew of the King Pan Geng . The tomb is only of medium size but over 1,600 burial objects discovered in this particular tomb. Among them were bronzes , jades , bone and ceramic and stone wares, over 6,000 cowrie objects. Most of the over 200 bronze ritual vessel are in couple or serial. There were also four bronze mirrors, the earliest bronze mirror discovered so far in China. Some bronzes in this tomb bear the characters "Fu Hao"(Lady Hao) or " Si Mu Xin" which accord with the oracle bone inscription(One of King Wu Ding's three wives was named "Xin" ). Therefore , the owner of this tomb is probable Lady Hao. This is so far the only Shang imperial tomb, the owner of which can be identified in association with historical records.

The large stone chime with the design of tiger is of historical interest. The stone is white touched with blue, 84 cm high, 24 cm wide, 2.5 cm thick , sounded like bronze. Among all the Chinese ancient musical instruments, it is one of earliest and well-preserved ones . It shows the high level attained by Yin 's handicrafts.

The oracle bone inscriptions unearthed at the Yin Ruins are a very important discovery . They many times mention and record the different conditions related with the Yin society. The inscriptions on bones or tortoise shells of the Shang dynasty have either been shipped off our country or missed before the founding of the People's Republic of China. After the founding of the PRC, a small number of oracle bone inscriptions have been excavated in Anyang and Zhengzhou. In December 1971, 21 oracle bones were uncovered west of Xiaotun. Among them, one bears as many as 60 characters recording

Yin Dynasty imperial sacrificial ceremony. Two years , archaeologists unearthed a total of 4,800 animal bones and tortoise shells south of Xiaotun. The inscriptions on them concern sacrificial ceremonies, movements of celestial bodies, and hunting and other expeditiond.

These historical relics provide new materials for Chinese archaeology . They afford also valuable material for the treasure house of the whole world .

## DUJIANGYAN

Situated on the Minjiang River near Guanxian County on the Chengdu Plain, the Dujiangyan project was built under the direction of Li Ping, who assumed office as Governor of Sichuan in 250 B.C. Dujiangyan consists of three component units: Fish Snout (the primary division head), Flying Sands Spillway and Cornucopia Channel. The river diverting Fish Snout is a midstream weir dividing the Minjiang River into Inner River on the east and Outer River, its mainstream, on the west. Cornucopia Channel is the upper end of a canal built by splitting Jade Rampart Mountain. Flying Sands Spillway regulates the volume of flow into the canal.

Below Cornucopia Channel, Inner River feeds into irrigation channels that crisscross the Chengdu Plain. Because of Dujiangyan, the Chengdu Plain "had the benefit of irrigation against drought, and of prevention of flood in the rainy season", according to classical records. The area became a rich granary and was called "Land of Abundance".

The planning, designing and building of Dujiangyan were remarkably scientific, original and nearly perfect. Fish Snout, Flying Sands Spillway and Cornucopia Channel co-ordinate to handle the flow in both flood and low-water seasons for irrigation and flood prevention.

To measure water level so as to control it, there "were stationed three stone figures at three different places" at the canal intake, and "their feet should not emerge in low water, nor should their shoulders be submerged in flood". These stone figures were a primitive form of water gauge. The fixing of the two water levels was the result of long-term observation and also the study and cognition of the law of changing water levels between flood and low-water seasons. The feeding capacity into the canal was controlled by manipulating that into Inner River, then by regulating the water level by means of the diversion project composed of Fish Snout, Flying Sands Spillway and Cornucopia Channel. This indicates that as "theory of weired flow", or the admission of a certain volume of discharge at a certain water level.

At Dujiang "five stone rhinoceroses were made upon Li Bing's orders, two of which stood in the gulf" The "gulf" refers to Inner River. Different in purpose from the stone men, the stone rhinoceroses marked



the required height of the riverbed for regular "deep bed dredging" at Dujiangyan. By "deep bed dredging" the river-bed was kept at a desired depth providing a river-flow cross-section of adequate size to ensure safe passage of relatively big floods. It is clear from this that there was considerable mastery and utilization of the law concerning the interrelationship between flowing volume and the cross-section of the river-bed. Such interrelationship constitutes an important aspect of modern formulae about flowing capacity.

Located at the head of the Dujiangyan canal, Guanxian County has a long history. Surrounded by green mountains, Guanxian County has numerous places of historical interest with its hill, river, weir and city integrated into a whole, Er Wang Temple and Fu Long Guan. With towering ancient trees, the structures are grand in concept and architecturally superb. Qingcheng Mountain the southwestern suburb of Guanxian, having peaks one higher than another is a welcome from summer retreat. Complementing the natural beauty of this scenic spot are the towers, temples and pavilions set amidst the slopes. Dujiangyan is now regarded as a gem--in the treasure of ancient culture.

## LONGMEN GROTTOES

Longmen Grottoes are located in Longmen, in the southern suburb of Luoyang (about 13 kilometres from the city). Longmen Grottoes is honoured as one of the three Chinese Buddhist art treasure-houses.

The rocky mountains of this place mainly belong to the Cambrian - Ordovician period of the Palaeozoic era which are natural material for stone sculpture. The construction of the Grottoes began in 494, before and after the Northern Wei regime moved its capital to Luoyang. Large scale work was done over a period of some 1,000 years during the Eastern Wei, Western Wei, Northern Qi, Northern Zhou, Sui and Tang, the Five Dynasties, Northern Song, Jin and late Qing Dynasty. The over 1,000 metres of precipitous cliffs stretching from north to south of Luoyang city proper still contain today 1,352 grottoes, 2,100 niches and over 100,000 statues. In addition, there are 3,680 inscribed tablets and 40 pagodas.

Longmen Grottoes is later than Yungang Grottoes. Longmen Grottoes is characterized by its own style.

The structure shape of Longmen Grottoes is comparatively simple and monotonous. Most of the subject matter in the Grottoes are concise and clear stressing on the main Buddhas. Grottoes of the Northern Wei Dynasty were generally an extension of the natural caves with arched roof. The subject matter of statues often centered on the main Buddha with attendants. Some caves contain no other decorated carvings but the Main Buddha. Fundamentally speaking, the Northern Dynasties niches contains the statue of Skt. Sakyamuni, or Skt. Sakyamuni and Prabhutaratna sitting side by side, the three Buddhas and the other seven Buddhas. By the Sui and Tang Dynasties, the main Buddha were mostly Skt. Amitabha, Matreya, some others as Skt. Vairocana and Bhaisajyaguru Buddha. In addition, the Thousand Buddhas and the Ten Thousand Buddhas were also outstanding but not worshipped as main Buddha.

The sculpture in Longmen Grottoes became simpler, in the folk style. The influence of mysterious existed, more or less early in the Northern Wei period. By the Northern Dynasties, however, Longmen sculpture had developed into one with a special national style. Most of the main Buddhas sit in their Sumeru seats with a slightly smiling face, thick lips, erect. The corners of its mouth curved upward in a gentle smile. Differing from that of Yungang statues, their clothes spread in rhythmic flowing lines instead of the sharp lines. These statues are sculptured with lowered heads and eyebrows. A worshipper acquired a feeling of warmth and kindness. It suggests that the gap between God and Man were reduced. The Lokeshvararaja Buddha is the masterpiece and focus of the Longmen Grottoes. His head alone is over four metres in height, and his

ears are 1.9 metres in length. Not only is this big Buddha a sculptural success, but the lesser figures flanking him are also lively. Once again the statues evidences the brilliant achievement in stone sculpture during the Tang Dynasty. The statues are much more lifelike and have more human interest and pity compared with those constructed during the Wei Dynasty.

In addition, there are also many exquisite Buddhist, Taoist and other religious statuary, and a wide of inscription stone tablets. They shed light on the study of the history of Chinese calligraphy. "The tablet of Longmen Calligraphy (20 and 50 kinds)" and the tablet by Chu Shuilian in Yi Gie tower, all are art treasures of Ancient Chinese calligraphy. Using the chronological inscription on most of the stone statuary, we can determine the absolute date of each of these niches. Compiling these inscriptions together, a chronological history of the late Northern Wei to the Middle Tang is thus completed. Those caves which bear no inscription also provide valuable material for the study of the grotto shape and statue style and date of its kind.

