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Supplement to Volume One

NEW LIGHT ON PREHISTORIC CHINA

CHÊNG TÊ-K'UN

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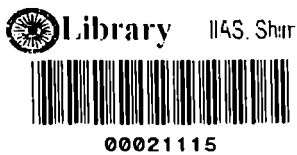

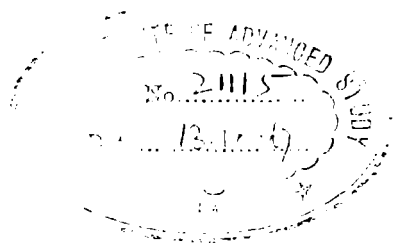

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Preface

EVER since 1950, China has been earnestly excavating her ancient past. After several years of intensive research I was able to construct in *Prehistoric China* a rather coherent picture of her prehistory by piecing together the published accounts of the discoveries against the country's unique geographical background and filling in the gaps by inferences. The book was published in 1959 and was well received. It went out of print early this year and the publisher is issuing a second impression to meet the ever-increasing demand.

Since *Prehistoric China* was written, archaeology in China has been progressing rapidly. Reconstructions that are taking place throughout the land have brought the study into the limelight. Hundreds of young archaeologists have been trained and they are organized into field teams that can be sent to any part of the country to co-operate with the local workers. They have been digging in every province, exploring old sites, discovering new ones and producing reports, mostly by group discussion, with bewildering rapidity.

In 1962 the Institute of Archaeology in Peking brought out in Chinese a summary of field-works carried out so far in China, entitled *Archaeology in New China* (**G**). Like a large number of modern archaeological reports in China the book was produced by a team, consisting of 32 archaeologists, young and old, representing 14 research institutes, museums and field parties, under the editorship of the Institute. They took into consideration a total of 579 reports, some of which are still in manuscript form. The new data are presented in three parts, named after the three stages of social evolution, recently championed in Chinese historical research. They are the *yuan-shih* Primitive Society in the prehistoric times, the *nu-li* Slave Society in the Shang and Early Chou periods, and the *fêng-chien* Feudal Society in the Late Chou and subsequent dynasties. But throughout the book the editorial team appear to be more concerned with recording the new discoveries and discussing the numerous problems in their own field than just trying to prove a theory in historical research.

Part One of *Archaeology in New China* which deals with the prehistoric period uses the material up to the end of 1960. It is organized in the same way as in *Prehistoric China* by geographic groupings. This shows that as a whole

the general picture which I sketched in 1957 still holds good. However, the new discoveries present much rich data and a number of these have rendered some of my earlier conclusions obsolete. Therefore, on the occasion of the second impression of *Prehistoric China*, it seems appropriate to present a supplement which sets out the new discoveries in the various regions up to the end of 1964 and brings our knowledge of prehistoric China up to date. This is entitled *New Light on Prehistoric China*, and may serve as a summary of the entire period.

In preparing this survey of recent finds I was deeply indebted to the field archaeologists who have made their discoveries available to the public regularly. I wish them good luck and success in their future undertakings and look forward to the day when a fuller picture of prehistoric China is presented.

I would also like to take this opportunity to express my sincere gratitude for the kind evaluation and encouragement of the many friends and critics who have taken the trouble to write and to review the first impression of the book.

CHÊNG TÊ-K'UN

November 1965

Contents

List of Illustrations

I. Pre-Palaeolithic Period

K'AI-YUAN FOREST APE

In the geological sense Human China began in the Pliocene. Recent investigations seem to show that South China was a favourable home for some ape-like animals which were the common ancestor of ape and man. In 1957 ten fossil teeth of such an animal were unearthed associated with the remains of a *Mastodon* elephant in a Pontian coal bed in K'ai-yuan, Yunnan. The deposit may be dated as Early Pliocene, some 15,000,000 years ago. As the region was covered then by a forest the ancient animal is given the name: *K'ai-yuan Forest Ape* (**G**, 3).*

GIGANTOPITHECUS (*PC*, 14–16)

More important discoveries have come to light in the karst region of Kwangsi. The human and animal fossils and deposits in the numerous limestone caves give evidence that they were formed in the Pleistocene when the climate here was favourable for human and animal habitation. The vertebrate fossils further provide some valuable data to classify these caves vertically into three tiers up to 100 metres of the river level. Unlike the limestone fissure complex at Chou-k'ou-tien in North China, the erosive action of rivers in the soft limestone and the rise of the earth's crust in Kwangsi were responsible for first making and then moving the earlier caves to such a high altitude. It has been ascertained that the upper row of caves belonged to Lower Pleistocene; the middle row, Middle Pleistocene; and the lower row, Upper Pleistocene.

