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## Peking

Peking (Bei-jing in Pin-yin romanization) is both a very old and a very new city—old and rich in its cultural and artistic heritage but new and thriving since 1949 as the capital of the People's Republic of China. Few cities in the world have served for so long as the political headquarters and cultural focus of a country as immense as China. The city has constituted an integral part of the history of China over the past eight centuries, and there is scarcely a building of any age in Peking that has not made its contribution toward the evolution of the country. As Peking is itself a China in miniature, it is impossible to understand China without a knowledge of this ancient city, which in 1970 had a population of 7,600,000 and a metropolitan area of 6,900 square miles (17,800 square kilometres).

More than 2,000 years ago, a site near present-day Peking was already an important military and trading centre for the northeastern frontier of China. Not until the Mongol dynasty (AD 1279 to 1368) was a successor city—called Ta-tu—to become the administrative capital of China. During the reign of the first emperor of the Ming dynasty (1368 to 1644), Nanking became the capital, and the old Mongol capital was renamed Pei-p'ing (Peace in the North); the third Ming emperor, however, restored it as the Imperial seat of the dynasty and gave it a new name, Peking (Northern Capital). It remained the capital until the 20th century, when, after the successful campaign of the Chinese Nationalist troops against warlords in Peking in 1927, Nanking was selected as the national capital, and Peking once again resumed its old name—Pei-p'ing—a name still used by the Nationalist government in Taiwan.

In spite of frequent political changes in China, the city throughout the earlier decades of the 20th century remained the most flourishing cultural centre in the nation. Peking's importance was never fully realized, however, until the city was chosen as the capital of the People's Republic of China in 1949, and this new political status has over the past two decades added much vitality to the ancient city. Indeed, few cities in the world have ever experienced such rapid growth in population and geographic area, as well as in industrial and other activities. Combining both historical relics of an ancient culture and new urban construction under a socialist system, Peking has become the showplace of modern China.

This article is divided into the following sections:

### History

#### The contemporary city

- Physical organization
- Transportation
- Demography
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- The economy
- Political and governmental institutions
- Public utilities
- Health
- Education
- Cultural life
- The media
- Recreation

### HISTORY

With but few interruptions, Peking has been the capital of China for some 700 years, and in the number of years as the Imperial capital it is exceeded only by Ch'ang-an (Hsi-an) in Shensi Province and Lo-yang in Honan Province. In prehistoric times the area around Peking was

inhabited by some of the earliest human beings of whom we have knowledge. Between 1918 and 1939, the fossil remains of Peking man (formerly *Sinanthropus pekinensis*; now known as *Homo erectus pekinensis*), who lived about 500,000 years ago, and of Upper Cave man, who lived about 50,000 years ago, were unearthed at Chou-k'ou-tien, a village 34 miles southwest of Peking.

While long periods in Peking's early history necessarily remain blank, it is certain that, some 3,000 years ago, Neolithic communities settled down on or near the site where Peking now stands. During the Warring States period (481–221 BC) of the Chou dynasty (from about 1122 to 221 BC), one of the powerful feudal states, the kingdom of Yen, established its capital named Chi near the present city of Peking; this was the first capital city to be associated with the site. The city was destroyed by the troops of Shih Huang Ti, founder of the Ch'in dynasty (221 to 206 BC).

Chi—the  
capital  
of Yen

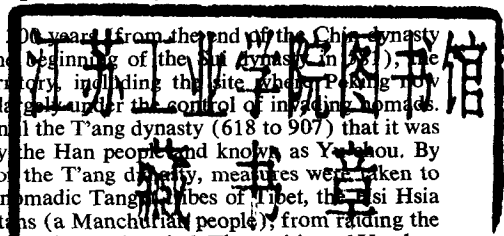
During the Ch'in dynasty, the Yen capital was incorporated into one of the 36 prefectures then established throughout the country. A new town was built during the Han dynasty (206 BC to AD 220) and was known as Yen. But, throughout the Han dynasty and the turbulent centuries that followed, the place remained a provincial town, witnessing most of the time the fateful struggle between the Han Chinese to the south and the nomadic Hsiung-nu, or Huns, to the north.

During the period of Three Kingdoms (AD 220 to 264), the city was again called Yen. The northern border of ancient China ran close to the present city of Peking, and northern nomadic tribes frequently broke in from across the border. Thus the area that was to become Peking became an important strategic as well as a local political centre.

For nearly 300 years from the end of the Ch'in dynasty in 317 to the beginning of the Sui dynasty in 581, the northern territory, including the site where Peking now stands, was largely under the control of invading nomads. It was not until the T'ang dynasty (618 to 907) that it was recovered by the Han people and known as Yu-chou. By the middle of the T'ang dynasty, measures were taken to prevent the nomadic Tangut tribes of Tibet, the Hsi Hsia and the Khitans (a Manchurian people), from raiding the border lands and threatening the position of Yu-chou, consequently became increasingly important. On the fall of T'ang China, a number of states emerged in North China. One of these states was established by the Khitans; after destroying the city of Yu-chou, the Khitans established the Liao kingdom (947 to 1125) and built one of their capitals on approximately the same site, calling it Nanking (the Southern Capital) to distinguish it from other capitals in their Manchurian homeland (also distinct from the modern Nanking or Nan-ching in the Yangtze Valley). The Liao capital was bounded by a square wall, almost 14 miles in circumference and some 32 feet high. It had eight gates and enclosed a fine Imperial palace in the centre, which indicated the strong influence of Chinese city planning.

In the middle of the 12th century, when the Juchen, a Manchurian people from the Amur Valley, defeated the Liao and established the state of Chin, the Liao capital was rebuilt as the new Chin capital and renamed Chung-tu (Central Capital). Chung-tu under the rule of the Juchen (Golden Tartars) was constructed on a larger scale, with splendidly decorated palaces and halls.

Between 1211 and 1215 the Mongols, under the leadership of Genghis Khan, one of the great conquerors of



The  
Mongol  
capital  
of Ta-tu

history, repeatedly attacked and finally took the city from the Chin. In the battle the palaces of Chung-tu were set on fire and blazed for over a month. When all China fell to the Mongol hordes, Kublai Khan (1215 to 1294), a successor to Genghis Khan and founder of the Yüan dynasty (1279 to 1368), determined to build a new capital at Peking, abandoning the old city of Karakorum in Mongolia. In 1272 he named the new capital Ta-tu (Great Capital); under Mongol control it became for the first time the political centre of all China.

Ta-tu was larger than any of its forerunners and was rebuilt slightly northeast of the old site. The square of the outer wall measured about 18 miles in length and enclosed an area of more than 20 square miles. The city walls were built with pounded earth, and once a year labourers were called in to repair them with mud. The Imperial Palace, which was approximately to the west of the existing one, was situated in the southern half of the capital city. The chief palace architect at the time was an Arab, appointed by Kublai Khan. The city of Ta-tu exemplified the imposing and variegated architecture of the Mongol period. The square walls and the 12 gates were all modelled on the Chinese plan, but the inner chambers and living quarters were often in the style of Mongolia or of Central Asia. It was at this time that a canal, the T'ung-hui Canal, was dug and connected to China's Grand Canal so that boats transporting the tribute rice from the provinces south of the Yangtze could sail into one of the new lakes inside the city. Ta-tu, which had magnificent Imperial palaces and treasures drawn from every corner of the country, was the scene of stupendous feasts given by the khan (ruler) on state occasions. These characteristics and the well-organized post-stages on the roads leading to the city astounded Marco Polo (*q.v.*), the Venetian traveller who visited Ta-tu in the 1280s.

In the middle of the 14th century, Chu Yüan-chang headed a peasant revolt that overthrew the Mongol dynasty and established the Ming dynasty (1368 to 1644). He moved the capital to Chin-ling, near his own hometown in Anhwei Province, and called it Nanking; Ta-tu was renamed Pei-p'ing (Northern Peace) and was placed under his son's rule. On Chu's death (1399) the throne should have passed to his grandson in Nanking, but his son, Prince Yen, who ruled Pei-p'ing, usurped the throne. In consequence, in 1403 the city was renamed Peking (Northern Capital), and in 1420 it was officially made the capital city of the Ming dynasty.

Peking in the Ming period grew on a yet grander scale than under the Mongols. The present city walls, moats, palaces, and temples were mostly built in the 15th century. The old city of Ta-tu, including the palaces, was largely demolished. The new city was situated further south, thus leaving the northern part of the Mongol city derelict while at the same time slicing off one gate from the east and west walls, respectively. In 1553, an outer city wall was begun, to include the increasing number of inhabitants living outside the city, but, when the entire construction was subsequently found to be too costly, the plan was abandoned on the completion of the south wall, thus producing the present shape of the walled city. Unlike the city wall of pounded earth of Mongol times, the walls of the Ming city were faced with a layer of bricks, in order to prevent weathering.

In 1644 Peking was taken over by Li Tzu-ch'eng, who led a peasant uprising against the Ming regime. Li's army held it for only 40 days, for the Manchus were simultaneously preparing an incursion south of the Great Wall, and—thanks to the treachery of a Ming general who opened the gate—they swept down on the city. Peking fell intact and in the same year was declared the Manchu capital by Shun-chih, the first emperor of the Ch'ing (also known as Manchu) dynasty (1644 to 1911).

Peking remained superficially the same throughout Ch'ing times. The city plan was unaltered, though many palaces, temples, and pavilions were added outside the walls to the west, notably the Yüan Ming Yüan (old Summer Palace), built in the 17th century, and the Yi Ho Yüan (new Summer Palace), built in the late 19th century. The old Summer Palace was completely de-

stroyed by fire in 1860 by the allied British and French troops in Peking during the "Arrow" War (1856–60). In the same year, as a result of the treaties of Tientsin in 1858, a permanent British embassy was established in the city, and a legation quarter, situated to the southeast of the palace ground, was reserved for British and other embassies. The legation quarter was besieged for nearly two months by the Boxer rebels in 1900.

After the revolution of 1911, Peking remained the political centre of the Republic of China until 1928, when the Nationalists moved the capital to Nanking, at which time Peking was renamed Pei-p'ing once again. The city was occupied by the Japanese from 1937 to 1945. In 1949, when the Communists established the People's Republic of China, Peking (with its old name restored) was chosen as the capital of the new regime.

#### THE CONTEMPORARY CITY

**Physical organization.** *The city site.* Peking is situated at the northern apex of the triangular North China Plain and lies at an elevation of between about 100 and 130 feet above sea level. To the north lies the fringe of the Mongolian Plateau; to the northeast rises the mountain range of the Yen Shan (Yen Mountains), part of which forms the eastern part of the concave arc that circles the Peking lowland from the northeast to the southwest and that is known to geologists as the "Bay of Peking."