Over the centuries, nature and man caused much damage to the Longmen Grottoes. A pair of reliefs in the Binyangzhong Grotto, "The Emperor and the Empress Pay Homage to Buddha", are as exquisite in composition and carving as they are in sculpturing detail. They were chiselled off by a imperialist and shipped out of China. According to statistics 1965, the number of carvings the imperialists ruined amounted to over 720. Not a few of those that remain are missing heads and limbs.

After the founding of the People's Republic of China, special organization has been set up there. The government had many repairs undertaken in the Longmen Grottoes. trees planted in the environment. The famous Lokeshvararaja Buddha niche, the Fengxian Temple has been carefully protected and renovated. New techniques and material of Chinese civil and chemical engineering had adopted. Renovations of other niches have been carried also.

The now inviting scenic spot - Longmen Grottoes share its splendor with its thousands visitors every year.

### Shennongjia Nature Reserve

Shennongjia Nature Reserve in the western part of Hubei Province lies between Daba and Wudang Mountains. Its geographical location is at  $113^{\circ}3'$  --  $110^{\circ}34'$  E and  $31^{\circ}22'$  --  $31^{\circ}37'$  N. Lying between the transitional zone of south-western high mountain and low hilly land of Central China, the Reserve has a total land area of 90,000 ha.

Since the function of crustal movement, the Shennongjia Mountain had been from the middle Devonian period raised above the sea level. Through the uplifts of Cenozoic and Mesozoic era and the erosion for many years, the topography is criss-crossed with mountains and rivers, forming an unusual development and dislocation valley. The Shennong Crest that has been known to be the first peak of Central China, locates in the middle part of the Reserve with the elevation of 3,105 m. There are within the Reserve 31 peaks having their altitude of more than 2,500 m above the sea level. The lowest elevation is 480 m with the relative difference of height at more than 2,500 m.

Lying between the transitional region of the northern subtropical and warm temperate zone and locating at the middle reaches of the Yangtse River, the Shennongjia Nature Reserve has concurrently impacted by the southeastern oceanic monsoon and the cold wave from Siberia. The climate there is therefore characterized by four types of subtropical, warm temperate, temperate and cold temperate zones. The formation and development of soils have both the features of the coniferous forest of western crossed mountain range and the mixed coniferous and deciduous forests of Qinling-Bashan upland, and it represents many typical properties of the subtropical soil.

Variable conditions of topography, soil and climate have resulted in an age-old character of flora, and variety of the vegetable composition and the resources. The Reserve is a meeting area of the fauna and flora of the Central China, the North China and the Southwestern and northwestern China, having almost all the species of the subtropical, temperate and cold temperate zones. The vertical zonation of the vegetable type is very clear with the man-made forests growing below the elevation of 1,000 m which includes the economic forests of palm tungoiltree, walnut etc; from 1,000 m to 1,700 m of elevation it is the mixed evergreen and deciduous broad-leaved forests including the dovetree, Henry Emmenopterys, lacquertree, Yantao Actinidia, beech and oak etc.; from 2,100 to 2,400 m, the coniferous forest belt of Farges Fir; from 2,400 to 2,800 m, the belt of Farges Fir and Fortune Rhododendron; from 2,800 to 3,000 m, the grove belt of arrow bamboo and 3,000 m up the alpine meadows.

According to the statistics, there are in the Reserve approximately 1,131 species of plants, of which 80 are Pteridiphyte, 22 Gymnosperm, 913 Dicotyledon and 116 Monocotyledon.

Some 380 species belong to the Xylaphyta, of which, representing the plant species of Daba mountain are the dovetree, Chinese Katsuratree, David Ketelleeria, Farges Fir and Henry Pine etc.; representing the plant species of northwestern part of Qinling Mountain, the Armand Pine, Bunge Pine, Qinling Mountain Fir and Chinapaper birch; representing the flora of Central China the species of Masson Pine, whinghackberry, Chinese Tuliptree and Yangtao Actinidia etc. The Shennongjia Nature Reserve is also rich in wildlife resources. According to the statistics, there are 54 kinds of animals, 190 of birds, 12 of reptile and 8 of amphibian with a variety of entomical species accounting for 81.8% of the 33 order of China. Among these wild animals, the protected ones are Rhinopithecus, Panthera tigris amoyensis, Panthera paradus, Felis Temmincki, Chrysolophus, T.Temminckii, and Megaloba-

trachus davidianus etc.

The animals of the whitenized type in the Shennongjia Nature Reserve have attracted many scientists both from domestic and overseas attaching their great importance to them. The species of whitenized ones found so far are mainly the white bear, white muntjac, white monkey, white serow and white snake etc.

Early in 1922, the scientific researchers of China had conducted their survey activities there. Since the founding of the People's Republic of China in 1949, a lot of State scientific research organizations have also carried out for many times the multi-disciplinary survey in this area. After the establishment of the Reserve, the priority for research work has been given attached to the aspects of the wild ecological habits and the changes of the population of the Rhinopithecus roxellanae.

The establishment of the Reserve was approved by the Government of Hubei Province in March of 1982 and ratified by the State Council ranking as the National Nature Reserve in July of 1986. A Supervision Office has been set up in the Reserve with 79 supervisors and technical personnel. In addition, there are three Supervision Stations and two Local Police Stations.

In the Reserve there scatters a number of villages with the inhabitants of more than 7,000. They are mainly engaged in farming activities and the crops are maize, potato, soyabean and oats etc. Since the limitation of the natural conditions of soil and climate, the yielding of the crops is very low. The main cash income of the farmers is mainly based on a diversified economy by raising cattles, pigs and beekeeping as well as collecting the Chinese herbal medicine etc. Owing to the Reserve lying in the mountainous area, the communication is very difficult and always obstructed during the overcast rainy seasons.

According to the "Forestry Act" and "The Protection and Management Measures for the Wildlife in the Nature Reserves", the Shennongjia Nature Reserve has also developed a "Rules for Protection of the Shennongjia Nature Reserve: and conducted a responsibility system of the protection work. On the basis of dividing areas for protection, the contractual system has been adopted for all the supervisors, and since then, the rampant felling and the forest fire have never occurred. The local government has energetically given its support to the protection work and carried out a favourable policy of exemption of farming taxes for the farmers in the Reserve area. To solve the problem of the shortage of grain ration, the government has in recent years allotted some 500,000 kg of grain to the people in the Reserve. The Supervision Office of the Reserve has also actively given their aid to the local people in organizing the surplus labourers to contract some sideline production so as to increase their income.

The Shennongjia Nature Reserve is a typical zonation of plant species of subtropical, temperate and cold temperate zones in the central part of China. The Reserve is obviously a converging area for the fauna and flora of the southwest and northwest China, the Central China, South China and North China, of which many of them have been ranked as the rare species with important scientific research value. The Reserve provides an ideal base for the directional research to the forest ecological system. Especially, since the discovery of the whitenized species of some large wildlife in this area, the scientific circles both the domestic and overseas are paying great attention to explore and explain the natural phenomena.

The Shennongjia Nature Reserve has an attractive landscape with a lofty mountains and boundless forests. The magical nature offers you with a magnificent scenery of hot summer at the hill foot and spring on the ridge

while the clear autumn comes to the hillsides, the hilltops are coated with snow. All the seasons are present before you, people could hardly distinguish the spring, summer, autumn and winter in the same period.

The Shennongjia Nature Reserve being protected as the natural heritage is of significant and fully deserve. With the improvement of the management work, it would no doubt make more contribution to the natural protection activities of China and the world as well.



### Dongzhai Port Nature Reserve

Situated in Qiongzhan County, Hainan Island, Guangdong Province, the Dongzhai Port Nature Reserve (20° 7' N and 110° 30' E) covers an area of 2,500 ha. with a total coast line of more than 50 kilometers.