The most interesting discovery in these caves is a home of *Gigantopithecus*. It is a long and narrow cave with two entrances some 90 metres above the ground in Liu-ch'êng. On the dwelling floor fossils of the giant ape, notably

* All references in the text are in parentheses. The bold or italic letters refer to the books or journals under those letters in the Bibliography (p. 43). Where three numbers follow a letter, for example (**D**, 64, 2. 5–7), the first refers to the year, the second to the number, and the third to the page of the journal.

three jaw bones, were found in association with fossils of deer, pig, tapir and horse as well as *Trilophodon seridenstoides* and *Stegodan preorientalis* elephants. They were probably carried up there by the giant ape. An examination of the crown of its teeth shows that, unlike the ape who is strictly vegetarian, *Gigantopithecus* lived on a mixed diet of meat and vegetables. The mandible, slightly bent and curved, is large and thick and it differs from both the horseshoe-shaped jaw of man and the long U-shaped jawbone of modern ape. It shows that the *Gigantopithecus* jaw possessed more of the basic characteristics of ape than those of man, but it was closer to man than any other ape. The abundant food supply might have contributed towards its enormous growth, but the favourable environment was also responsible for the incapacity to develop its forelimbs and to use tools, resulting gradually in the final extinction of the species. The location of the cave and the associated fauna both indicate that *Gigantopithecus* lived in Lower Pleistocene about a million years ago. (**D**, 58. 1. 17–19; 63. 4. 5–7; Pei Wen-chung, *Excavation of Liucheng* Gigantopithecus *cave and exploration of other caves in Kwangsi*, Peking, 1965.)

II. Lower Palaeolithic Period

KÊ-HÊ CULTURE

Apart from the well-known Chou-k'ou-tien site, our knowledge of the Lower Palaeolithic culture is now enriched by several new sites. The earliest and most extensive one is Kê-hê, located in the southern tip of Shansi where the river Huangho, flowing from the north, turns sharply eastwards. The area, stretching for more than ten kilometres, is bisected by a canyon in which flows a tributary of the Yellow River. Eleven localities were investigated in 1960 and 13 species of animal fossils and 138 pieces of stone artifacts were collected. These were found embedded in gravel and marls beneath a layer of 20 to 40 metres of Red Earths. A typical section of the strata shows a bottom layer of reddish-brown marly clay dating from Early Pleistocene with marked erosion on the surface. Above this is the gravel layer with the artifacts and fossils. Over the gravel layer are layers of cross-bedded sand, fine sand and red clay, which are generally regarded as the strata of Peking Man, representing Middle Pleistocene. The top layer, consisting of gravel and sandy loess, belongs to Upper Pleistocene.

The dating of the Kê-hê culture as Early Middle Pleistocene is supported by the palaeontological data. The most striking mammal fossil is the *Stegodan ʒdanski* elephant which is known to be from Pliocene to pre-*Sinanthropus* in date. Others are the *Euryceros flabellatus* and the *Euryceros pachyostus* deer which were occasionally found in the earlier localities of Chou-k'ou-tien. The *Euryceros flabellatus* pre-dates *Sinanthropus*. There are also some *Lamprotula antiqua* thick-shelled clams, which had long since become extinct. The data seem to suggest that some 600,000 years ago Kê-hê was a marsh which was crossed by rivers and spotted with lakes, a natural habitat for men and animals. Although no human fossils have yet been found, the numerous stone artifacts indicate busy human activities. The ancient population went to the river to collect mollusc for food and pebbles with which to make stone implements and to hunt animals. They also gathered edible plant-roots, tubers and fruits.