The city was built at the mouth of this embayment, which opens onto the great plain to the south and east, and between two rivers, the Yung-ting and the Ch'ao-pai, which eventually join to empty into the Gulf of Chihli, some 100 miles to the southeast of Peking. Peking is a natural gateway on the long-distance land communication route between the North China Plain and the northern ranges, plains, and plateaus. To the south of the city the plain spreads out for about 400 miles until it merges into the lower valley and the delta of the Yangtze. On the east the plain is bounded by the sea, except for the break caused by Shantung Hills; on the west it is flanked by the Tai-hang Shan, which constitute the eastern edge of the plateau of loess (loamy material deposited by wind). Since Peking stands at the apex of the triangle, routes running across the great plain naturally converge on the city.

Since the dawn of Chinese history, the Yen Shan range has constituted a formidable barrier between the North China Plain to the south, the Mongolian Plateau to the north, and the Liao Ho (Liao River) Plain in the southern region of the Northeast (formerly Manchuria). A few passes, however, cut through the ranges—the most important being Nan-k'ou, Ku-pei-k'ou, and Shan-hai-kuan—and are so situated that all roads leading from Mongolia and the Northeast to the North China Plain are bound to converge on Peking. For more than 700 years, therefore, Peking has been an important terminus of the caravan routes leading to and from the vast Central Asian hinterland.

Since the early 15th century, the city of Peking and its surrounding territories have been organized as a metropolitan district of enormous size, having a governor—formerly appointed by the emperor himself—equal in rank to a provincial governor. This special district organization was continued by the Ch'ing dynasty and by the People's Republic of China. The present metropolitan boundary was established in 1959 and covers a territory of approximately 6,600 square miles. The metropolis consists of eight *ch'u* (municipal districts) in the centre and nine annexed *hsien* (counties) in peripheral areas. It may be divided into three concentric zones, based on urban functions. The central zone coincides with the walled city; it is mainly occupied by old palaces, government buildings, commercial districts, and old residential areas and makes up roughly 0.4 percent of the total metropolitan area. Four of the *ch'u* lie within the walled city. The second zone, the near suburb, comprises three *ch'u* immediately surrounding the walled city; it provides sites for new factories, schools, government buildings, and workers' dormitories. The outer fringe of this zone is intensively cultivated and supplies vegetables and fruits to

The  
15th-  
century  
city

The  
metropoli-  
tan district

the population of the central zone. The near suburb accounts for 7.6 percent of the metropolitan area. The third zone, the far suburb, consists of one *ch'u* and nine annexed *hsien*. This zone constitutes 92 percent of the metropolitan area and functions as the economic base—supplying coal, lumber, construction material, dairy products, water, and some grain crops to the urban population in the central zone and the near suburb. The far suburb of Peking is mainly under the administration of people's communes.

**The environment.** Though the distance from Peking to the Gulf of Chihli is only about 113 miles, the general air circulation in Peking is mainly from the northwest throughout the year. Maritime effects on Peking's weather are meagre. The climate is clearly of the continental monsoon type that occurs in the temperate zone. Winters are cold and dry because of the Siberian air that passes over the Mongolian Plateau and moves southward into China proper. In summer the warm and humid air from the southeast often penetrates into North China, bringing Peking most of its annual precipitation.

Local topography has a great effect on Peking's climate. Being located in the lowland area and shaded by mountains, the city is a little warmer in winter than other areas of China on the same latitude; it has only five months in a year in which the mean monthly temperature is lower than 50° F (10° C). Wind direction in Peking is also influenced by topography, with changes occurring from day to night. Generally, there are more southerly winds in the day but northerly or northwesterly winds at night.

Based on meteorological data from 1841 to 1956, the annual mean temperature of the city was 53° F (about 12° C). The coldest month was January, when monthly mean temperatures were 24° F (about -4° C), and the warmest month was July, when the monthly mean was 79° F (26° C). In an average year, there are 132 days of freezing temperature in Peking (between October and March); the mean amount of precipitation is 25 inches (635 millimetres), with 75 percent of the annual total falling in the summer months from June to August. July is ordinarily the wettest month of the year, with monthly mean precipitation averaging about nine inches.

One of the characteristics of Peking's rainfall is its variability. In 1959—an extremely wet year for Peking—the total precipitation amounted to 55 inches, whereas in 1891—an extremely dry year—only seven inches of rainfall was recorded. The average number of rainy days is about 80, and the average relative humidity for the city is 57 percent.

Winter in Peking is long and usually begins in October, when northwesterly winds gradually gain strength. Until March, this seasonal wind system dominates Peking; coming from the Mongolian desert, the wind is cold and dry, bringing little snow or other precipitation. The monthly mean temperature from December to February is below 32° F (0° C), and during this period it is not unusual for a daily mean temperature of 14° F (-10° C) or lower to last for days. Spring, the windiest season, is short and rapidly becomes warm. Total precipitation from March to May is less than three inches. Mainly because of the prevailing high winds, the evaporation rate in spring averages 24 inches—about nine times the total spring precipitation—and frequently is sufficient to cause droughts that are harmful to agriculture. In addition to being the season of torrential rains, summer is rather hot, with the average temperature for June, July, and August being above 75° F (24° C). Autumn begins in late September and is a pleasant, though short, season when the sky is clear and the temperature comfortable.

The mountain areas of Peking belong to the temperate deciduous forest zone, while the plains area belongs to the wooded steppe zone. Because of continuous deforestation by man for several centuries, however, only the mountain areas in the northeast and the western parts of the metropolitan area are still covered with mixed forests, composed mainly of pines, oaks, and Manchurian birch. Different types of forest, divided into vertical zones, can be seen at higher elevations. On the lower slopes of many hills to the west of the city, human activities have resulted

in the disappearance of forest cover so that only bushes and shrubs dot the landscape. On sunny slopes at altitudes of between about 2,300 and 5,600 feet, a variety of species occurs, including Manchurian birch (*Betula mandshurica*), Dahurian birch (*Betula davurica*), trembling poplar (*Populus tremula*), Mongolian oak (*Quercus mongolica*), and Liaotung oak (*Quercus liaotungensis*). Between 5,600 and 6,250 feet above sea level, the mixed forest of truncated maple (*Acer truncatum*) and trembling poplar replaces all other species. Above 6,250 feet, goat willow (*Salix caprea*) becomes the dominant tree. A larger part of the plain areas of Peking has been either cultivated or occupied by various settlements so that it is for the most part bare of any natural vegetation. Occasionally, some small groves of planted trees may be seen near graveyards or in the vicinity of villages; these are mainly composed of mixed woods consisting of oil pine, Chinese juniper, Chinese cypress, willow, elm, and Chinese locust.

**The city plan.** The city proper of Peking essentially consists of two walled cities, the northern inner city and the southern outer city. The inner city, also known as Tatar City, lies approximately on the site of the Mongol city of Ta-tu; it is in the form of a square, with walls nearly 15 miles in length. The outer city, also known as the Chinese City, was added during the region of the Ming emperor Chia-ching (1521 to 1566); it is in the form of an oblong adjoining the inner city, with walls 14 miles in length, including four miles of the southern wall of the inner city. Within the inner city is the former Imperial City, also in the form of a square, which has red plastered walls six and a half miles in length. Within the Imperial City, in turn, is the moated "Forbidden City," with walls two and a quarter miles long. The Forbidden City contains the Imperial Palaces, which have been converted into a museum.

Peking represents, better than any other existing city, the heritage of Chinese architectural achievement. During each dynasty in which Peking was the capital, care was consistently taken to preserve tradition unchanged when the city was rebuilt or remodelled. Few cities in the world can thus rival Peking in the regularity and harmony of its city plan.

The plan is composed about a single straight line, drawn north and south through the centre of Peking, on which the internal coherence of the city hinges. All the city walls, important city gates, main avenues and streets, religious buildings, and daily shopping markets are systematically arranged in relation to this central axis. Because the central axis has historically signified the authority of the ruling dynasty, many official buildings, public grounds, and city gates are located along this line. From north to south this line passes through the Chung Lou (Bell Tower); the Ku Lou (Drum Tower); Mei Shan (Coal Hill) Park; the Forbidden City, including the Imperial Palaces; T'ien An Men Square; Ch'ien Men (Front Gate); T'ien-ch'iao (section of town); and Yung Ting Men (Gate of Eternal Stability).

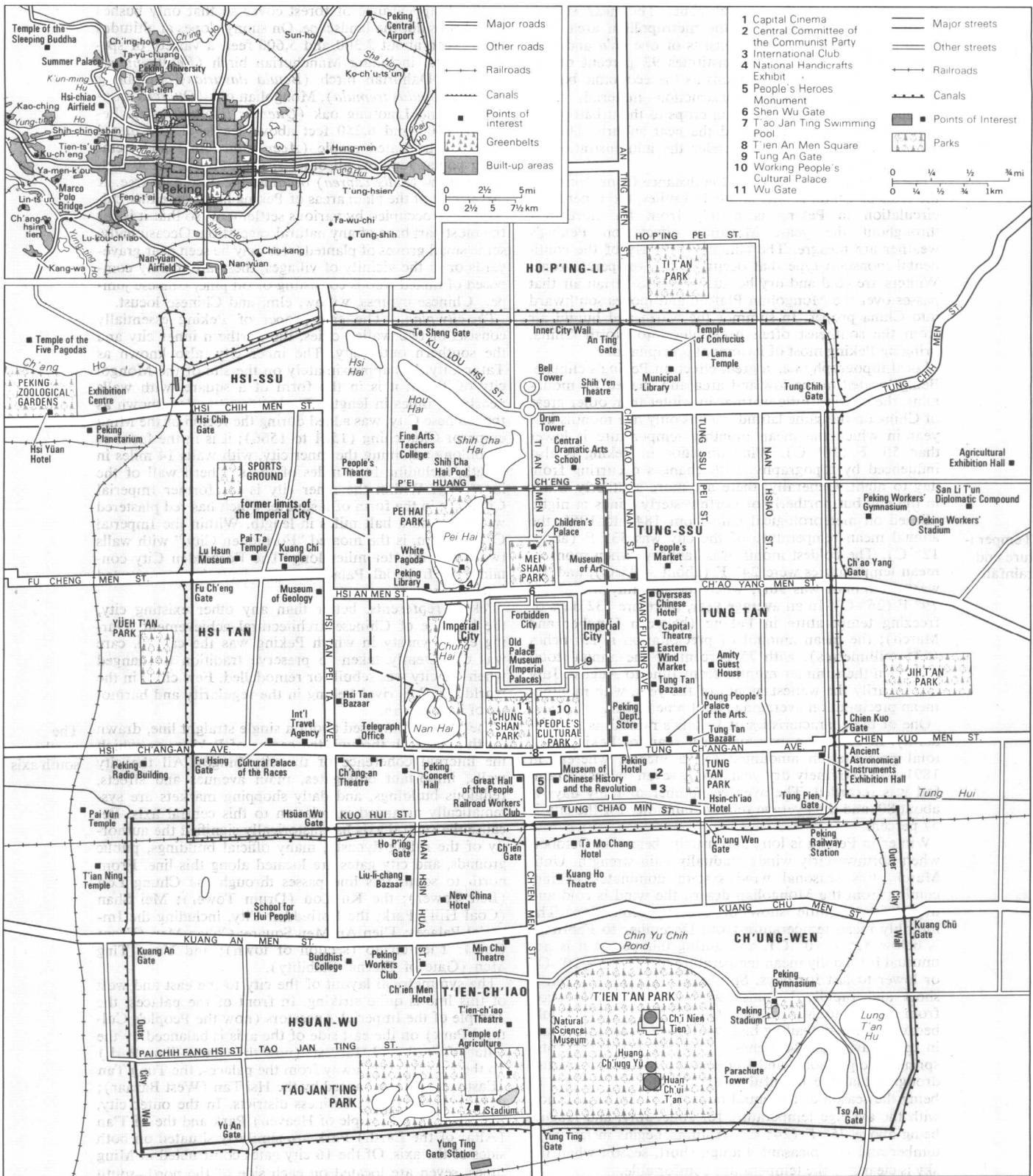
The symmetrical layout of the city to the east and west of this line is quite striking. In front of the palaces, the Temple of the Imperial Ancestors (now the People's Cultural Park) on the east side of the axis is balanced by the Altar of Earth and Harvests (now the Chung Shan Park) on the west. Farther away from the palaces, the Tung Tan (East Bazaar) is balanced by the Hsi Tan (West Bazaar); these form the main business districts. In the outer city, the T'ien T'an (Temple of Heaven) Park and the Ti T'an (Altar of the Earth) Park are similarly situated on both sides of the axis. Of the 16 city gates constructed in Ming times, seven are located on each side of the north-south line, and two are situated on the line itself.