With many windings and bays along the coast line, the Dongzhai Port was formed by a serious earthquake in the year of 1605. The harbour is deep and wide with gentle and flat beach. There are a quite number of tidewater gullies. When the tide rises the beach is flooded and the gullies are full of water and while the tide edds the beach is exposed resulting many shallow pools. The mangrove forest is growing on the beach along the sea coast. The red soil of the land comes from the weathered basalt and the salinized soil is under the mangrove forest with the lowest PH value of 3.78 and the highest of 8.17. The soil of the deep layer is mainly fine sands and soft mud.

There are six rivers in the Reserve, namely Malinggou, Yangzhouhe, Yangfenghe, Xihe, Sanjianghe and Taolanxi. Besides, there are still some river courses directly emptied into the sea. During the rainy season, the fierce wind and torrential rain caused by the violent typhoon wash a large quantity of fine sands and organic particles into the harbours, resulting swampland followed by the accumulation of silt. Thanks to the shallow water and gentle wind and calm waves here, it is quite suitable for the growth of the mangrove forests.

Since the Reserve lies in the monsoon climate area, the average annual temperature is 23.8 degrees C with 28.4 degrees C in July and 17.1 degrees C in January and 1,700 mm of annual rainfall and the temperature of the sea water varies from 32.6 degrees C to 14.8 degrees C with the average of 24.5 degrees C.

The mangrove forest is the special flora in the beaches of tropical and subtropical areas. In the Dongzhai

Nature Reserve, there exist mainly 12 families of flora with 19 species. The Rhizophoraceae family has the species of Rhizophora stylosa, Bruguiera sexangula, B. gymnorrhiza, Kandedia candel and Ceriops tagal; the Verbenaceae family of Avicennia marina; the Myrsinaceae family of Aegiceras corniculatum; the Euphorbiaceae family of Excoecaria agallocha; the Palmae family of Nypa fruticans and the Sterculiaceae family of Heritiera littoralis. The mangrove forests are mainly growing in the following harbours: Sanjiang and Yanzhouxi (more than 730 ha.), Shanweixi (90 ha.) and Tashi (more than 900 ha.). The Bruguiera is the only nature tree in this reserve are and the highest ones can have 14.5 m with 60 cm of breast high diameters. The Rhizophora stylosa is growing in most of the areas in the Reserve with rich and crisscross root systems and wind and wave resistant characteristics, which is one of the main tree species for the establishment of the coast line sheltbelts. The mangrove forest belts is the ideal habitat for birds, amphibians, reptiles and fishes. The common birds are wild ducks, egrets, sanpipers etc. and there are also plenty of fishes, prawns, crustaceans and molluses.

Setting up in 1980 by the Provincial Government of Guangdong, the Dongzhai Port Nature Reserve was ratified by the State Council in July, 1986, as one of the State controlled nature reserves. At present, there are 19 staff members in the Reserve. The Dongzhai Port Nature Reserve is the first mangrove forest nature reserve in China. Since the establishment of the Reserve, the mangrove forest belts have been well protected and some man-made forests of mangrove have also been established in the Reserve. Beginning from 1980 up to now, more than 500 ha. of man-made forests of mangrove have been afforested with 65% of the planted trees crowned, which has greatly promoted the development of the mangrove forests.

At the surroundings of the Reserve, there are 72 villages with 13,000 inhabitants who take the agriculture

as their main farming activities and fishing as sideline occupation or are engaged in half agriculture and half fishery.

In order to run the Reserve well, a policy of responsibility system has been conducted and each person should fully fulfil the job assigned by the authority of the Reserve. In addition, they always educate the public to be aware of the importance for protecting the mangrove forests and give publicity to the rules and regulations in managing the Reserve. Supported by the county authorities, some joint protection and joint guard groups have been set up between the neighbouring townships and villages so as to protect the mangrove forest belts more efficiently.

Since the establishment of the Dongzhai Port Nature Reserve, some research activities have been conducted, such as the survey of the flora resources, phenology observation, afforestation experiments in different site conditions, ecosystem changes of the mangrove forest etc. and some results have already been achieved.

The mangrove forests are mainly distributed along the coast lines of Guangdong Province and some coast lines of Guangxi, Taiwan and Fujian Provinces and the species are more or less the same with that of the Southeast Asian Countries. In China, the best mangrove forests are in the northern coast line of Hainan Island, Guangdong Province. The mangrove forest in the Dongzhai Port Nature Reserve is the typical representative of the Hainan Island. The research work of the mangrove forests is of significant importance in protecting the ecological balance of the harbours and the coast lines. By doing study and practice, it proves that the mangrove forests can be planted artificially and this kind of research will certainly be done continuously in future.

### The Alligator Sinensis Nature Reserve

The Alligator Sinensis distributed in the lower reaches of the Yangtze River is a peculiar wildlife in China. The Alligator Sinensis, one of the fresh water crocodiles in the alligator family, have a history of 200 million years. There are only two species of this family in the world today, one is the Alligator Sinensis in China and the other is Alligator mississippiensis in the Mississippi River of north America. Having a gentle disposition and no harm to the people, the Alligator sinensis is one of the rare animals in the world.

According to the field survey, the Alligator sinensis is only distributed over the southern part of Anhui Province and some places of the neighbouring province of Zhejiang, totalling about 500 pieces. Since it has some significance in the history of the animal evolution and academic importance, the biological specialists both at home and abroad have devoted much attention to the protection of the animal which was ranked as one of the protected wildlives in the world by the United Nations in 1973. The Chinese Government has also given its first priority to take care of the animal.

In order to protect the endangered animal, an Alligator sinensis Nature Reserve was established by the Government of Anhui Province in 1982. The Reserve (30° 6'--31° 6' N and 118° 6'--119° 6' E) covers five counties of Nanling, Jingxian, Shuancheng, Lanhsi, Guangde of Anhui Province. The headquarter of the management organization locates at the Forestry Bureau of Shuancheng Prefecture and the top governing organ is the Forestry Department of Anhui Provincial Government and then the Reserve was approved by the State Council as one of the State controlled reserves in China in July, 1986.

There are three rivers in the Reserve, namely Zhanghe River, Qingyi River and Shuiyang River which are linked

up each other and empty into the Yangtze River. The three rivers are connected with many lakes, ditches and ponds with abundant food for the animal and less human disturbance, so that it is a suitable habitat for the Alligator sinensis. The animal usually inhabits in the lairs of the hilly land at the elevation of less than 100 m where the soil is more soft with a large amount of sand content. The vegetation here is mainly grasses, such as Miscanthus sinensis, Imperata cylindrica, Themeda triandra, Kummerowia stipulacea etc.; quite a few bushes of Rosa multiflora, Rubus parvifolius, Lespedeza formosa etc. and some scattered trees of Salix matudana, Melia azedarach, Robinia pseudoacacia, Celtis sinensis etc.

It is very interesting that the body temperature and the metabolism of the Alligator sinensis can be changed according to the environmental conditions. The dormant stage of the animal begins at the end of October till the middle of April the next year.

The establishment of the Alligator sinensis Nature Reserve has played an important role in preserving this odd species. The accidents of killing the Alligator sinensis have been reduced gradually during the last few years because of the managing personnel of the Reserve using all kinds of opportunities such as meetings, radio, proclamations and bulletin boards to educate the public inside the Reserve the awareness of importance for protecting the rare animal. Besides, five protection and observation stations have been set up and another six are under preparation in the townships, villages and hill and pond sides where there are more Alligator sinensis inhabited. In 1985, in the four protected lairs, the Alligator sinensis laid 87 eggs and hatched 51 young ones, so that the population of the animal has been increased in the field.

With the purpose of rescuing the endangered rare species, an "Anhui Provincial Alligator sinensis Propagation

and Research Centre" was established by the Ministry of Forestry, the People's Republic of China and the Anhui Provincial Government in 1982 to carry out artificial raising, propagation and research work and to regain and develop the resource of the animal in China and to probe the relationship between the Alligator sinensis and human beings. The Centre has hatching rooms, propagation pools and raising ponds, covering a total area of 100 ha. Having several years of experiences in biological research, the Centre has mastered the principles of propagation and growth and the methods of artificial raising of the animal, so that the hatching and survival rate has been increased year by year. The hatching rate was 90.3% and the survival rate 95.4% in 1985. At present, there are more than 1,000 Alligator sinensis kept in the Centre.