The stone implements of Kê-hê are made mainly of quartzite pebbles. They are fashioned by knocking the raw material against a stone anvil or striking it with a stone hammer or dashing one large boulder on top of another, but rarely by retouching. Several distinct types of implements have been noticed. Apart from the unretouched cores and flakes, choppers are most numerous. They all have a sharp edge with a blunt butt end for easy holding in use. Flakes which seem to have been utilized for scraping are also common. The most interesting tool is a heavy triangular point adapted from a thick stone flake with a point on one end for digging roots and other edible plants. Some small points were probably used for skinning animals or digging insects out of the tree trunks. The stone bolas, a rather standardized discoidal 'scraper', is generally 8 to 10 centimetres in diameter. It might have been used for throwing at animals in hunting. (**C**; **D**, 61. 12. 8–11; **E**, 63. 1. 32–34.)

PALAEOLITHS OF T'UNG-KUAN, SHAN-HSIEN, YUAN-CH'Ü, ETC.

Extensive exploration in Middle Huangho has brought to light many new Palaeolithic sites. Stratigraphically they may be classified into three stages: Lower Palaeolithic in the Red Earths, Middle Palaeolithic in the basal gravel of Loess, and Late Palaeolithic in the Loess Yellow Earths. Apart from Kê-hê mentioned above, many localities, notably those of T'ung-kuan in Shensi, Shan-hsien in Honan and Yuan-ch'ü and other districts in Shansi, have yielded stone artifacts in the reddish clay. They are invariably characterized by a primitive pebble-flake industry similar to that of *Sinanthropus*. The flakes are removed from pebbles either by striking with a hammer stone or by working on a stone anvil after the first flake has been removed. The striking platform is large and makes an obtuse angle with the fracture surface. The resulting flakes vary greatly in size and shape, and are mostly choppers. Yuan-ch'ü produced a large pointed flake of hornfel fashioned in the Kê-hê tradition retouched on only one face, leaving the other face, with the bulb of percussion, smooth. The artifacts from the lower levels of Red Earths are usually larger and more roughly trimmed than those recovered from the upper levels. Future excavations may show that the Lower Palaeolithic culture in North China consists of several sub-stages. (**B**, 3–28.)

SINANTHROPUS PEKINENSIS (*PC*, 14–24)

Additional fossils and stone artifacts have been unearthed at Chou-k'ou-tien, the home of Peking Man. Among the human fossils there are five teeth, one

mandible of an old female, and a forearm and a shinbone of *Sinanthropus*. The shinbone is an unique specimen, not represented in any earlier collections. It preserves a number of primitive features. In the evolution of the human race, *Sinanthropus* represents a rather advanced stage when the four limbs and trunk had already acquired human proportions. The discovery of the tibia shows, however, that the development of the hind limbs is slower than that of the forearms. This may be correlated with the primitive skull of the ape-man which has a smaller cranial capacity than that of the modern man. (**K**, 60. 1.)

Sinanthropus lantianensis

Peking Man has now a 'distant cousin' who lived not in a limestone cave such as those on the hill of Chou-k'ou-tien, but on the shores of the river and lake district of Middle Huangho. In the summer of 1963 an ape-man fossil, represented by a mandible, was recovered from the bottom of a 30-metre-thick stratum of Red Earths in Lan-t'ien, some 50 kilometres to the south-east of Sian, the capital of Shensi. The reddish clay was laid over a layer of gravel about a metre thick. The mandible was found associated with a large number of typical Middle Pleistocene mammal fossils such as those of tigers, red dogs, elephants, boar and sika deer. Over 1,000 metres away from the ape-man mandible, but in the same stratum, a quartz pebble with traces of working was also unearthed.

The size of the Lan-t'ien mandible is rather small and its teeth are well worn. It belonged to an old female. On the whole the jaw resembles, but is not identical with, that of Peking Man. Compared with it, the frontal part slants more and is a little higher, and the sides extend backward at a greater angle. Its protuberances are not so marked. The teeth are bigger than those of the female, but smaller than those of the male of Peking Man. The most interesting feature is the lack of the third molars (wisdom teeth) on both sides of the mandible and this has been found to be a congenital defect, a phenomenon which was generally regarded as to have occurred only among modern man. With the discovery of the Lan-t'ien mandible it is evident that such a phenomenon could have taken place before the appearance of *Homo sapiens*. With these morphological differences in view, the new ape-man is given the provisional name, *Sinanthropus lantianensis*.