The main avenues of Peking, whether running north-south or east-west, connect the gates on the opposite walls and divide the whole city into a rectangular grid. Within the walls, buildings are constructed around a courtyard or series of courtyards, with every important building facing south. Buildings often stand behind one another along a north-south line, with small courtyards in between. The prevailing southern orientation of buildings has its climatic functional basis and also appears to

Tempera-  
ture and  
rainfall

Vegetation

The  
north-  
south axis



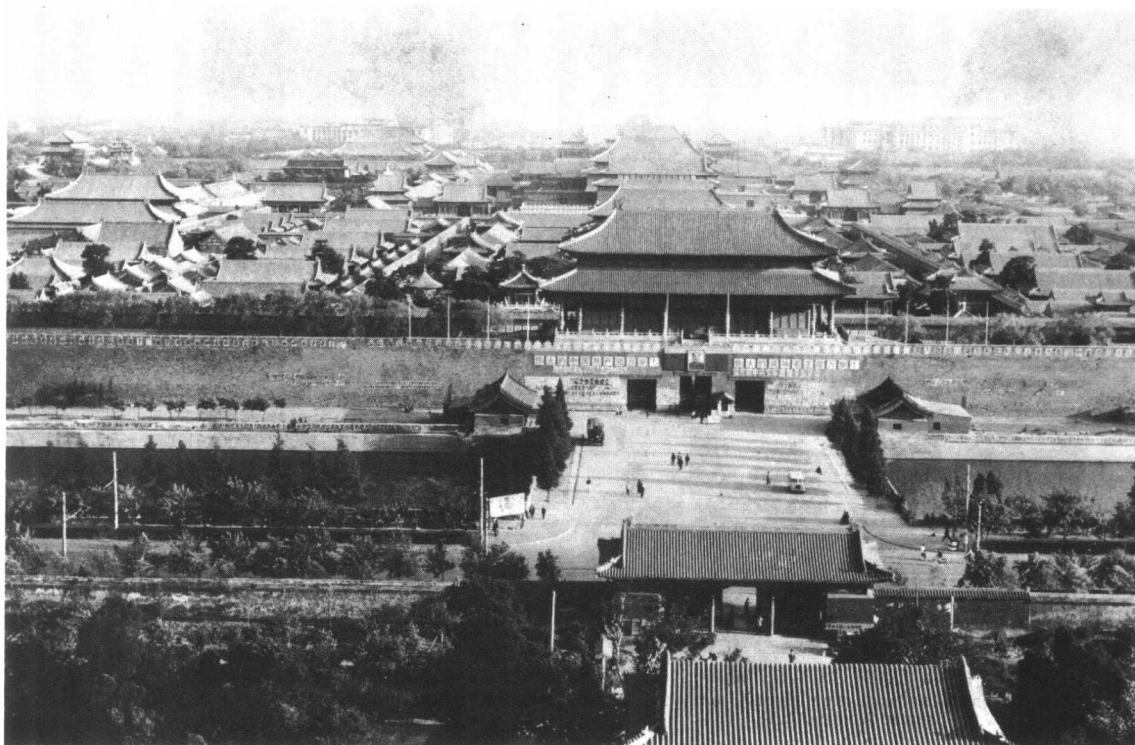
The city of Peking and (inset) its metropolitan area.

have been sanctified or conventionalized early in the Bronze Age in connection with ancestral ceremonies and with the worship of Heaven and Earth.

Since 1949, the greatest change in the city's appearance has been the extension of its streets immediately outside the old city walls. On the west side of the old city, an area extending about a mile out from the Fu Hsing Men has become a new extension of the Hsi Ch'ang-an Avenue and

is used primarily for government offices. To the north, government offices are situated in an area of approximately the same width. Toward the Summer Palace, to the northwest, is an area where the most important universities and research institutes of the country are located. To the north of the city, the outlying districts between An Ting Men and Te Sheng Men are being developed as a new housing area adjoining the educational district in the





Forbidden City as seen from Mei Shan. The Great Hall of the People on T'ien An Men Square is visible in the background at right and the Museum of Chinese History and the Revolution at left.

Paolo Koch—Rapho Guillumette

#### Rail communi- cations

northwest. Plans call for factories to be located around the east and south suburbs, although the southern suburbs still retain a predominantly rural aspect.

**Transportation.** Peking is the railroad centre of China, forming the terminus of four major lines and three local lines in the national railroad network. The four major lines radiating from Peking provide connections with Shenyang (Liaoning Province), Shanghai Municipality, Wu-han (Hupeh Province), and Pao-t'ou (Inner Mongolian Autonomous Region), respectively, each city being a major national industrial and commercial centre. The local lines are of regional importance and serve outlying districts within the metropolitan area; they are the Peking-Ku-pei-k'ou line to the north, the Peking-Tung-hsien line to the east, and the Peking-Ta-tai line to the west. Peking is linked by direct express with several other large urban centres, such as Tsingtao (in Shantung), T'ai-yüan (in Shansi), Sian (in Shensi), Lan-chou (in Kansu), Ch'ang-ch'un (in Kirin), and Man-chou-li (in Heilungkiang). Under international agreements, Peking is also periodically connected by express train with Moscow; P'yöngyang, North Korea; Ulaanbaatar, Mongolian People's Republic; and Hanoi, North Vietnam.

There are four major railroad stations in the city: Peking, Hsi Chih Men, Te Sheng Men, and Tung Pien Men. Peking Station, completed in 1959, is by far the largest and most important of these; located almost two miles from the heart of the city near the eastern end of the main thoroughfare, Tung Ch'ang-an Avenue, it has the capacity to serve more than 200,000 people a day and is the terminal and transfer point for all express lines. The new facilities were built to replace the Ch'ien Men Station (now the Railroad Workers' Club), built in 1906 outside the front gate of the inner city. The new station has more than 2,800,000 square feet of floor space in its central concourse and two wings, while its 18 waiting rooms can accommodate 14,000 people at one time. The roof of the beamless concourse is constructed in the form of a hyperbolic shell supported on four columns; it reaches the height of a ten-story building. Platform No. 1, at which the international trains pull in, is wide enough to hold a military review and is equipped with cinemato-

graphic and television facilities. The other three stations are mainly for local commuting trains.

While railroads connect Peking with distant cities, highways are the principal means of communication with communities within a 125-mile radius. There are 12 major highways radiating from the city, along which regular bus services run to Tientsin (in the Tientsin Municipality, an autonomous area in Hopeh Province), Chou-k'ou-tien, Nan-k'ou, the Ming Tombs (all in the Peking Municipality), and T'ang-shan and Ch'eng-te (in Hopeh). Five major bus depots are located in the walled city.

Peking is also the centre of China's civil airlines. The nation's major air routes radiate from Peking to Shanghai, Canton (in Kwangtung Province), Ch'eng-tu (Szechwan), Chungking (Szechwan), Urumchi (Sinkiang Uighur Autonomous Region), Harbin (Heilungkiang), K'unming (Yunnan), Nan-ning (Kwangsi Chuang Autonomous Region), Lhasa (Tibetan Autonomous Region), and Hsi-ning (Tsinghai).

Peking's intracity communications and commuting services are provided by a network of a city-owned system of buses and trolleys. The public transport system carries about 2,000,000 riders every day. The city's population is served by almost 120 routes with a route mileage of about 1,250 miles and by more than 1,000 buses and 430 trolleys. At places to which a large number of people are carried, such as the Shih-ching-shan steel mill and the Ch'ang-hsin-tien locomotive works (both in the outlying areas), bus routes run through the plant itself. The trolley routes run through the densely populated districts of the inner and outer walled cities; the pattern is much influenced by the symmetrical arrangement of the city plan. Bus routes also run throughout the walled city and the suburban areas. Bus fares are determined by distance, and monthly passes good for both trolleys and buses are available. There are also about 200 taxicabs on the city streets. For short-distance intracity travel, bicycles are very popular, constituting the bulk of street traffic.

**Demography.** Since 1949, Peking has become one of the most rapidly growing urban centres in China. The population change in historical times is illustrated by Table 1.



Young people painting Maoist slogans on the pavement in front of the Ch'ien Men railway station in 1967 (now the Railroad Workers Club).

*Der Stern*—Black Star

#### Population growth

During the dynastic period, when Peking was the capital, from the 13th to the beginning of the 20th century, the population of Peking seems to have increased very slowly in numbers, but since the downfall of the Manchu

expansion of the city boundary in 1958 to include nine counties within the metropolis, it is likely that at least one-third of the total population may now be considered rural.