The establishment of the Alligator sinensis Nature Reserve has played an important role in protecting and propagating the animal. The Alligator sinensis had already lived for more than 200 million years on earth before the appearance of Human beings, that's why people call it a living fossil.

The Chinese Government has made great efforts and gained distinct achievements in protecting one of the two fresh water crocodiles in the world.

### Poyang Nature Reserve

Situated in northern Jiangxi, Poyang Lake, the largest fresh water lake in China, lies to the south of the middle and lower reaches of the Changjiang River. It stretches 170 km from north to south ( $28^{\circ}25'$  --  $29^{\circ}45'N$ ), and 74 km at its broadest east to west ( $115^{\circ}$  --  $116^{\circ}44'E$ ), covering a total area of about 3,841 square kilometres (when water depth at Hukou where the lake joins the Changjiang River is 21 meters). Its coast line is 1,800 km. The lake has been well known as "a land of abundance" and is reputed as a "bright pearl" in the basin of the Changjiang River with its rich aquatic resources and flourishing crops in surrounding fertile lands.

The lake area enjoys a subtropical warm and wet climate with sufficient sunshine, ample precipitation and long frost-free period. The average annual temperature varies from 16.7 to 17.7 degrees C and the average yearly rainfall is 1,400 to 1,900 mm. From April to June during the flood season, its surface area is considerably expanded forming an endless rippling blue expanse. In the dry season of winter and spring, the water recedes and seasonal small lakes and large marshes appear all over the lake area.

According to preliminary survey, there exist in the lake 25 families of phytoplankton totalling almost 100 species, the dominant being green algae, 37 families of aquatic vascular plant with 98 species, the dominant being sedge, *Potamogeton malaianus* and *Vallisneria spiralis*; 65 species of mollusca, the dominant being snail and mussel; 21 families of fish with 122 species, the dominant being Cyprinidae. In addition, there is a good supply of silver fish, a famous product of the area. Spreading on the grassland along the banks are 74 species of 25 families of meadow and helophyte plants, the dominant being Gramineae, Cyperaceae, Polygonaceae and Compositae.

Such abundant natural resources provide a welcoming habitat for birds, attracting tens of thousands of migratory birds to spend their winter there, thus turning the Poyang Lake into one of the world's most famous migratory birds sanctuaries.

In June, 1983, the People's Government of Jiangxi Province established the Migratory Birds Reserve in the western part of Poyang Lake where most of the migratory birds flock there for winter, and set up corresponding administrations. This Reserve, with Wucheng in Yongxiu County as its center, embraces nine seasonal lakes and marshes including: Dahuci, Banghu, Zhonghuci, Shahu, with a total area of 22,400 ha. There dwell in the Reserve 150 species of birds among which many are rare ones listed for global protection. In February 1984, 840 white cranes were observed, the largest flock of white cranes ever found in the world. This number has increased considerably in recent years. On 12th of January 1985, a crane inspection delegation from the International Crane Fund witnessed over 1,350 white crane. In the winter of 1985 the number increased to about 1,500. In addition, 20 species of rare birds such as white naped crane, hooded crane, common crane, white stork, black stork, spoonbill, whistling swan, mandarin duck, great bustard and pelican also frequent the area. The Poyang Lake Migratory Birds Reserve has been visited by specialists and scholars of the International Crane Fund, the International Union for Protection of Nature and Natural Resources, the Hong Kong Branch of WWF, Japan, Sweden, Spain and other countries, and has been highly spoken of by them as a "paradise" and "gold reserve newly discovered". The large flock of cranes stretching over a few kilometres has been acclaimed China's "Second Great Wall".



The establishment of the Migratory Birds Reserve offers favourable condition for both the protection of migratory birds and scientific research on wetland. Chinese scientists have been carrying out research on wetland as well as public awareness drives for "loving and protecting birds". The area will, as a result, gradually become a center of crane research and wetland education in the southern part of China. It will also become a scenic spot for both Chinese and foreign tourists to view the migratory birds.

### THE LIJIANG RIVER SCENIC ZONE AT GUILIN

The Lijiang River Scenic Zone at Guilin ( $24^{\circ}40'-25^{\circ}25'N$ ,  $110^{\circ}5'-110^{\circ}40'E$ ) is located in the northeast of Guangxi Zhuang Autonomous Region of the People's Republic of China. The total area is two thousand square kilometers which covers the entire city of Guilin, Yangshuo County and certain parts of Lingui, Lingchuan and Yongfu counties.

Lijiang River Scenic Zone at Guilin together with its natural resources is owned by the state. In 1982 the State Council listed the Lijiang River Scenic Zone at Guilin among the first group of the major places of scenic and historic interest, which is now in the charge of the Administrative Bureau of the Lijiang River Scenic Zone at Guilin.

The landforms of Guilin can be divided into four categories but corrosion takes the main part of the four, that means the low-lying land of peaks and plains of peak forests are the landform features of Guilin; then the corrosion landforms of hillock and gentle slope hillock; eroding landforms of ridge, ravine; and accumulation landforms of every terrace.

The stone mountains, mainly of limerocks, of Guilin are composed of marine biochemical sediments. Years of weathering and water erosion have given shape to the rich and varied patterns of its present peaks, either in isolation or in cluster, and magnificent karst caves.

The Lijiang River starts from Mao'er Mountain. The section of the river from the confluence of the Darong River to Pingle is the Lijiang River. It flows through Guilin and Yangshuo with a total length of 116 kilometers and a catchment area at its upper reaches of 2,860 square kilometers.

The Guilin Scenic Zone has a long history. As far back as seven or eight thousand years ago, primitive men lived here in the manner of matrilineal communes. In 214 B.C. Emperor Qin Shi Huang of the Qin Dynasty ordered people to hew the Lingqu Canal and linked up the route of the Xiangjiang River to the Lijiang River and set up Guilin Prefecture. Later in the Song Dynasty, Guilin had begun to be noted throughout the country for its extreme natural beauty and the saying "Among all the mountains and waters, Guilin is the best" came into being.

Guilin is well-known for its unique mountains and beautiful rivers. It mainly consists of five scenic sites. There are about 157 rock hills (now under first-class or second-class state protection respectively), 21 major karst caves and several hundred smaller ones. Among the solitary hills and protruding rocks of Guilin, flows the tranquil Lijiang River and its tributaries, which produce most spectacular sight.

Guilin is also famous for its Reed Flute Cave and Seven-Star Rocks. There are a lot of cultural relics in the scenic zone. More than two thousand stone carvings scatter all over its scenic sites. There is the Lingqu Canal of the Qin Dynasty, site of Guyanguan Pass of the Qin and Han periods and the Imperial City of the Ming and Qing dynasties. The Huaping primitive forest area, home of Cathay Silver Fir known as the world's living fossil, is located within 70 kilometers radius of Guilin City.

The People's Government of Guilin City has made a program for the preservation of this scenic zone. Both the state and the local governments allocate certain amount of money each year for the development and preservation of the area.

## THE HUANGLONG-JIUZHAIGOU SCENIC ZONE

Adjacent to each other in geographic location, the twine scenic attractions of Huanglong (Yellow Dragon) and Jiuzhaigou (Nine-Village Valley) shine like two dazzling pearls in the highland inhabited by the Tibetans. However, different in their respective types of scenic attractions, receiving capacities, best seasons for tourism and administrative leadership, the two are both independent from and supplementing each other. The following gives a brief separate introduction to each.

### 1. THE HUANGLONG (YELLOW DRAGON) SCENIC ZONE

The Huanglong Scenic Zone of the People's Republic of China is located in Songpan County of the Aba Tibetan Autonomous Prefecture, at the northern foot of Xuebaoding, the southern section of the Minshan Mountains that towers on the plateau of northwest Sichuan Province. The Peiyuan Bridge which marks the starting point of its main scenic area is at 32°4'N and 103°49'E. The scenic zone proper covers an area of 700 square kilometers with an additional protective belt of 640 square kilometers. In the south, it is close to Chengdu, capital of Sichuan Province, while adjoining Qinghai and Gansu provinces in the west.