The stratigraphical sequence, the palaeontological evidence and the characteristics of the human fossil all confirm that the Lan-t'ien remains belonged to Middle Pleistocene, corresponding to *Sinanthropus pekinensis* in

date. The bone structures of the ancient ape-men were not necessarily identical to each other. The discovery shows that there was a wide distribution of *Sinanthropus* on the North China plain. They were just as at home around the river and lakes of southern Shensi as they were in the caves of North Hopei. (**D**, 64. 2. 5–7.)

A complete skull cap of *Sinanthropus lantianensis* was found in sediments in the open near Kung-wang-ling to the east of the Lan-t'ien city in 1964. On 31 May 1965, a scientific forum of over 200 scientists was held in Peking to receive the preliminary reports on the new finds made by palaeoanthropologist Woo Ju-kang, palaeontologist Chow Ming-chên and archaeologist Chia Lan-po. A brief summary of the reports has been published as follows:

The skull was judged to have been that of a female some thirty years of age. The skull cap is broader than that of an ape. The internal surface of the frontal bone has a pronounced frontal crest. There is a clear demarcation between the anterior surface of the upper jaw (maxilla) and the floor of the nasal cavity, and marked anterior nasal spine. All these features are peculiar to humans. Its upper alveolus arch and molar teeth are different from the *Australopithecus* in form.

Compared with the skulls of Peking Man (*Sinanthropus pekinensis*) and Java Man (*Pithecanthropus erectus*), the Lantian skull has a cranial wall of extraordinary thickness, massive supraorbital ridges, a pronounced postorbital constriction, a flat frontal squama, a lower skull vault, and a small cranial capacity, around 780 cc. All this indicates that the Lantian ape-man is more primitive than Peking Man and the Java Man from the Trinil beds of Java. It seems morphologically to be closer to the most primitive type of Java Man (*Pithecanthropus robustus*) from the Djetis beds of Java.

These and other facts lead the scientists to believe the Lantian ape-man to be the most ancient human of the ape-man type so far discovered and that he lived in the early Middle Pleistocene period, around 500,000 to 600,000 years ago. [**E**, 65.9.45; cf. F. P. Lisowski in *Man*, 65.7–8.119, and Woo Ju-kang in *Current Anthropology*, 66. 2. 83–86.]

III. Middle Palaeolithic Period

Palaeoliths of Ning-wu, Shuo-hsien, etc.

The fossil remains and stone artifacts which have been recovered from the upper levels of Red Earths and the basal gravel of Loess in North China are generally regarded as Middle Palaeolithic. Many localities belonging to this period have been investigated in Shensi, Shansi and Honan. Yang-chuang in Ning-wu and Hou-kê-ta-fêng in Shuo-hsien, both in northern Shansi, may be taken as examples. The stone artifacts and mammal fossils of these two districts were all recovered from the basal gravel. The implements are generally similar to those of *Sinanthropus* in types and in techniques of production while the fossils are characterized by a fauna which had survived from Middle Pleistocene. The three localities of Hou-kê-ta-fêng yielded no less than 200 stone tools which are mainly of pebbles of coloured quartz. There is a marked increase in the number of scrapers which are usually medium or small in size and have neat secondary trimmings at the cutting edges. The excavators maintain that they were worked by an improved technique employing perhaps a wooden striker. In this respect the Middle Palaeoliths may be distinguished from those of the Lower period. (**B**, 32–39.)

Homo neanderthalensis

There is a wide distribution of the Middle Palaeolithic man in China. It is now represented by three groups of fossils in the three river basins of China Proper. In the Huangho valley there is the Ordos man, excavated at Ti-shao-kou in Inner Mongolia. The remains consist of a fragment of its skull and a section of the femur (**P**, 3). In the Yangtse valley the Ch'ang-yang Man has been found in a cave at Chao-chia-yen in Hupei. The excavation yielded a fragment of an upper jaw with two teeth and a loose front molar. In the Sikiang valley, a rather complete skull of a middle-age male has been unearthed from a cave at Ma-pa-hsiang in Shao-kuan, Kwangtung (**D**, 63.4. 5–7). This is known as the Ma-pa Man. Stratigraphical and faunistic data show that Ma-pa Man is the oldest type, dating from Late Middle Pleistocene,

150,000–200,000 years ago, while Ch'ang-yang Man is the youngest, dating from Early Upper Pleistocene, about 100,000 years ago. Morphologically they are all recognizable as *Homo neanderthalensis* having transitional features between the typical Neanderthal Man of Europe and *Homo sapiens*. (**G**, 5.)