**Table 1: Peking Population Growth**

| year | population |
|------|------------|
| 1280 | 401,000    |
| 1578 | 707,000    |
| 1913 | 728,000    |
| 1916 | 801,000    |
| 1930 | 1,300,000  |
| 1936 | 1,551,000  |
| 1948 | 1,722,000  |
| 1949 | 2,360,000  |
| 1953 | 2,768,000  |
| 1958 | 4,148,000  |
| 1959 | 6,800,000  |
| 1970 | 7,600,000  |

dynasty it has increased at an accelerating rate. The rapid increase during the four decades from 1910 to 1949 may be attributed to several factors. First, the rural disorder on the North China Plain during the rule of the warlords caused extensive migration to the walled city of Peking; second, the loss of Manchuria to Japan in 1931 made Peking a shelter for thousands of refugees from the northeastern provinces; third, the establishment of numerous institutes of higher education, sponsored by the government or by foreign missionaries, stimulated the growth of the student population in a city that was a cultural as well as a political capital.

The phenomenal increase in Peking's population did not occur, however, until the city had resumed its role as the national capital. In 1949 Peking, with a population of 2,360,000, was the fourth largest city in the country; ten years later a total of 6,800,000 made it the second largest. This increase resulted primarily from three circumstances: the necessary migration of thousands of government workers to the new capital, the rapid rate of industrial development in the municipality, and the extension of the municipal boundary in 1959 to include large rural areas. The 1953 census indicated that Peking had 708,000 persons living in rural areas—about 25 percent of the total population of the municipality. With the

**Housing and architecture.** *Housing.* To cope with the rapid growth of population, some 200,000,000 square feet of floor space of new housing was constructed in the 1950s and 1960s for office and factory workers. During the time of the first five-year plan (1953 to 1957), new housing projects were concentrated in the western outskirts of the city, where apartment buildings were erected near the newly built government offices outside the Fu Hsing Men. After 1958 the construction of a large group of multi-unit housing estates was begun in the northern outlying districts between the city gates of An Ting and Te Sheng, centring on the new residential district of Ho-p'ing-li. The Ho-p'ing-li housing development contains primary and secondary schools, nurseries, hotels, and recreational facilities, as well as more than 100 four- or five-story apartment buildings. In addition, there are many groups of single-family houses in the northern suburbs, with associated parks, theatres, and recreational centres. All these buildings are supplied with gas and water, in contrast with the older parts of the city, where the existence of old stone paving had hindered the development of modern structures and facilities.

In the area outside the city gate of Chien Kuo, to the east of the city, apartment buildings accommodate the families of office workers employed in nearby government office buildings. This area has also been selected as the new diplomatic district and contains many foreign embassies, together with a number of Western-style houses for the housing of diplomatic representatives and their families.

In the older districts inside the city walls, many dilapidated houses have been pulled down in municipal housing-renewal projects and have been replaced by multistory apartment buildings. Urban-renewal projects, however, had, by the early 1970s, been unable to match the growth of population. In consequence, many traditional house compounds—originally designed centuries ago to house officials' families during the Manchu dynasty—were repaired or renovated and subdivided to provide quarters for three or four families in each compound; each family in a compound faces a public courtyard and shares a common front gate with other families.



## Workers' community housing

In order to minimize commuting traffic in the metropolis, many factories in the eastern and southern outskirts of the city have erected four-story apartment buildings for workers' living quarters. These workers' residences constitute independent communities of their own and are so located that they are easily accessible from the place of work yet are far enough away to be free from noise and smoke. Rents in these community housing units are rather low compared with the total family income of average workers. A 1965 survey by the Peking Housing Bureau of 5,000 families living in houses operated by the city or various public enterprises found that the average rent amounted to about 6 percent of each family's monthly budget.

*Building types and architectural features of note.* Peking's heritage of Chinese architectural achievement is exemplified by both private housing and public buildings. As the whole city was laid out upon a rectangular street pattern symmetrically arranged around a centrally located palace, almost every dwelling unit in the city is rectangular in form, with the four sides squarely facing the cardinal directions. Most houses in the inner city were designed as residences of former officials and their families, and almost every dwelling compound is surrounded by high walls, with an open courtyard in the centre flanked by houses on the eastern, western, and northern sides, usually one story high. The former residences of high-ranking officials were composed of two or three compounds, interconnected along a north-south axis.

Stepping over the high wooden gate-sill of the front gate of a large compound, the visitor will find a brick screen wall located a few feet inside the gate—a structure that was supposed to shut off the intrusion of evil spirits, as well as to prevent curious passersby from looking inside. Beyond the screen is the outer courtyard, or service courtyard, which is flanked by houses to the east and west. Here, in former days, were the kitchen and living quarters for the gatekeeper, servants, and any visiting guests and relatives. A red-painted gate leads through the north wall of the outer court into the main part of the house. This is built around three sides of the main courtyard, which, usually shaded by a large tree, was the centre of the family's life. All the windows look inward to the courtyard, and a double door opens into the courtyard from each of the three wings. The windows extend from three feet above the ground up to the deep, overhanging eaves. As they face south, the rooms in the main building get the maximum possible sunshine in winter, and the eaves provide a pleasant shade in summer, when the sun is high. The wing at the northern end of the court was intended for the head of the family and his wife. It is divided into three compartments, the central one being the living or community room, and the smaller rooms at either side being the bedroom and study. The rooms facing east and west—three on each side of the court—were for married sons and their families. This is the basic plan of all the old houses in Peking. Larger families built an extra courtyard behind the main house, for it was regarded as essential that all the existing generations should live together. Since 1949, however, as mentioned, a great many of the old-style houses have been adapted for use by several families.

While the style and architecture of private dwelling units are uniform throughout the city, the public buildings and temples are characterized by a variety of designs and structures. As the nation's political and cultural centre for some 700 years, Peking possesses more buildings of historical and architectural significance than any other contemporary city in China. Since 1949 many new government and municipal buildings, combining both traditional and Western architecture, have added to the city's landscape.

Perhaps the most imposing structure constructed in the heart of the city since 1949 is the Great Hall of the People, an equivalent of the Capitol, in Washington, D.C. The Great Hall is located on the southwestern side of the T'ien An Men Square and is an immense building with tall columns of gray marble set on red marble

bases of floral design. It has a flat roof with a golden-yellow tile cornice over green eaves shaped like lotus petals. Its frontage is 1,100 feet long—about the equivalent of two city blocks. Its floor space is 6,062,000 square feet—more than that of all the palaces in the old Forbidden City. The grand auditorium, seating 10,000, is where the National People's Congress holds its sessions. Other components are a banquet hall for 5,000, huge lobbies, and scores of meeting rooms and offices for the standing committee of the congress. The base of the building is of pink granite, and its walls are apricot yellow. Inside the building, the ceiling and walls are rounded. The focus of the lighting system is a red star surrounded by golden sunflower petals.

Among the historical and religious structures in Peking, the T'ien T'an (Temple of Heaven), located in the outer city, is unique both for its unusual geometric layout and because it represents the supreme achievement of traditional Chinese architecture. Entering from the western gate of the temple, along a path that is about 1,600 feet in length and shaded by ancient cypresses, one comes to a raised passage about 1,000 feet long. This broad walk connects the two sets of main buildings in the temple enclosure. To the north lies the Ch'i Nien Tien (Hall of Prayer for Good Harvests) and to the south the Huang Ch'ung Yü (Imperial Vault of Heaven) and the Huan Ch'ui T'an (Circular Mound Altar). The three buildings are built along a straight line. A bird's-eye view of the enclosure would show that the wall to the south is square, while the one on the north side is semicircular. Such a pattern symbolizes the traditional Chinese belief that Heaven is round and Earth square.

The Ch'i Nien Tien, built in 1420 as a place of heaven worship for the emperors, is a lofty, cone-shaped structure with triple eaves, the top of which is crowned with a gilded ball. The base of the structure is a triple-tiered circular stone terrace more than 63,000 square feet in area. Each ring has balustrades of carved white marble, which gives the effect of lace when seen from a distance. The roof of the hall is deep blue, resembling the colour of the sky. Without the use of steel and concrete, the entire structure, 125 feet high and about 100 feet in diameter, is supported by 28 massive wooden pillars. The four central columns, called the "dragon-well pillars," represent the four seasons; there are also two rings of 12 columns each, the inner ring symbolizing the 12 months and the outer ring the 12 divisions of day and night, according to a traditional system. The centre of the stone-paved floor is a round marble slab that has a design of a dragon and a phoenix—traditional symbols of king and queen. The hall has no walls, only partitions of open latticework doors.

The Huang Ch'ung Yü, first erected in 1530 and rebuilt in 1752, is a smaller structure some 64 feet high and about 50 feet in diameter. The circular building has no crossbeam, and the dome is supported by complicated span work. Its decorative paintings still retain their fresh original colours.

South of the enclosure lies the Huan Ch'ui T'an, built in 1530 and rebuilt in 1749. The triple-tiered white stone terrace is enclosed by two sets of walls that are square outside and round inside; thus, the whole structure forms an elaborate and integrated geometric pattern. The inner terrace is 16 feet above the ground and about 100 feet in diameter; the middle terrace is about 165 feet across and the lowest terrace some 230 feet across. Each terrace is encircled by nine rings of stones. Both the Huang Ch'ung Yü and the Huan Ch'ui T'an were erected to portray the geometric structure of the heaven, as conceived by the architects of the Ming dynasty. After 1949, the whole enclosure of the T'ien T'an was repaired; it is now a public park.

*The economy.* One of the main differences between the Imperial capital of former times and present-day Peking is that the Imperial capital was a consumption rather than a production centre, receiving supplies of all kinds from other parts of the country. In the 1950s and 1960s, however, Peking became one of the nation's principal industrial centres. The first five-year plan emphasized the

## The Great Hall of the People



Children sweeping the steps at the Ch'i Nien Tien, or Hall of Prayer for Good Harvests, central building of the Temple of Heaven, Peking.

Emil Schulthess—Black Star

reconstruction and industrialization of the capital city; by 1959, there were almost 100 industrial units employing 1,000 to 5,000 workers each and 15 that employed more than 5,000.

**Industrial activities.** Among the large industrial establishments is the Shih-ching-shan Iron and Steel Works, located about 15 miles west of the walled city. The Shih-ching-shan plant was originally started in 1920, based on local ore and anthracite in the Western Hills; after the Japanese occupation of 1937, it produced a meagre amount of pig iron. Since 1958, the plant has been enlarged with a blast furnace, a steelworks, electric furnaces, and other equipment. With an annual capacity of 1,900,000 tons of iron and 1,500,000 tons of ingot steel, it is among the largest steel plants in China. Its high-quality steel production supplies such growing Peking industries as machine building, electrical engineering, and precision instrument manufacturing. A number of smaller finishing mills have also been established to produce such items as cold-drawn bearing steel and flat spring steel for tractor and automobile accessories, seamless tubes for high-pressure boilers, and magnetic steel for machine tools and radios. Peking is also an important centre of machinery manufacture, with plants established for manufacturing cranes, locomotives, automobile parts, tractors, wheat harvesters, and mining and printing machinery. Most of these plants were built in the suburbs east and south of the walled city, where extensive tracts of level land were available and where the prevailing northwest winds

Iron and  
steel  
manufac-  
turing

would carry industrial pollutants away from the densely populated areas. With the rapid expansion of cotton cultivation in Hopeh Province in the 1950s and 1960s, Peking has also become one of China's major textile centres. Peking's textile industry includes the manufacture of cotton and woollen fabrics and piece goods, serge, and several types of synthetic fabric, including polyester and nylon. To meet the needs of agriculture in the large rural area within Peking's administrative jurisdiction, insecticides, chemical fertilizers, and plastic sheets are also produced.