The Huanglong Scenic Zone, including all its natural resources, comes under the ownership of the state. In 1982, the State Council listed it among the first group of major places of scenic and historic interest directly under state protection. The immediate unit responsible for its administration is the Huanglong Scenic Zone Administrative Bureau.

Characterized by its fully exposed sedimentary landform, the Huanglong Scenic Zone abounds in varied untouched natural attractions of plateau, river sources, snow-crowned mountains, glaciers, canyons and forests. Visitors can also enjoy here the rich and colorful social customs of the local Tibetans.

Besides its plentiful varied and unique scenic attractions, the Huanglong Scenic Zone is rich in natural resources, exuberant in vegetations, excellent in water quality, free from pollution and perfectly preserved. The provincial government of Sichuan has drawn up, in the light of the Provisional Regulations Concerning Places of Scenic and Historic Interest, an overall preservation program for the

Huanglong Scenic Zone. Every year, the state and local governments allocate to the scenic zone quite an amount of money to finance the various undertakings in the zone. Efforts are being made by both relevant administrative institutions and scientific personnel to preserve and manage the zone according to the overall preservation program.

The Huanglong Scenic Zone, represented by the open-air karst landform of the Yellow Dragon Valley, presents, in a highly concentrated manner, the world's most unique and spectacular open-air karst scenery. Found in the Yellow Dragon Valley are more than 3,400 colorful karst pools, 5 tufa cascades and an 80,000-square-meter shoal glittering with a calcificated bottom. Available in its surrounding areas are such natural attractions like canyons, waterfalls, hot springs, etc. This scenic zone has very rich fauna and flora resources. It boasts 219 kinds of animals including first-class state-protected animals such as giant pandas, golden monkeys, and takins. Vegetations found in the area, mainly the evergreen trees typical of subtropical mountain regions and those of conifer-broadleaf hybridization, also include alpine grass line, plateau shrubs, and the primitive coniferous tree line. The Huanglong Scenic Zone is also reputed for producing many kinds of precious traditional Chinese medicinal materials like musk, pilose anteler, Chinese angelica. But the best known above all both in China and abroad are the fritillary bulbs produced in Songpan County, which are simply referred to as "Songpan Fritillary Bulbs."

Though discovered only recently, the Huanglong Scenic Zone is known as the only large-scale open-air karst scenery ever found in China and is catching more and more attention of the world. It is often referred to as "an incomparable scenic wonder on earth."

## 2. THE JIUZHAIGOU (NINE-VILLAGE VALLEY) SCENIC ZONE

The Jiuzhaigou Scenic Zone ( $35^{\circ}53'-33^{\circ}2'N$ ,  $103^{\circ}46'-104^{\circ}5'E$ ) lies in the mid-south in Nanping County, Aba Tibetan Autonomous Prefecture, Sichuan Province. Situated in the northern side of the Zaerna Peak of Minshan Mountain Range, the place occupies an area of more than 720 square kilometers with a peripheral protection zone of 600 square kilometers. It is about 450 kilometers away from Chengdu — the capital city of the province.

The Jiuzhaigou Scenic Zone is owned by the state. In 1982, the State Council of the People's Republic of China made Jiuzhaigou as the first group of important scenic zones of the state. The zone is under the direct administration of the Jiuzhaigou Scenic Zone Administrative Bureau.

The zone stands in the Songpan-Ganzi geosynclinal region where the Qinghai-Tibetan Plateau borders the Sichuan Basin. Being the largest rift of the landform transformation, the geosynclinal region possesses special topographical characteristics including mountains, canyons, lakes, brooks, level grounds, all typical of the mountain and canyon type in landforms. Representative are the 3 canyons and 118 lakes which include the 5 beaches, 12 waterfalls, 10 streams and 10 springs. Together with the 9 villages and 12 peaks, they form a natural wonder of mountains and canyons. Some dead trees are seen in the bottom of the carbonate barrier lakes and clothed in carbonate deposits, they resemble coral. With the colorful trees mirrored in the lakes, it is like a fairyland.

The forest in the Jiuzhaigou Scenic Zone covers an area of 277.8 square kilometers. There are about 150 species of plants and 223 species of animals, 27 species being rare animals like giant pandas and golden monkeys. The soil has five colors and textures. From up to down, it changes from drab to gray-drab. Jiuzhaigou is also one of the major areas for producing medicinal herbs in the province.

Culture in the area remains rather simple and underdeveloped. The Tibetans there believe in the Bon Sect of Lamaism. Their traditions and customs are unique.

## MOUNT HUANGSHAN SCENIC ZONE

The Mount Huangshan Scenic Zone is located in the southern part of Anhui Province, People's Republic of China, at 30°1'N and 118°1'E. It is in the juncture of four counties, Shexian, Taiping, Yixian and Xiuning, and at the divergence in Anhui Province of Changjiang (Yangtze) River and the Qiantang River. The administrative area covers 154 square kilometers and is protected under three levels.

The ownership and natural resources of Mount Huangshan belong to the state. The area has been under direct control of the central government for a long time. In 1936, the KMT government established the Huangshan Preparatory Administration Department. In 1939, Huangshan Engineering Office was set up and in 1943 established Huangshan Administrative Bureau. In 1949, the central government of the People's Republic of China established an administrative organ — the Huangshan Administrative Department in 1979, it developed into Huangshan Administrative Bureau. In 1982, the State Council listed it as one of the major places of scenic and historic interest under state protection. Now the department in charge is the Huangshan Scenic Zone Administrative Bureau.

The main part of Mount Huangshan is composed of second group of granite of Yanshan cycle. The loose deposit of Quaternary period is rarely seen in the area, but glacier sites of the Quaternary period can be found, which has been the research object for geologists. In 1936, Li Siguang, the renowned geologist, published "Glaciers of the Quaternary Period in Mount Huangshan, Anhui Province," which testified with much evidence to the existence of glaciers in the Quaternary period in east China. The structure of Mount Huangshan is mainly rift and seam cracks. The seam in the southern slope is thin while in the northern slope dense, thus making the magnificent landscape "grand in front and pretty at the back."

Mount Huangshan is famous for odd-shaped pines, spectacular rocky peaks, sea of clouds, mountain springs, and two lakes, sixteen springs, twenty-four brooks as well as numerous caves, pools, waterfalls and abundant natural resources. The three main peaks reach over 1,800 meters above sea level. Around the three peaks, the scenic areas spread out, forming seventy-two peaks and five lakes. Grotesque rocks permeating the mountain take different shapes, one telling example of which is the vivid "Monkey Watching the Sea." Mount Huangshan

boasts several unique sceneries such as its water scenery — lakes and waterfalls, its sky scenery — a sea of clouds, and its scenery of sunrise. The majestic sight of the flaming red sun rising from the eastern end of the sea of clouds is much akin to the overwhelming view of the literal sunrise from the ocean. Mount Huangshan also abounds in plants which amount to 1,450 species. The odd-shaped pines have a fame of "No pine is not grotesque in Mount Huangshan" which is also home to 320 species of animals.

Mount Huangshan has a long history. As early as four to five thousand years ago, there had been human activities there. An archaeological site of Neolithic Age was excavated in Jiangjiashan in Taiping County of the city of Huangshan. The relics include pottery pieces and stone tools. Many temples were built as early as the Tang Dynasty and now twenty of them are still in existence. The paintings and inscriptions by renowned people of different dynasties make Mount Huangshan more attractive.

Now a long-term plan has been worked out for the development of Mount Huangshan. The staff of the Mount Huangshan Scenic Zone Administrative Bureau are working hard for the administration and preservation of Mount Huangshan in accordance with the plan. The state and local governments invest certain amount of money each year for the relevant undertakings in Mount Huangshan. The "Provisional Regulations Concerning Places of Scenic and Historic Interest" promulgated by the State Council provides the legal guarantee for the development of the Mount Huangshan Scenic Zone.