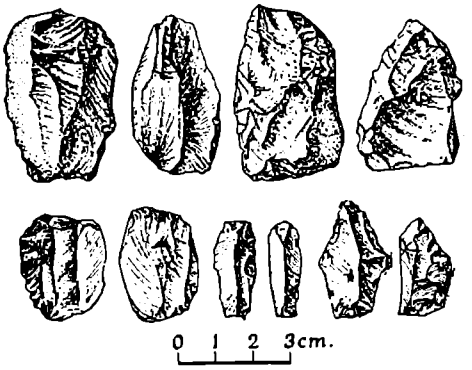

Fig. 1. Microlithic tools of Hsiao-nan-hai, Honan (*see p.* 10). After **G**,6.2

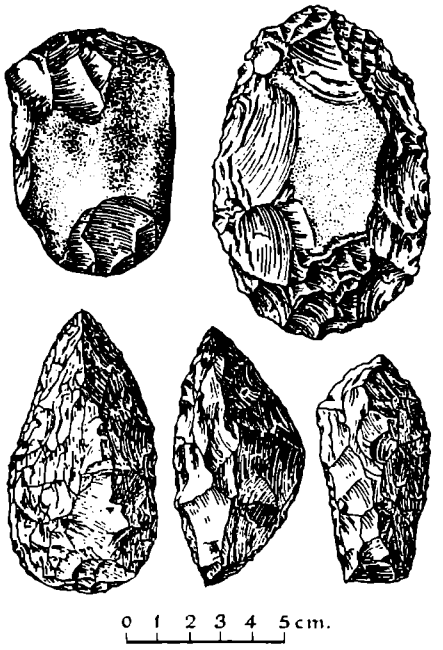

Fig. 2. Chipped pebble choppers and Ch'ing-shui-ho points of Inner Mongolia (*see p.* 11). After **G**,6.3

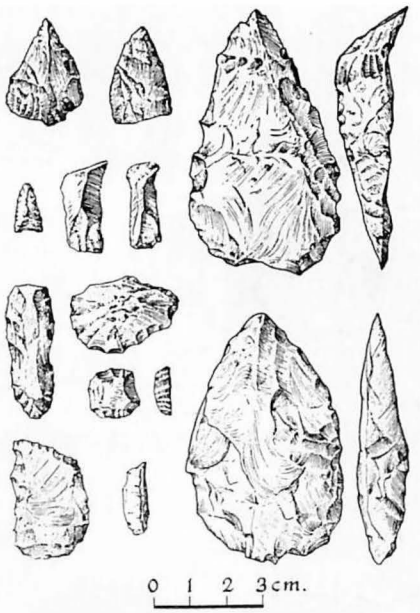

Fig. 3. Microlithic tools of Ta-li, Shensi (*see p.* 14). After **G**,39.20

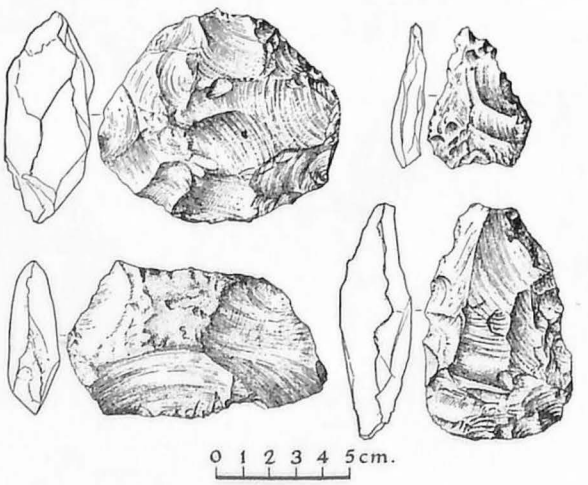

Fig. 4. Chipped stone tools of Hsi-chiao-shan, Kwangtung (*see p.* 14). After **G**,34.15

IV. Late Palaeolithic Period

TING-TS'UN MAN AND CULTURE (*PC*, 24–29)

Our knowledge of the Late Palaeolithic North China has been greatly enriched by the reassessment of the Ting-ts'un finds. In the preliminary accounts of the site, Ting-ts'un was taken as a Lower Palaeolithic culture dating from Middle Pleistocene. But after a detailed study of the sequence of geological stratification, the assemblage of the mammal fossils and the characteristics of the lithic industry, the final report of the excavation concludes that it belonged actually to the Loessic Upper Pleistocene.