As a former Imperial capital, Peking possesses a rich accumulation of art treasures, produced by a variety of arts and handicraft industries that were intimately connected with court life and Imperial needs. Today, much of the traditional handicraft industry has not only been preserved but has been reorganized and re-equipped. Among the city's well-known handicraft products are rugs and carpets, porcelain and chinaware, jade and ivory sculpture, brass ware, enamel and lacquer ware, lace, and embroidery.

**Commercial activities.** With the rapid growth of industry and population in the city, many service industries, operated mainly by government agencies, have also greatly expanded.

Since 1949, there has been a slow but steady increase in tourist services provided in Peking. Many new hotels and hostels have been built, and old ones have been renovated and enlarged to meet the demands of the public; among these are the International Hotel, Hsin-ch'iao Hotel, Hop'ing Hotel, Ch'ian Men Hotel, Nationalities Hotel, the Overseas Chinese Hotel, Tung-ssu Hotel, and the enlarged Peking Hotel. Peking now has altogether more than 300 hostels and hotels; more than a dozen of them meet international standards. The China International Travel Service, which is state-owned, especially serves foreign tourists. Its general office is located on Hsi Ch'ang-an Avenue, and it has branches in all major cities in the nation, including one in Hong Kong. It makes reservations for airline and train tickets, hotel accommodations, and can also arrange for food, interpreters, cable service, and foreign monetary exchange. The general office of the Overseas Chinese Tourist Service is located in the inner city; its main function is to take care of overseas Chinese who are touring China, and it has more than 40 branch offices throughout the country.

China has a nationwide and centralized system of banking, in which The People's Bank of China, a state-owned institution, plays a key role. This bank, with its head office in the inner city, functions as the agent of the national treasury. All funds of state-owned industrial enterprises, as well as of national, provincial, and local governments, the People's Liberation Army, and the network of cooperatives, are deposited with the People's Bank. The bank centralizes the financial resources of the government and the major sectors of China's economy. It uses the working capital at its disposal for the operations of the economy and the government. The People's Bank thus acts as cashier of the national budget and of a large part of the nation's financial operations. Through its branch offices and savings account centres, the bank also serves the daily needs of people in the city and in the suburbs. Working in cooperation with the People's Bank and under its supervision are two other older banking institutions—the Bank of Communications, which has the task of financing and supervising all basic construction projects, such as new railways, and the Bank of China, which specializes in international trade and foreign exchange.

Banking  
institutions

**The urban economy.** Although Peking has been the capital of China for hundreds of years, it is far distant from the nation's traditional key economic area, the productive Yangtze Valley. The task of feeding the large urban population in Peking—not an easy one—was facilitated by the opening and maintaining of the Grand Canal and by the use of sea transport for importing grain from the south. Since the first decade of the 20th century, railways have played an important role in bringing food supplies to the capital; with the completion of additional

trunk lines since 1949, Peking, as mentioned, has become a major railway centre. Today, food grains and industrial raw materials from almost every corner of the nation can easily be shipped to Peking. The city, however, has striven for a high degree of self-sufficiency in secondary food supplies, such as vegetables, fruits, fish, and poultry, and in a number of construction materials. The expansion of municipal boundaries in 1958 and 1959 was partially aimed at this goal, and in the early 1970s the municipality was succeeding in maintaining an adequate supply of vegetables and fruits.

Vegetables are grown by the people's communes in a six-mile-wide belt, totalling more than 35,000 acres of land, that encircles the city and is covered by a network of irrigation channels. Some 600 miles of power lines provide power for the several thousand electric pumps that have made intensive farming possible. Hothouses, where vegetables are grown in the winter months, have 17,000 compartments, each occupying an average area of 130 square feet. This large farm belt is also one of the most highly mechanized agricultural areas in China.

In the 1950s and 1960s, many state farms near Peking have converted some of the hill slopes to the west of the city into large orchards, some of which are 1,700 acres in area. Several communes have also reclaimed large areas of wasteland to the north and east of the city for fruit tree planting. At present, the city's fruit-growing region ranges from the Great Wall in the north to the Grand Canal in the south and from the Yen Shan in the northeast to the Yung-ting Ho (Yung-ting River) in the southwest. While the hill areas produce large quantities of pears, persimmons, apples, chestnuts, and walnuts, the newly reclaimed lowlands are covered with vineyards and peach orchards. There are six state farms for fruit growing within the metropolitan area; of these, the Nan-kou State Farm, north of the city, is the largest. With more than 40 varieties of fruit grown in the metropolitan area, the ripening season lasts from early May to September. Most of Peking's fruit is channelled to the retail market through two distribution centres. Some of the fruit grown around Peking is sent to canneries, and some is put into cold storage; large quantities of "Aromatic Rose" grapes are sent to the Peking winery. Part of the Peking fruit crop is shipped by train to the cities of the Northeast and Inner Mongolia.

*The business districts.* Because of the symmetrical layout of the city, Peking lacks the compact central business district that characterizes most cities in the Western world. Historically, the market areas of the city were situated at two street intersections to the southwest and southeast of the centrally located Imperial Palace, and today the Tung Tan and Hsi Tan districts are still major shopping centres. Since 1949, however, a number of multi-story department stores have been erected along Wang-fu-ching Avenue and at Hsi Tan, supplying a wide variety of goods for daily needs. The China Department Store, a state-owned enterprise, is the largest department store in China and has branch stores in major cities throughout the country. The International Friends (Quaker) Service Center serves foreign visitors and specializes in high-quality clothes, souvenirs, and gifts. In addition to these modern establishments, there are a dozen traditional bazaars that still serve an important local function. The Peking bazaars have evolved through a long period of history, and each has developed its own reputation for special commodities and services.

The Tung Tan Bazaar, located on the busy Wang-fu-ching Avenue, is the largest bazaar in the city. It includes about 30 different trades, which are carried on in more than 600 separate stalls. The bazaar is famous for the traditional handicrafts produced in the city, such as ivory, jade, and stone carvings, antiques and curios, lacquer ware, necklaces, cloisonné (a kind of enamel work) and porcelain, gauze lanterns, Peking sweets (dried and sugared fruits, such as sugared dates, sugared lotus, and sugared apples), and preserved fruits. The bazaar contains a number of restaurants and cafés serving a variety of Chinese regional foods.

The Liu-li-chang Bazaar is located just outside the city

gate of Ho P'ing in the outer city. Because colourful glazed tiles were made here in the Ming dynasty, the area acquired its present name (which means "the glazier's shop"), but during the later part of the 18th century it gradually became a market for curios, antiques, old books, paintings, works of ancient Chinese calligraphers, and paper. It is still the centre for traditional art shops. The Ch'ien-men Administrative Department of the Peking Handicrafts Company has set up a workshop there that makes reproductions of traditional Chinese paintings, ancient bronze and iron vessels and statuettes, pottery and porcelain ware, and stone and wood carvings.

Inside the city gate of Yung Ting and near the T'ien T'an is the T'ien-ch'iao Bazaar. As early as the 16th century, poor people of the city began to come to T'ien-ch'iao to buy and sell secondhand goods. Open-air markets were also held here in the evenings. After 1900, when the railway station in the southern suburbs was moved to the vicinity of the T'ien T'an, peddlers and small traders, folk artists, storytellers, and musicians began to appear in large numbers, and the place became a

Paolo Koch—Rapho Guillet



Stalls in Peking's main market.

bustling market for fish, poultry, fruit, and vegetables, as well as a recreational area for poor people. This bazaar has some of the best food shops in the city and remains a folk-entertainment centre for the metropolis.

The Hsi Tan Bazaar, established in 1932 around Hsi-tan-pei-ta Street in the western section of the city, is one of the most diverse markets in the city. The bazaar is composed of five different sections, each offering special commodities or services. The commodities include sports equipment, musical instruments, books, magazines, food supplies, hardware, and electric appliances; there is also a complete department store, as well as a number of recreational establishments.

**Political and governmental institutions.** As the national capital, Peking houses the most important political institutions in the nation. These include the National People's Congress, the supreme organ of state power, and the State Council, the highest executive organ of the state, which carries out the decisions of the congress. The State Council has under its jurisdiction administrative depart-

The State Council

Shopping facilities



ments, the number of which varies according to the needs of the work. They include the ministries and commissions in charge of foreign affairs, internal affairs, public security, national defense, justice, finance, culture, health, education, nationality affairs (concerning minority groups in the country), agriculture, and various branches in industry.

In addition to the above, there are some organs of state concerned with the maintenance of law and order—the People's Courts and the People's Procuratorate, both of which are located in Peking.

Peking is one of the three independent municipalities in China (the others being Shanghai and Tientsin), and there is no governmental tier between it and the central government. Peking is divided administratively into eight municipal districts in the centre and nine annexed counties in the peripheral areas. The highest organ of the municipal administration is the People's Congress of Peking Municipality. The representatives for the congress, numbering 564, are elected among groups of workers, peasants, teachers, merchants, office workers, the armed forces, public institutions, and religious circles. The congress elects the members of the Peking People's Council, the executive organ of the municipal government, including the mayor and deputy mayors. It ensures that the municipal government carries out the decisions and resolutions of the congress, discusses and approves the budget and financial statements submitted by the municipal government, and examines the report on the administrative work of the municipality. The composition of the congress in 1955 is shown in Table 2.

**Table 2: Composition of the People's Congress of Peking Municipality**

| groups   | number of deputies |
|--|--------------------|
| Workers  | 168                |
| Employees in the education and cultural fields | 136                |
| Government employees                           | 65                 |
| Industrialists and businessmen                 | 43                 |
| Democratic parties                             | 30                 |
| Peasants                                       | 27                 |
| Medical and health workers                     | 26                 |
| Engineers and technicians                      | 26                 |
| Co-op employees                                | 12                 |
| Dependents of veterans                         | 12                 |
| Armed forces stationed in Peking               | 10                 |
| Religious groups                               | 9                  |
| Total  | 564                |

The congress included a percentage of women, minority groups, and model workers elected by various industrial plants.