## MOUNT EMEI SCENIC ZONE

A hundred and sixty-eight kilometers away from Chengdu, the capital of Sichuan Province, and forty kilometers from the city of Leshan, is Emei County where sprawls the southwestern part of the Sichuan Basin and lies the Mount Emei Scenic Zone. One of the third-class state-protected zones, the famous Mount Emei Scenic Zone covers an area of 115 square kilometers.

The Mount Emei Scenic Zone is owned by the state, and so are the natural resources there. When the State Council of the People's Republic of China promulgated the first list of well-known scenic zones for high priority protection in 1982, Mount Emei was one of them then. Now the body directly responsible for the scenic region is the Mount Emei Scenic Zone Administrative Bureau.

The region consists of two parts, however, one is Mount Emei, the other the Giant Buddha Sculpture of Leshan. The strata of Mount Emei include ten of the thirteen periods that compose the entire geological strata of the globe, and is, therefore, of high geological value. Here, you can also find geological sections of the Sinian and Cambrian periods formed forty to sixty million years ago, magmatism granite eighty million years ago, and basalt twenty million years ago whose distribution is also shared by Yunnan and Guizhou provinces, and Guangxi Zhuang Autonomous Region.

The boundary section of the geological strata near Zhangshan, the southern part of the Emei Mountain Range, is one of the best for studies of stratum of the Sinian system, as well as the Cambrian system. As a result, geologists from the world's association of scientists often make their explorations there.

As a range of dislocation masses, Mount Emei roots up with clear layer sections from a vast area of flat land, trailing off from west to east. For the eastern part is low, providing a pretty screen, the peaks in the middle part rise like bamboo shoots, and the towering western part presents a splendid view, Chinese men of letters have described Mount Emei as "Beauty of Heaven" since ancient times.

The Golden Summit, main peak of Mount Emei, measures 3,099 meters above sea level, where lucky visitors may enjoy its four natural wonders of "A Sea of Clouds," "the Sunrise," "Buddha's Halo" and "Sacred Light."

There are three varying climatic zones from the bottom to the top of the mountain, and precipitation there is more than enough, plus the soil which is

acid, alkaline, and neutral as well, all these make adequate conditions for plants, giving rise to its flora resources. Forests are dense, plant specimens amounts to more than three thousand, among which the rare ones are over one hundred.

Besides these, there are also rare animals. Precious historical sites and relics began to be constructed and accumulate over a thousand years ago. Among the 20-odd earliest temples in Mount Emei are the Baoguo Temple of the Eastern Han Dynasty (25-220), and others such as the temples of Tiger-Taming, Wannian, etc.

Mount Emei is one of the four sacred Buddhist mountains in China. The Giant Buddha Sculpture of Leshan stands close to the converging point of the rivers of Minjiang, Qingyi and Dadu. It measures as high as seventy meters and has complemented the natural beauty of the spot.

A big sum of money is allocated each year by the central and local governments for the protection and reconstruction projects in the Mount Emei Scenic Zone, according to the plan of the administrative bureau.

### LUNAN STONE FOREST SCENIC ZONE

The Lunan Stone Forest Scenic Zone (24°46'-49'N, 103°16'-19'E) of the People's Republic of China is located in the Lunan Yi Nationality Autonomous County, Qujing Prefecture in Yunnan Province, with an elevation ranging from 1,625 to 1,900 meters above sea level, nestles in the middle part of the Yunnan Plateau characterized by a low latitude and high elevation. The scenic proper is 126 kilometers from Kunming, and 15 kilometers from the seat of Lunan County. Its main preservation area is 14.37 square kilometers while 36.96 square kilometers are under planned preservation. The preservation of the entire area is divided into three classes by degree.

The Lunan Stone Forest Scenic Zone as well as its natural resources are owned by the state. In 1982, the State Council listed the Lunan Stone Forest Scenic Zone among the first group of the major places of scenic and historic interest. The immediate unit responsible for the zone is the Lunan Stone Forest Scenic Zone Administrative Bureau.

The scenery of Lunan Stone Forest is composed mainly of peculiar rock pillars supplemented with karst caves, lakes, waterfalls and other scenic attractions and tinged with rich local flavor.

The stone forest is scattered throughout the 300 square kilometers of Lunan County. It is a special type of karst landform. Its towering rock pillars in high concentration look very much like a forest of stones, hence the name. These rock pillars, high and stragely shaped, spread widely and are well preserved. In addition, there are numerous karst caves fraught with stalagmite, stalactite, stone pillar, stone corridor and five underground rivers, lakes, ponds and waterfalls. Found also in the scenic zone are 65 reservoirs and ponds with a total storage capacity of 50 million cubic meters and good water quality.

The most striking characteristic of the stone forest is that each of its rocks takes a unique pattern that varies from the others. They are so vividly formed that some look like human figures and others like animals. Many of them were given fantastic names and provided resources of legends and folk tales.

The whole scenic zone includes six scenic sites. The major plants found in the area are Yunnan pines, Yunnan cypresses as well as many rare and ornamental flowers and plants. The singing, dancing and social customs of the Yi people add more colors to its scenic beauty. The stone forest with its mysterious scenery

and natural beauty is described as "the most fantastic scenery under heaven" by the people in and out of China.

The program for preservation of the Lunan Stone Forest Scenic Zone has been worked out. Scientific as well as administrative personnel are doing their best to carry out the program. Both the state and local governments allocate certain amount of money each year to the area for its relevant undertakings.

### THE WEST LAKE SCENIC ZONE

The West Lake Scenic Zone is located in the city of Hangzhou, Zhejiang Province, People's Republic of China at 30°15'N and 120°10'E. The scenic area covers seventy square kilometers.

The West Lake Scenic Zone and its natural resources belong to the state. In 1982, the State Council of the People's Republic of China listed it among the first group of places of scenic and historic interest under state protection. Now it is under the jurisdiction of the Hangzhou Gardening and Afforestation Bureau.

From the geological point of view, the West Lake is composed of Devonian stone bind, Carboniferous of Permo-carboniferous period and laterite layer of Tertiary period.

Hangzhou, located on the north bank of the Qiantang River, is a cultural center with a history of 2,100 years. Evidences show that our ancestors lived on this land as early as four thousand years ago. Hangzhou is one of China's six ancient capitals. The popular saying of "Paradise in heaven and Suzhou and Hangzhou on earth" goes back right to the Song Dynasty. Later inscriptions depicting the scenic wonders, such as "Ten scenic wonders in the West Lake," also appeared.

The fame of the West Lake, as its name goes, is derived from its water. With a north-to-south length of 33 kilometers and a breadth of 2.8 kilometers, the lake lies like a beautiful mirror with its gentle glazing ripples. It covers 5.6 square kilometers, and the length rounding it is approximately 15 kilometers. Surrounded on three sides by hills and one side by the city, the lake has a total water surface of 24 square kilometers, with a depth averaging 1.5 meters and is divided into five parts by Su and Bai causeways. At the center of the lake are three isles — Lesser Yingzhou, Mid-Lake Pavilion and Ruangong Isle. The isle of Lesser Yingzhou covers 105 mu of which 60 percent is water surface. It is literally "a lake within a lake, and an isle within an isle." In the front there are three stone pagodas with a height of 2 meters. Moonlight shining through holes in these pagodas is reflected on the water as three moons, giving the place the name of "Three Pools Reflecting the Moon." There are altogether 103 scenic spots distributed in 15 scenic areas like Solitary Hill. On the surrounding hills, 60,000 mu of trees are planted, some are famous trees as camphorwood and

sweet-scented osmanthus. The West Lake is dotted with green trees and colorful flowers of lotus, chrysanthemum, orchid, etc.

There are as many as 38 places in Hangzhou which are under state, provincial and municipal protection respectively. There are also many other archaeological and cultural sites located in the periphery of the West Lake, for example, the well-known Grand Canal.