There are generally three terraces on the banks of the river Fên-ho. Terrace I, the oldest, has a top layer of true aeolian loess 3 to 5 metres thick, and beneath this is a thicker layer of ten metres which is composed of a reddish loessic material of chiefly aeolian dust mixed with rewashed Yellow Earths. Terrace II slopes down gently toward the river about 100 metres above the present river bed. It consists mainly of finely stratified sandy layers, intercalated with layers of greyish and greenish marls with fine loessic material on top. Terrace III, consisting of sand and gravel layers, forms the bank of the present river and is about 20 to 30 metres high. All the Ting-ts'un stone artifacts and mammalian fossils have been found in the upper part of the sand-gravel layers of this terrace. This is composed, as at Locality 100, of a 5-metre layer of fine, unstratified, yellow loessic material on top and gradually more sandy, finely stratified greenish layers below. A granular analysis of the particles in the top layer, which measured between 1/4 to 1/8 millimetre in diameter, indicates that the deposit was laid not by aeolian agency, nor by torrential water, but most probably by calmer water from washings from the higher levels. There seems no doubt that this top layer of loessic material was deposited in a rewashed condition, and hence the sand-gravel layers underneath can be taken to correspond only to the Loessic period of North China or that of Sjara-osso-gol in Inner Mongolia (*PC*, 32–34). The age of the top layer is also Loessic because a fossil of *Bos primigenius*, a typical Loessic ox, has been found in it.

The 28 forms of mammalian fossils from Ting-ts'un are actually of a single group. Among them four, namely *Rhinoceros merki*, *Coelodonta antiquitatis* rhinoceros, *Pseudaxis grayi* deer and *Palaeoloxodon tokunagai* elephant, are archaic survivals from Middle Pleistocene, generally associated with *Sinanthropus*. Eight others, *Equus hemionus*, *E. prjewalskyi* horses, *Rhinoceros tichorhinus*, *Elephas camadensis*, *Sinomegaceros* cf. *ordosianus*, *Sinomegaceros sp.* deer, *Bos primigenus* ox and *Mammuthus primigenus* elephant, are common in the Sjara-osso-gol deposits. Three other species in the collection, namely *Canis procyonoides* dog, *Siphneus fontanieri* rat and *Elephas* cf. *indicus* deer, may be regarded as recent forms. Finally, the three human teeth from Locality 100 are also closely related to the upper incisor reported from Sjara-osso-gol in 1923 (*PC*, 33). The fauna assemblage shows clearly that the Ting-ts'un deposit was not of the Red Earths but of the Loessic North China.

Although equivalent to the Sjara-osso-gol culture in geological stage, the Ting-ts'un stone artifacts are made of different materials, mainly hornfel, in a more primitive tradition. The technique was derived from the Kê-hê industry as the flakes are large, heavy and crude, bearing twin bulbs and an oblique platform. They look somewhat like the Clactonian flakes of western Europe, but fine secondary chippings are rare and recognized types few. The industry differs also from the Chou-k'ou-tien tradition in the use of different flaking and chipping techniques and in the absence of bi-polar implements. It can be easily differentiated from the Ordos industry which is characterized by the making of small artifacts, points, scrapers and gravers. The Ting-ts'un industry was indeed an unique survival of a Lower Palaeolithic culture into the Loessic Upper Pleistocene. (**M.**)

Microlithic culture of Hsiao-nan-hai and Ku-lung

Apart from Ting-ts'un, Sjara-osso-gol and Upper Cave (*PC*, 34–37), North China plain has yielded yet another Upper Palaeolithic culture. The remains of a new industry have been found in a cave at Hsiao-nan-hai in An-yang, Honan, in 1960. The cave was filled with the typical Upper Pleistocene Yellow Earths and in it a series of fine microlithic implements was found associated with a Loessic fauna, characterized by the fossils of *Rhinoceros tichorhinus* and a quantity of broken eggshells of *Struthiolithus* ostrich. The raw materials are mainly flint and a small quantity of quartz. The artifacts are all meticulously chipped in the Gobi tradition and the common artifacts are small cores and flakes finely trimmed into scrapers and points (Fig. 1, facing p. 8). The same type of microlith has also been excavated from a loess

formation at Ku-lung in Yang-ch'êng, Shansi, in 1958. It is now clear that the Gobi microlithic industry was not limited to regions outside the Great Wall. Some bearers of the Gobi culture had made their homes in the Huangho valley way back in Upper Pleistocene. (**K**, 60. 1; **G**, 6; *KKHP*, 65. 1. 1–49.)