The Peking People's Council in 1955 consisted of 47 members, including the mayor and his deputy mayors. They control 47 administrative units that cover all fields of life in the city—health and sanitation, public security, education, employment, industry, etc. As a subdivision of the municipality, each district or township has its own people's council. Below the urban district are a number of street offices of the district people's council. Below street offices are residents' committees, which are self-governing welfare organizations established on a neighbourhood basis. The residents cooperate on matters of common interest, such as problems of local hygiene, culture and recreation, sports, studies in current events, and literary classes. The residents' committee is also in charge of the neighbourhood's population census, vital statistics, population movements, children's nurseries, and street beautification.

**Public utilities.** Peking is not on a river, and all water for municipal consumption has to be brought from elsewhere. Some water, however, comes from shallow wells, which are common throughout much of the region. These provide some villages with drinking water and supply water for irrigation.

From the earliest history of the city, use has been made of the rivers and springs in the neighbourhood. To the east is the Pai Ho, which, after being joined by the Sha

Ho, turns southward. The tumultuous Yung-ting Ho is a large river, draining the Shansi Plateau and the northwest of Hopeh. After following a twisting course through the mountains, it reaches the Peking plain, passes under the Marco Polo Bridge, nine miles southwest of Peking, and then turns southward to meet the Pai Ho north of Tientsin. The flow of the Yung-ting Ho is irregular; in the rainy season it rises rapidly, carrying with it large quantities of silt, which raise the level of the riverbed considerably. At Marco Polo Bridge it is 50 feet above the level of the city, thus constituting a hazard when the river is in flood but facilitating canalization and irrigation. Several springs rise at the foot of Hsiang Shan (Fragrant Hills) and on the Yü-ch'üan Shan (Jade Fountain Hill), both to the northeast of the city. During the Manchu dynasty these springs were tapped by means of an aqueduct that conveyed water for the city moat and for the three lakes near the Imperial Palaces. The moat around the city walls became an important means of water distribution for the municipality.

In the early 1950s, large-scale water-conservancy projects were begun to provide more water for the expanding urban area. Two large artificial lakes have since been made: the Mi-yün Reservoir, northeast of the city, and the Kuan-t'ing Reservoir, in the northwestern mountains beyond the Great Wall. These regulate the flow of the Pai Ho and of the Yung-ting Ho upstream, storing water at times of heavy discharge and releasing it when the rivers are low. Two lesser projects have also been carried out: the construction of the Ming Tombs Reservoir, whose waters feed a hydroelectric power station and irrigate the neighbouring countryside, and a hydroelectric power station near Mo-shih-k'ou, which uses the waters of the Yung-ting Ho and feeds them back into the river through an ancient canal. The hydroelectric station at Kuan-t'ing, which has been generating electricity since 1956, is the largest source of electricity for the metropolitan area of Peking.

The Peking Water Company, which was originally formed in 1908, is responsible for supplying water for the municipality. Water is obtained from the old waterworks within the walled city, as well as from several waterworks in the suburbs; altogether, the network of mains and pipes totals nearly 1,250 miles in length and extends to every newly built residential and industrial unit, including towns and villages near the Men-t'ou-kou coal mine about seven miles from the city. Public standpipes have also been installed at regular intervals throughout the city, the suburbs, and nearby rural people's communes. The Kuan-t'ing Reservoir, the largest man-made lake in the North China Plain, supplies the metropolitan area of Peking with most of its water.

Peking is one of the few cities in China equipped with a modern sewage system. An underground sewage system was installed as early as the 15th century, when nearly 195 miles of sewage network were constructed. Later this network became clogged with effluent and silt. A new sewage system was installed in the early 1950s, which, within the walled area, was partly based on the rehabilitation of the old system. All open sewers, characteristic of many Chinese cities, were eliminated, and nearly 600 miles of new pipes were laid throughout the densely populated areas of the municipality.

The headquarters of the Peking General Post Office is located on Kung-an Street, on the east side of T'ien An Men Square. It provides more comprehensive services than the post office in any Western city, handling mail, telegrams, long-distance telephone calls, and the distribution of newspapers and magazines. There are also more than 350 branch offices and stations in the city and the suburbs. The Peking General Post Office has also set up several service centres at certain busy traffic points, such as Hsi Ch'ang-an Avenue, Ch'ien Men, Peking Railway Station, T'ien An Men, Hsi-chi, and Wang-fu-ching. The service centre at Wang-fu-ching takes subscriptions to foreign newspapers and magazines and sells single issues.

The Peking Telegraph Office is housed in the Telegraph Building on Hsi Ch'ang-an Avenue. It is open day and night for domestic and international telegrams and for

long-distance telephone calls. International telegrams can be sent to all countries throughout the world in four languages: Chinese (in Chinese standard code, in which each character is represented by four numerals), Russian (in Roman alphabet), English, and French; telegrams may also be sent in any other language agreed upon by the countries to which the telegrams are sent, provided they are written in the Roman alphabet and notice is given of the language to be used.

The  
telephone  
system

Telephones first appeared in Peking in 1900, when a small exchange was established by a foreigner. In the subsequent 50 years, more than 20,000 telephones were installed. In the 1950s the Peking Telephone Administration increased its 21 exchanges to 29, and nearly all telephones in the city became automatic. Seven of the new exchanges were installed in suburbs, serving outlying districts that have experienced rapid industrial and agricultural development. In the 1960s the original five-digit dialing system was changed to one of six digits, thus increasing the city's telephone capacity from 100,000 to 1,000,000 instruments. Public telephones are located in shops in busy streets. As a great number of households in Peking cannot be reached by phone, a neighbourhood messenger service is provided in many of these street service stations. The caller gives the name and address of the person he wants to reach, leaving his own number and the time he wants to be called with the attendant who delivers the message; attendants are usually elderly men or housewives.

**Health.** Chinese medical services employ two systems of medicine: traditional Chinese and Western. Peking possesses some of the best hospitals of both systems in the nation.

The Peking Union Hospital, the earliest modern hospital to be established in China, was founded in 1921 as an affiliate of the Peking Union Medical College, which from 1915 onward was supported by the China Medical Board of the Rockefeller Foundation. The hospital, now renamed Peking Hospital, is a large polyclinic combined with an institute of gynecology and pediatrics. It handles about 500,000 cases annually and is the largest hospital in Peking. Since 1949, more than 30 new hospitals, clinics, and sanitariums, together covering more than 10,000,000 square feet of floor space, have been built, and there are more than 25,000 beds available in the inner districts of the metropolitan area. Among the newly established hospitals is the Friendship Hospital, located at T'ien-ch'iao in the outer city, a gift made by the Soviet people at the time of the peak of Sino-Soviet friendship in the 1950s. Until 1960, the Soviet staff not only treated patients but also gave advanced training to Chinese medical personnel according to the latest Soviet methods.

Many hospitals are clinical teaching hospitals attached to medical schools; these include the Fu Wai Hospital of the Chinese Academy of Medical Science, located outside the city gate of Fu Ch'eng; the First Affiliated Hospital of the Peking Medical College, near the city gate of Hsi An; the Affiliated Hospital of the Research Institute of Chinese Medicine, located in the western suburban town of Hsiao-yüan; and the Affiliated Hospital of the Peking Chinese Medical College, situated on Nanshao Street. The largest children's hospital in China, the new Peking Children's Hospital, is situated just outside the city gate of Fu Hsing. It has 600 beds and was designed to provide a homelike atmosphere for the sick child. In the hills to the west, a sanitarium in the traditional Chinese architectural style has been built for students from Asian countries; it has accommodations for up to 300 students. The most specialized hospitals are located in the old residential districts of the city and include the Stomatological Hospital (dealing with the mouth and related diseases), the Chest Surgery Hospital, the Hospital of Plastic Surgery, the old Peking Children's Hospital, the Peking Municipal Hospital of Chinese Medicine, and the Ji-sui-tan Hospital, which specializes in traumatic (accident-related) and orthopedic surgery.

Traditional  
medicine

Chinese traditional medicine comprises the prescription of Chinese herb drugs and the practice of acupuncture (a

medical practice encompassing therapeutics and anesthesia that involves puncturing various parts of the body with needles). Doctors in both Chinese and Western systems are trained in many universities and institutes in Peking. Students in the Western-style medical schools are taught the essentials of Chinese traditional medicine, and Chinese traditional medical students are expected to be familiar with the essentials of Western medicine. Diagnoses of difficult cases are made only after consultations with specialists of both systems.

For the rural areas of the metropolis, each county has a well-equipped county hospital located in the county seat. But the basic unit of the medical service is the health centre in the commune, which is equipped with complete clinical facilities. Medical teams of doctors, nurses, and public health personnel are sent frequently from the teaching centres in the city to the communes to assist in the general medical work and to keep the local medical staff in touch with the latest medical progress and techniques.

**Education.** There has been no radical change in the school system in Peking since 1949. The school system is still largely composed of six years of primary education, which is quite universal, and six years of secondary education. For preschool-age children, kindergartens and nurseries are operated by factories, business enterprises, government offices, and city block cooperatives. Their main function is to permit the mother to work so that, while some of these facilities are located in the residential neighbourhoods, many are located on the premises of particular institutions of employment. In the suburban or rural areas, kindergartens are often temporarily set up during such events as the harvest; small fees are charged that help to offset the cost of meals provided.

In the early years of the present regime, efforts were made to abolish private schools and to put all education in the hands of the state. As a result, all private schools run by missionaries were taken over by the government. It was soon realized, however, that the government could not possibly provide enough schools for the millions who demanded education. The government then reversed its policy to some degree and decided to encourage the establishment of schools by local organizations, such as factories, business concerns, collectives, and communes. In the early 1970s a major part of the finance for elementary education was met by sources other than the central government, though government subsidies to schools in difficult financial situations were also considerable.

The curriculum in the primary school is simple. The early part of primary education is largely devoted to reading, writing, and mathematics, and in the last two years of the primary school, nature study, history, geography, and physical education are added to the curriculum. Closely related to primary education are movements for the liquidation of illiteracy, the phoneticization of the Chinese writing, and simplification of Chinese characters.

The secondary schools in Peking are mainly of three types: the general middle school, the normal school, and the vocational and technical school. The general middle school is of the academic type, with a curriculum designed to prepare students for college. The normal school is to train teachers for primary schools. The vocational and technical schools, created to provide skilled workers in various fields, have developed most rapidly in the city and in the early 1970s were beginning to overtake the general middle schools in number.

Peking's position as a centre of higher education in China has been further strengthened since 1949, and within the metropolitan area in the early 1970s there were more than 20 institutes of higher learning. A scientific and educational district has emerged in the north-western outskirts of the city, against the background of the K'un-ming Hu (K'un-ming Lake), the Summer Palace, and the Western Hills. This area contains such prestigious institutes of higher education as Peking University and Ch'ing-hua University. Founded in 1898, Peking University is one of the largest composite universities in China. The university has a faculty of 2,000 and

The  
schools

Institutions  
of higher  
education





May Day rally in T'ien An Men Square, Peking.