Due to the ornamentation in the ancient dynasties, the natural scenery as the lakes, hills, caves, springs, flowers and fruits in the West Lake were well coordinated with the man-made temples, sculptures and inscriptions.

Hangzhou, being the capital of ancient dynasties and a land of silk, has also produced many well-known historical figures and relics. Many historical facts and wide-spreading poems provide witness for, at the same time, being witnessed by, the scenic spots in the West Lake.

The long-term plan has been worked out for the preservation and development of the West Lake by the local government and responsible departments. State and local governments invest certain amount of fund annually for the implementation of the plan.

LISTE INDICATIVE DES PAYS DU GRAND MAGHREB1. Gisements préhistoriques

- Grotte des Pigeons à Taforalt (Maroc)

2. Sites rupestres

- Propositions complémentaires : Tassili n'Ajjer (Algérie), inscrit en 1982, et Sites rupestres du Tadrart Acacus (Jamahiriya arabe libyenne), inscrit en 1985
- Proposition commune : Les Atlas, Atlas saharien (Algérie) et Draa-Bani-Haut-Atlas (Maroc)

3. Sites protohistoriques

- Nécropoles de Germa (Jamahiriya arabe libyenne)
- Site de Ben Jasla (Tunisie)
- Monuments mégalithiques d'Ellez (Tunisie)

4. Sites puniques

- Lixus (Maroc)
- Cité punique de Kerkouane (Tunisie), inscrit en 1985

5. Sites maurétaniens

- Les Djedars près de Frenda (Algérie)
- Le Mausolée royal numide du Medghacene à El-Mahder (Algérie)
- Le Gour (Djedars, Maroc)
- Sala, avec la cité islamique de Chellah (Maroc)

6. Sites grecs

- Site archéologique de Cyrène (Jamahiriya arabe libyenne), inscrit en 1982 et Apollonia de la Pentapole (Jamahiriya arabe libyenne)

7. Sites libyques, romains et byzantins

- Site antique d'Hippone (Algérie)
- Djémila (Algérie), inscrit en 1982
- Tipasa (Algérie), inscrit en 1982
- Timğad (Algérie), inscrit en 1982

- Ghirza (Jamahiriya arabe libyenne)
- Site archéologique de Leptis Magna (Jamahiriya arabe libyenne), inscrit en 1982
- Site archéologique de Sabratha (Jamahiriya arabe libyenne), inscrit en 1982
- Volubilis, avec la cité islamique de Moulay Idriss (Maroc)
- Maisons souterraines de Bulla Regia (Tunisie)
- Site archéologique de Dougga et son mausolée (Tunisie)
- Site archéologique de Sbeitla (Tunisie)
- Site archéologique de Carthage (Tunisie), inscrit en 1979
- Amphithéâtre d'El Jem (Tunisie), inscrit en 1979

## 8. Sites islamiques

### a) sites archéologiques :

- Kalaa des Beni Hammad (Algérie), inscrit en 1980
- Belyounech (Maroc)
- Mosquée de Timal et son environnement (Maroc)
- Azougui (Mauritanie)
- Tegdaoust (Mauritanie)

### b) monuments individuels :

- Mosquée de Tlemcen (Algérie)
- Mosquée de Taza (Maroc)
- Ribat de Monastir (Tunisie)

### c) villes historiques :

- Casbah d'Alger (Algérie)
- Sidi Bou Mediène (Algérie)
- Médina de Marrakech (Maroc), inscrit en 1985
- Meknès (Maroc)
- Moulay Idriss, avec site de Volubilis (Maroc)
- Chellah, avec site de Sala (Maroc)
- Médina de Fès (Maroc), inscrit en 1981
- Chinguitti et Ouadane (Mauritanie)
- Kairouan et sa grande mosquée (Tunisie)
- Ville historique de Sousse (Tunisie)
- Médina de Tunis (Tunisie), inscrit en 1979

### d) zones culturelles :

- Vallée du M'Zab (Algérie), inscrit en 1982



9. Sites de contact avec l'étranger

- Cité portugaise d'El Jadida (Maroc) (cela recoupe le thème des grandes découvertes)
- Villes andalouses de Chefchaouen (Maroc) et de Testour (Tunisie)

10. Architecture pré-saharienne et saharienne

- Ancienne ville de Ghadamès (Jamahiriya arabe libyenne)
- Une Casbah du sud : Ensemble Aït Ben Haddou (Maroc)
- Oualata (Mauritanie)
- Tichitt (Mauritanie)
- Ksar Hadada (Tunisie)
- Village pitonnier de Chenini (Tunisie)
- Matmata (Tunisie)

ATELIER UNESCO-ICOMOS POUR LA CONSERVATION

DU PATRIMOINE A L'ATTENTION DES DIRECTEURS

DES SERVICES NATIONAUX

BAMAKO (MALI) 26-30 JANVIER 1987

## A - LISTES INDICATIVES DES ETATS

### A.1 OBSERVATIONS LIMINAIRES

- Les listes indicatives suivantes correspondent à une première approche des listes des biens culturels que les différents Etats représentés au séminaire pourraient, en priorité, faire inscrire sur la liste du patrimoine mondial. Elles correspondent à une sélection établie par les participants assistés par les experts de l'ICOMOS.

- la mention de certains biens culturels est accompagnée de recommandations adoptées en réunion et qui concernent leur protection ou leur délimitation précise.

- Ces listes ne constituent en aucun cas des obligations pour les Etats qui, ainsi que le précise la Convention, sont seuls responsables de la proposition de biens culturels qu'ils souhaitent inscrire sur la liste du patrimoine mondial.

### A.2 LISTES INDICATIVES DES ETATS

#### BENIN

- pour mémoire : Palais Royaux d'Abomey (site inscrit)
- village lacustre de GANVIE (à délimiter)
- habitats fortifiés : TATA SOMBA (à localiser de façon précise)
- façade de la mosquée de SAKETE  
(architecture du "retour") (problèmes de conservation)

#### BURKINA FASO

- gravures et peintures rupestres d'ARIBINDA et de POBE-MENGAO.
- gravures rupestres de la grotte de BORODOUGOU
- ruines de SATI
- ruines de LOREPENI
- falaises de NIANGOURI
- falaises de BANFORA associées aux pics de SINDOU (à délimiter et localiser)
- villages de KORO (habitats construits dans et sur les rochers)
- SYA ou DOULASSOBA (vieux quartier de BOBO-DIOULASSO) (à délimiter)

#### CAMEROUN

- habitats en cases-obus de KARSIKI près du parc national de WASA (à délimiter)
- habitats BAMILEKE (à délimiter)
  - . Chefferie de BADJOUN
  - . Chefferie de OKU
- Palais de FOUMBAN (roi N'JOYA)
- Mont Cameroun (bien naturel) associé à la ville coloniale de BUEA

CAP VERT

- le village de CIDADE VELHA

CENTRAFRIQUE

- sites mégalithiques de BOUAR (à délimiter)
- site historique de N'DELE du sultan SENOUSSI

CONGO

- gorges de DIOSSO et habitats associés
- chute
- palais royal de M'BE (roi MAKOKO)
- palais royal MA-LOANGO
- site archéologique de BITTORI
- église de LOUNZOLO
- basilique STE ANNE DU CONGO

COTE D'IVOIRE

- ensemble architectural colonial : quartier FRANCE de GRAND BASSAM
- habitats traditionnels : village lacustre TIAGBA
- site archéologique, architectural et archéologique : village de KONG et sa mosquée
- site archéologique : les îles EOTILE
- architecture traditionnelle :
  - . KONI : village des forgerons de la région SENOUFU
  - . SOUKALA LOBI ( site à déterminer en accord avec le Burkina Faso)

GABON

- églises traditionnelles (sous réserve d'un choix très sélectif)
- biens liés à SAMORY TOURE (traces matérielles à identifier)
- un pont de lianes associé à un habitat traditionnel (à identifier et à délimiter)

MALI

- ville ancienne de TOMBOUCTOU (délimitation stricte aux quartiers anciens)
- villes anciennes de DJENNE (DJENNE-DJENO et DJENNE) (protection large pour préserver l'archéologie)
- les architectures des falaises de BIANDIAGARA (pays DOGON)

suite éventuelle de la liste indicative du Mali

- ensemble ADRAR des IFOGHAS, vallée du TILEMSI, ES-SOUK
- un ensemble construit autour de la piste transaharienne de l'or et du sel à caractère archéologique : THEGAZA, TAOUDEMI, etc.