*Der Stern—Black Star*

an enrollment of more than 10,000 students, including some 300 foreign students from 30 different countries. In 1953 the university moved from its old site at Sha-t'an, in the inner city, to the present campus, which previously belonged to the missionary-established Yen-ch'ing University. The new campus has been expanded considerably to the east and south. Ch'ing-hua University has an enrollment of 6,000, with 45 percent of the students being selected from among workers in various factories throughout the country, 40 percent from communes, and 15 percent from the People's Liberation Army.

Within the academic district are also found the People's University of China, an institute of ideological training, and the Central Institute of Nationalities which accepts students from the various autonomous regions and districts. Situated in the same area are the Peking Normal College, the Peking Medical College, and the Central Conservatory of Music. Numerous institutes of higher education are also located in this area; these include the Peking Institute of Steel and Iron, the Peking Institute of Aeronautical Engineering, the Peking Petroleum Institute, the Peking Institute of Geological Prospecting, the Peking Institute of Forestry, and the Peking Mechanical Institute of Agriculture. The Chinese Academy of Sciences, the highest research institute in the nation, is also located in this district.

Besides technical colleges, there are a number of foreign-language institutions in Peking where foreigners are employed to teach alongside their Chinese colleagues. The First Foreign Language Institute is the largest institute of its kind in China and has an enrollment of 2,000. The Second Foreign Language Institute was set up in 1964 for training personnel for the New China News Agency. There are also a number of small institutes of language training, run by the Ministries of Foreign Affairs and Foreign Trade and by the Peking Radio Station. The Peking Institute of Foreign Languages is an institute

at the secondary level, which accepts children as young as eight years of age and enrolls about 1,000 students; 500 of them learn English, while others study French, German, Spanish, Arabic, Russian, and Japanese.

**Cultural life.** As the cultural focus of China for several centuries, Peking possesses what are probably the finest cultural institutions in the nation, including libraries, museums, and theatres.

To the east of T'ien An Men Square within the People's Cultural Park is found the Working People's Palace of Culture (formerly the Temple of the Imperial Ancestors), where the tablets of the emperors were displayed. The temple, like the T'ai Ho Tien (Hall of Supreme Harmony) and the Imperial Palaces in style, was built in three stone-work tiers, each with double eaves. On either side are two rows of verandas surrounding a vast courtyard large enough to hold 10,000 people. Exhibitions of economic and cultural achievements, both of China and of foreign countries, are frequently held in the three halls. Each exhibition lasts several weeks and draws hundreds of thousands of visitors. Lectures by leading scholars on science, literature, and the arts are frequently held there, and reports are presented by nationally known heroes of labour. There is also an art school for adults in the park; it has five departments—for literature, drama, music, fine arts, and dance. The park also serves as the home of amateur art groups, who specialize in dancing, orchestral music, or choral singing. Persons who are found to have particular artistic talent may be sent from here to a specialized school for further study. In the northeast corner is a sports ground that can accommodate more than 4,000 spectators. In a grove in the southeast corner is a large open space for dancing.

The Imperial Palace Museum is housed in the main buildings of the former Imperial Palaces. Many of the halls are kept as they were in dynastic times, each constituting a museum in itself; others are kept for the display

The  
Palace  
Museum

Foreign-  
language  
institutions

of some of the priceless treasures from China's past. The Imperial Palaces, with their golden roofs, white marble balustrades, and red pillars, stand in the heart of Peking and are surrounded by a moat and walls with a tower on each of the four corners.

The palaces consist of outer throne halls and an inner court. North of the three tunnel gates that form the front gate, called the Wu Men (Meridian Gate), a great courtyard lies beyond five marble bridges. Further north is a massive double-tiered hall, the T'ai Ho Tien (Hall of Supreme Harmony), once the throne hall. A marble terrace rises above the marble balustrades that surround it, upon which stand beautiful, ancient bronzes in the shapes of cauldrons, cranes, turtles, compasses, and ancient measuring instruments. The T'ai Ho Tien is the largest wooden structure in China.

Behind it, beyond another courtyard, is the Chung Ho Tien (Hall of Complete Harmony), where the emperor paused to rest before going into the throne hall (the Hall of Supreme Harmony). Beyond the Chung Ho Tien is the last hall, the Pao Ho Tien (Hall of Preserving Harmony), after which comes the Nei T'ing (Inner Court). The Inner Court was used as the emperor's personal apartment. It contains three large halls, the Ch'ien Ch'ing Kung (Palace of Heavenly Purity), the Chiao T'ai Tien (Palace of Heavenly and Earthly Intercourse), and the K'un Ning Kung (Palace of Earthly Tranquillity).

The Ch'ien Ch'ing Kung is divided into three parts. The central part was used for family feasts and family audiences, audiences for foreign envoys, and funeral services; the eastern section was used for mourning rites and the west section for business of state. The other two palaces, one behind the other, were Imperial family residences. The three throne halls in the Outer Court and the three main halls in the Inner Court lie along the central axis. On either side are smaller palaces, with their own courtyards and auxiliary buildings. Behind the buildings, before the north gate of the Imperial Palaces is reached, lies the Imperial Garden. Each palace, its courtyard and side halls, forms an architectural whole.

The Museum of Chinese History and the Revolution, located on the eastern side of T'ien An Men Square, is a new museum completed in 1960. There are more than 8,000 antiquities on display, of which the greater part have been excavated only during recent years. These are arranged to give a comprehensive survey of the progress of human achievement in China, beginning with the appearance of the prehistoric Peking man some 500,000 years ago, then continuing through the last 6,000 years of Chinese history. The exhibition has three main sections, devoted to primitive society, slave society, and feudal society.

The Museum of the Chinese Revolution occupies the left wing of the museum building on the eastern side of T'ien An Men Square. Its aim is to trace the history of China since the middle of the 19th century, laying particular stress on the revolutionary movement and the part played by the Communist Party.

The Peking Planetarium, the first of its kind in China, is located outside one of the city's western gates. Completed in 1957, it is an educational centre for the dissemination of general knowledge in astronomy and natural science by means of exhibitions, forums, films, projector demonstrations, and telescopic observations of the heavens. The planetarium proper, the "Theatre of Heavens," is situated on the south side of the building and has a seating capacity of 600. Behind the main building stand an observatory and meteorological station.

The Peking Library, with a collection of 7,000,000 volumes, is the largest public library in China and is located on the west bank of Pei Hai. The library has inherited books and archives from the Imperial Wen Yüan Ko library, a famous collection that has existed for more than 500 years and that, in turn, included books and manuscripts from the Imperial Library of the Southern Sung dynasty, established some 700 years ago. It also includes other collections from Imperial libraries of the Manchu dynasty, Imperial colleges, and private owners. Among them are rare copies of ancient manuscripts and

books of five dynastic periods from the Sung to the Ch'ing, including 140,000 manuscript volumes on 18,000 different subjects, 8,700 copies of Buddhist sutras going back to the 6th century, old maps, diagrams, and 25,000 rubbings from ancient inscriptions on metal and stone; it also possesses the *Yung-lo ta-tien* ("Yung-lo Encyclopedia") of the Ming dynasty and a copy of the *Ssu-ku ch'üan-shu* (from the Imperial Library of Ch'ien-lung), dating from the Manchu dynasty.

**The media.** Peking is the chief publishing centre for newspapers, periodicals, and books in China. Almost all publishing enterprises are owned by the government. New China News Agency in Peking is the chief provider of news releases in English. There are almost 250 periodicals with national circulations published in Peking. Several foreign-language magazines, including *People's China*, *China Pictorial*, *China Reconstructs*, *Chinese Literature*, and *Women of China*, are also published in the capital. More than 20 national newspapers are published there. "People's Daily" (*Jen-min jih-pao*), the official organ of the Central Committee of the Chinese Communist Party, is the most influential paper in the country and reflects the ideology and policies of the party in both foreign and domestic affairs. *Kuang-ming jih-pao*, jointly published by the various minor democratic parties, the All-China Federation of Industry and Commerce, and nonparty members of the Chinese People's Political Consultative Conferences, gives special attention to culture, education, science, politics, law, and the life of the national minorities. *Ta-kung pao* emphasizes news and commentaries on commerce, finance, and international affairs. "Worker's Daily" is the official organ of the All-China Federation of Trade Unions. "China Youth News," the official organ of the Central Committee of the Communist Youth League of China, is a political and educational media for teen-agers. "Chinese Children" is an official paper for the Chinese Young Pioneers, published also by the Central Committee of the Communist Youth League of China.

There are more than 40 publishing houses in Peking. The largest is the People's Publishing House; others deal in specialized fields, such as literature, fine arts, science, and national minorities. The Foreign Language Press is responsible for introducing China and the Chinese people to the world through books, pamphlets, pictorials, and translations of literary works; most are in English.

The most important radio station in China, the Central Chinese Broadcasting Station, is also located in Peking. Using more than a dozen different frequencies and broadcasting three sets of programs simultaneously, the central station is on the air for more than 47 hours a day. Three sets of programs are coordinated and supplement each other; the first gives news and news commentaries, while the second and third broadcast different literary or artistic items. Programs reach the city's population not only through radios but also through loudspeakers and radio-listening centres that are installed in almost every public gathering place, including railroad stations, public dining halls, playgrounds, and parks.

The first television station in Peking was established in 1959 by the Peking Broadcasting System. The city's television programming was still on a rather limited scale in the early 1970s, as the number of sets was not very large. Most television sets were for public use and are found in parks with benches provided for viewers, as well as in railroad stations, hotels, and other public places. Daily television programs include those devoted to popular science, sports, opera and theater, and the entertainment of children. The Peking Television College, offering preparatory courses in mathematics, physics, chemistry, and other subjects, was instituted in 1960 under the joint auspices of the city department of education, the Peking Broadcasting System, and three universities in the area. Students of the television college, numbering several thousands, are scattered in more than 800 institutions and organizations throughout the city; most of them work in factories, mines, and research organizations or are teachers in primary and secondary schools. In every district of the city the college also set up an advisory centre where students may go for additional tutoring.

Television services

The Peking Library

**Recreation.** As the residence of the Imperial families through several dynastic periods, Peking is well-known for its numerous parks and playgrounds; few cities in China have as large a proportion of land within the city walls allocated for recreational uses. Among the most popular of Peking's parks are Chung Shan Park, Pei Hai Park, Coal Hill Park (Mei Shan Park), the Summer Palace, and the Peking Zoological Gardens.