- un ensemble sur les établissements humains du lac DEBO : villages, mosquées, préhistoire et culture BOZO
- un ensemble sur les établissements humains de la région de KANGABA, coeur du pays MANDE
- un ensemble sur les établissements humains de la falaise de TAMBAOURA : or et orpailleurs du SOUDAN
- un ensemble habitats hypogées (archéologie) de la région BOUGOUNI.
- architectures militaires de la région de SIKASSO (état de conservation à vérifier)

#### NIGER

- mosquée d'AGADEZ (périmètre à limiter au quartier ancien)
- habitats fortifiés : TATA de BIRNI à ZINDER (murailles, quartier ancien avec la mosquée et le palais)
- massif de l'AIR
- villes fortifiées du DJADO

#### SENEGAL

- pour mémoire : île de Gorée (site inscrit)
- le site mégalithique de SINE-N GAYENNE
- habitat traditionnel : les cases à impluvium d'ENAMPORE
- l'île de KARABANE, ancienne capitale de CASAMANCE

#### TCHAD

- palais royaux de OUARA (périmètre étendu à définir comprenant le palais, la mosquée, le cimetière des rois, le lieu de prière des TRIE)
- sites archéologiques SAO (protection à développer englobant une réserve archéologique, des habitats et un éventuel musée de site)
- habitat traditionnel : les cases MOUNDANG
- envisager d'établir un bien lié aux voies transahariennes
- peintures et gravures rupestres du TIBESTI-ENNEDI

#### TOGO

- habitats TATA TAMBERMA (à délimiter)
- hauts fourneaux BANDJELI et NAGBANI à BASSAR (à délimiter)
- muraille de NOTSE (à délimiter et état de conservation à vérifier)

#### ZAIRE

- village royal de BAKUBA
- tribunal de MANKBETU
- grottes de MBANGA-NGUNGU
- sanctuaire de BUNZI

**TYPOLOGICAL AND CHRONOLOGICAL FRAMEWORK****PROPOSED BY SWEDEN**

<u>Time</u>	<u>Possible objects</u>	<u>Choice</u>
Stone Age to 2000 B.C.	Megalithic graves Trap systems	Denmark
Bronze Age 2000-500 B.C.	Rock paintings	. Tanum (Sweden) . Alta (Norway)
Iron Age 500 B.C.-1000 A.D.	- Cultural historic landscape from Iron Age until present time  - Prestigious site of great importance at its time  - Early urban settlement	. Halardalen, Orkesta (Sweden)  . Uppsala Hosar (Sweden) but rather . Jelling (Denmark)  . Birka (Sweden) but rather . Hedeby (F.R.G.)
Historic Time	A) Strategic choice of objectives from different times showing the variety of Swedish heritage  B) Swedish Monuments of outstanding specific interest	<u>see separate presentation</u>  . Copper Mine of Falun . Gammelstad , Luleo (Church and Old Town) . Royal site of Drottningholm . Ironworks ? . Town-hall of Stockholm ?

**Possible strategic choice of objectives from different times  
showing the variety of Swedish heritage**

- . Medieval totality
  - Island of Gotland,  
but too big
- . The centre of power since ancient times
  - Old Town of Stockholm with the Royal Castle, the Island of Nobility and the Parliament,  
but too big
- . Archipelago settlement
  - Finland
- . Castles and Harbours as borol economic units
  - Denmark
- . Wooden Architecture
  - fishing village
    - Norway
  - small town
    - Finland
  - church
    - Norway, Finland
  - remote settlements
    - Finland
  - specific traditions
    - Gammelstad, Luleo (Church and Old Town - Sweden)
- . Industrial Heritage
  - Copper Mine of Falun (Sweden)
  - Ironworks ?
- . Royal sites, monuments of highest artistic quality
  - The Royal Castle of Stockholm (Sweden)
  - Drottningholm
- . Monuments with great symbolic value
  - Town-hall of Stockholm (Sweden)

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND  
CULTURAL ORGANIZATION

CONVENTION CONCERNING THE PROTECTION OF  
THE WORLD CULTURAL AND NATURAL HERITAGE

(1972)

LIST OF STATES PARTIES HAVING SUBMITTED A TENTATIVE  
LIST OF THE CULTURAL AND/OR NATURAL PROPERTIES  
THEY ARE CONSIDERING NOMINATING FOR  
INCLUSION IN THE WORLD HERITAGE LIST

<u>STATES</u>	<u>Cultural Sites</u> <u>List</u>	<u>Natural Sites</u> <u>List</u>
AFGHANISTAN		
ALGERIA		
ANTIGUA AND BARBUDA		
ARGENTINA		
AUSTRALIA		
BANGLADESH		
BENIN _____	yes	
BOLIVIA _____	yes	yes
BRAZIL _____	yes	yes
BULGARIA _____	yes	yes
BURKINA FASO		
BURUNDI		
CAMEROON		
CANADA _____	yes	yes
CENTRAL AFRICAN REPUBLIC		
CHILE		
CHINA (Peoples's Rep. of) _____	yes	yes
COLOMBIA		
COSTA RICA		
COTE D'IVOIRE (Rep. of)		
CUBA		
CYPRUS _____	yes	
DEMOCRATIC YEMEN		
DENMARK		
DOMINICAN REPUBLIC		
ECUADOR		



<u>STATES</u>	<u>Cultural Sites</u> <u>List</u>	<u>Natural Sites</u> <u>List</u>
EGYPT		
ETHIOPIA		
FINLAND		
FRANCE	_____ yes	_____ yes
GABON		
GERMANY (Fed. Rep. of)	_____ yes	
GHANA		
GREECE	_____ yes	_____ yes
GUATEMALA		
GUINEA		
GUYANA	_____ yes	
HAITI		
HOLY SEE		
HONDURAS		
HUNGARY	_____ yes	
INDIA	_____ yes	_____ yes
IRAN (Islamic Rep. of)		
IRAQ		
ITALY	_____ yes	_____ yes
JAMAICA		
JORDAN	_____ yes	
LAO PEOPLE'S DEMOCRATIC REPUBLIC		
LEBANON*		
LIBYAN ARAB JAMAHIRIYA	_____ yes	
LUXEMBOURG		
MADAGASCAR		
MALAWI		
MALDIVES		
MALI		
MALTA		
MAURITANIA		
MEXICO	_____ yes	_____ yes
MONACO		
MOROCCO		
MOZAMBIQUE		
NEPAL		
NEW ZEALAND		
NICARAGUA		
NIGER		
NIGERIA		

<u>STATES</u>	<u>Cultural Sites</u> <u>List</u>	<u>Natural Sites</u> <u>List</u>
NORWAY	yes	yes
OMAN		
PAKISTAN	yes	
PANAMA		
PERU	yes	yes
PHILIPPINES		
POLAND		
PORTUGAL	yes	yes
QATAR		
SAINT CHRISTOPHER AND NEVIS		
SAUDI ARABIA		
SENEGAL		
SEYCHELLES		
SPAIN	yes	
SRI LANKA		
SUDAN		
SWEDEN		
SWITZERLAND*		
SYRIAN ARAB REPUBLIC		
TUNISIA		
TURKEY	yes	yes
UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND	yes	yes
UNITED REPUBLIC OF TANZANIA		
UNITED STATES OF AMERICA	yes	yes
YEMEN		
YUGOSLAVIA	yes	yes
ZAIRE		
ZAMBIA		
ZIMBABWE		

*\*Switzerland and Lebanon have informed the Secretariat that they have already submitted the nominations which they considered to be of priority and that for the time being they did not intend to submit any new nominations of cultural properties. They would re-examine the question in the future in the light of the development of the World Heritage List.*