Chung Shan Park adjoins the west wall of T'ien An Men; it is the most centrally located park in Peking and encloses the former Altar of Earth and Harvests, where the emperors made offerings to the gods of Earth and agriculture. The Altar of Earth and Harvests consists of a square terrace in the centre of the park, to the north of which is the 550-year-old Hall of Worship, now the Sun Yat-sen Memorial Hall, which is used for public meetings. The Hall of Worship is the oldest wooden structure in Peking; its simple form, masterly design, and sturdy woodwork bear the characteristic marks of early Ming architecture.

The Water Pavilion, built out over a lotus pond on three sides to provide a gathering place for scholars and poets, is also located in the park. Scattered among the park's pools, goldfish enclosures, rocky hills, weeping willows, pines, cypresses, bamboos, and flowers are pavilions, kiosks, and towers, which are typical of Chinese garden landscape.

Pei Hai Park lies to the northwest of the Forbidden City. It covers some 176 acres, half of which is water. It contains the most northerly of the three lakes that lie

Hill Park is Peking Children's Palace, with recreational, athletic, and educational facilities.

The Summer Palace, lying close to the Western Hills, is about six miles northwest of Hsi Chih Men, the nearest city gate. It is the largest park on the outskirts of Peking and is famous for its artificial landscaping, which provides an inimitable blend of woods, water, hills, and architecture. The Summer Palace covers more than 800 acres, four-fifths of which consists of lake, the remainder being man-made hillocks. More than 100 buildings—halls, towers, pavilions, bridges, and pagodas—lie scattered throughout the park; a marble boat, two stories high and some 80 feet long, located at the northwest corner of the lake, is one of its attractions. Connecting the buildings and courts along the shore of the lake are a series of richly painted covered promenades.

Peking Zoological Gardens is located on the western outskirts of the city, covering an area of 175 acres. The zoo was established toward the end of the 19th century and was named the Garden of Ten Thousand Animals. It is the largest zoo in the country with more than 3,000 animals from all parts of China and the world residing in captivity there.

Peking Workers' Gymnasium, which seats 15,000, is the largest and most complete athletic facility in China. Higher than a conventional eight-story building, it presents a facade of wide, gleaming windows set in light-green walls. Spectators may enter through gates on three of its sides, the north, east, and west sides; the south side is rimmed with practice rooms. The facility is used for basketball, volleyball, badminton, table tennis, gymnastics, fencing, weight lifting, as well as other sports. It is also used for large concerts and mass acrobatic performances.

For outdoor sports, the park located on the bank of the Shih Ch'a Hai (Lake of Ten Monasteries) is the largest open field in Peking. The park includes four indoor and outdoor swimming pools, a sunbathing ground, and an artificial lake for rowing.

The Peking Workers' Stadium, where soccer games and field and track events are held, is a large compound located to the east of the Imperial City, just outside the wall.

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(S.-d.C.)

Pei Hai  
Park



Pei Hai Park in central Peking. In the background is the White Pagoda, which dates from the Yüan dynasty.

roughly north and south within the Imperial City. Pleasure grounds, lakes, and buildings have existed on this site for 800 years. As the lakes were deepened and dredged, the excavated earth was used to build hillocks and islands of great beauty. In 1651, a Manchu emperor built the White Pagoda, the most striking landmark in the park, on the top of a hill. Many of the buildings in the park are used for serious pursuits, as well as recreation. They include an Institute of Research on the History of Chinese Classical Literature and a Natural History Museum, as well as a branch of the National Library. The lake in Pei Hai Park is crowded with rowboats in summer and freezes over to become a natural skating rink in winter.

Coal Hill Park, also known as Mei Shan Park, is a man-made hill, more than a mile in circumference, located north of the Forbidden City. The hill, from the top of which a spectacular panorama of Peking can be seen, has five ridges, with a pavilion on each. The hill was the scene of a historical tragedy when, in 1644, at the end of the Ming dynasty, the defeated Ming emperor hanged himself on a locust tree on its east slope; the tree is still standing and may be seen there to this day, located amid ancient pines and cypresses. In the northern part of Coal

The  
Summer  
Palace

## Pelecaniformes

The order Pelecaniformes comprises a number of diverse groups of aquatic birds that share the common characteristic of webbing between all four toes. There are three main groups (suborders): Phaethontes, the tropic birds; Fregatae, the frigate birds; and Pelecani, the pelicans, boobies (including the gannet), cormorants, and anhingas (or darters). All are relatively large birds: they range in length from about 40 centimetres or 16 inches (excluding the elongated central tail feathers) in the white-tailed tropic bird (*Phaethon lepturus*) to 1.8 metres (6 feet) in the Da'lmatian pelican (*Pelecanus crispus*).

### GENERAL FEATURES

In terms of their way of life, the pelecaniform birds fall into four adaptive groups: frigate birds—long-winged masters of piracy and aerial pursuit of surface-living marine prey; tropic birds and boobies—wide-ranging flyers that capture prey underwater by plunging from a height; pelicans—large, large-billed, long-necked, buoyant birds that fish mostly by reaching down while swimming at the surface; cormorants and anhingas—heavy-bodied, long-necked, underwater swimmers, respectively pursuing and lying in wait for their prey below the surface. The anhingas are largely confined to freshwater; pelicans and cormorants occur in both freshwater and marine habitats; and the other groups are entirely marine.

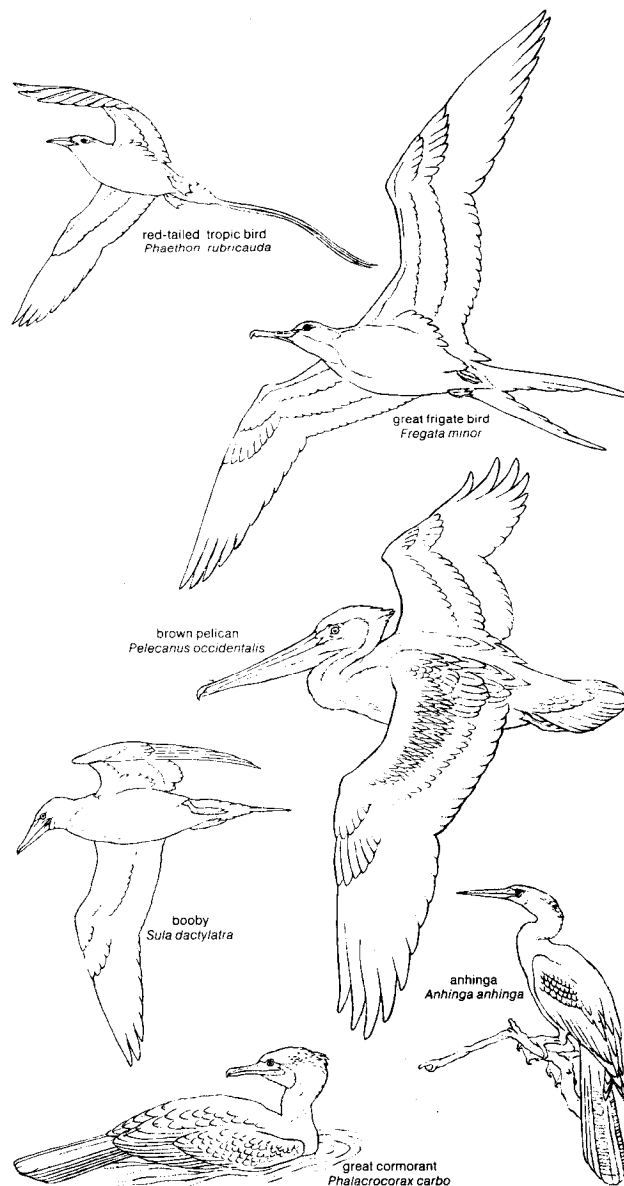
Production of guano as fertilizer

**Importance to man.** Most pelecaniform birds are of rather little significance to man, but the guano (excrement) of cormorants, boobies, and pelicans is an important fertilizer. Exploitation of old accumulations of guano reached its peak in the mid-19th century, and since then only the current production of guano has been available in most areas, but even this provides a substantial resource where the bird populations are large. There were an estimated 18,000,000 guano birds on the coast of Peru early in the 1960s. Of these, about 15,000,000 were guanay cormorants (*Phalacrocorax bougainvillii*), and the remainder were Peruvian boobies (*Sula variegata*) and brown pelicans (*Pelecanus occidentalis*). The harvest of guano at that time amounted to about 180,000 tons per year. The guano birds in the area feed largely on the Peruvian anchovy, and now that this fish is directly exploited on a large scale there is some competition between the birds and the fishing industry. In Southwest Africa artificial platforms have been constructed in coastal lagoons and on an offshore reef, greatly facilitating the collection of guano.

Pelicans, feeding on fish from inland and coastal waters, are among the animals whose diet tends to ensure that they will accumulate residues of insecticides (especially DDT) in their bodies. It recently has been found that among the physiological effects of these substances on birds are changes in calcium metabolism that result in their laying eggs with abnormally thin shells, or no shells at all, with the result that these eggs usually break before hatching. Effects of this kind have entirely prevented the successful reproduction of brown pelicans on the California coast during recent years, and some populations elsewhere are also showing adverse effects.

**Distribution and abundance.** Pelecaniform birds occur all over the world except in parts of the interior of North America, Africa, Asia, and Australia, in the high Arctic, and in most of Antarctica. Two groups, the tropic birds and frigate birds, are essentially confined to the tropics; the boobies, pelicans, and anhingas are widespread in the tropics but also penetrate far into the temperate zones; and cormorants breed from the Equator to the Arctic Circle and the Antarctic Peninsula.

The tropic birds are the most pelagic (free-flying over open ocean) of the pelecaniforms and can be seen even in the most unproductive central parts of tropical seas. Some boobies and frigate birds are found far out at sea, but most of them return to land to roost at night. Pelicans, cormorants, and anhingas do not venture far from land but may commute some distance between roosting or breeding places and their feeding grounds.



Representative Pelecaniformes.  
Drawing by R. Keane

### NATURAL HISTORY

**Reproduction.** The breeding of pelecaniform birds is essentially restricted to places free of mammalian predators. Tropic birds, boobies, and frigate birds typically breed on oceanic islands or on small islets and stacks off continental coasts. When man has introduced predators (such as cats) to isolated islands, pelecaniforms and other marine birds have often been eliminated from their traditional breeding grounds. On Ascension Island and St. Helena in the South Atlantic, for example, tropic birds, frigate birds, and boobies, which used to breed in large numbers on the main islands, have either been exterminated or driven to nesting on small offshore islets. Pelicans and cormorants are not normally found on islands far from continental land but breed on islands in lakes or offshore, or in other protected sites such as trees standing in water or cliffs. Anhingas breed in trees or bushes close to the sheltered waters where they feed.

Pelecaniform breeding, whether on the ground or in trees, is typically colonial, apparently because of the scarcity of safe places. If they are to breed at all, all the birds of an area must crowd into the available space. In practice, most colonies have a fairly definite upper limit of density determined by the distance that an incubating

Breeding grounds