Late Palaeolithic cultures in Inner Mongolia and Tibet

In Inner Mongolia many new Late Palaeolithic sites yielding a large quantity of finely chipped stone artifacts have been encountered. The raw material is mainly quartz pebbles which are flaked, chipped and finely retouched into choppers, points, scrapers, bi-facial artifacts and globular hammers. The industry is basically in the pebble-flake tradition with choppers and bolas as its main output. But new techniques, especially the meticulous, secondary retouching, are in service, producing a typical triangular implement with retouches on both faces to form a sharp point at one end and a cutting edge on one side. A large number of such pointed flakes has been reported at Ch'ing-shui-ho and as they are so standardized, the implement is known as the 'Ch'ing-shui-ho point' (Fig. 2, facing p. 8). The globular hammer might have been used in the trimming process. This is a typical working implement of the microlithic industry and it could thus be concluded that these widely scattered finds outside the Great Wall represent a mixed culture involving both the Gobi microlithic and the Huangho pebble-flake traditions. Like all other discoveries in the Mongolian and Central Asiatic Steppe and Desert Zone, the Inner Mongolian artifacts are all surface finds and there is yet no geological foundation to support a chronological sequence. (**K**, 59.; 60.2; *WW*, 59. 10. 15–18.)

Some Palaeolithic-looking chipped stone artifacts have also been reported from Chinghai and Tibet. They are all surface finds and geological data are lacking, yet the archaic implements are there to indicate that some ancient men had actually penetrated westward up to the 'roof of the world'. Tibet was evidently not unpopulated in the Pleistocene period. (**J**, 58. 2/3.)

Homo sapiens

The final report on the Tzŭ-yang Man (*PC*, 37) has been published. The human and vertebrate fossils were found on the right bank of the river Huang-shan-hsi which was responsible for the formation of a small alluvial plain at the site and is now in the old stage of development. The bank itself is an accumulation of fine clay containing decayed local organisms, the grains of which become coarser the deeper they are in the ground. The entire

section may be divided roughly into four layers. The top layer of yellowish red clay averaging 6 metres thick is quite similar to the North China loess. Below this is a layer of dark grey clay with abundant decayed organisms and some sandy layers. The third is a layer of yellowish sand and small pebbles, 1 to 1·5 metres thick with a large number of fossil trees. The fossil bones including a human skull were found in this layer. In the bottom layer the pebbles gradually increase in size and sand becomes rare. It contains no bones or trees. The sequence shows that during Pleistocene the river flowed first at torrential speed, but later became calmer and frequently changed its course, a situation very similar to the Loessic North China. In Upper Pleistocene the river became meandering, bringing in small pebbles and sands for the third layer. Animals and men were living nearby at this stage and their bodies became buried in the sand and gravel deposits together with those already fossilized and redeposited from the collapsed banks of the river.

The fauna of Tzŭ-yang may be classified according to the fluorine content, specific gravity and the state of preservation into two groups. The older fossils, represented by *Stegodon orientalis* elephant, *Rusa unicolor* deer and *Rhinoceros sinensis*, were generally Middle Pleistocene in date while the younger fossils such as *Homo sapiens*, *Muntiacus* deer and *Mammonteus primigenius* elephant, Upper Pleistocene.

The skull of Tzŭ-yang Man belonged to a middle-aged female. It is so complete that the values of the calvarial height index and the bregma index can be calculated and the bregma angle and the frontal angle measured. They indicate that Tzŭ-yang Man was an early form of *Homo sapiens*, more primitive than Cro-magnon Man of Europe and Upper Cave Man of North China. It represents an early type of the Neanthropic stage in China, bearing some resemblances to Upper Cave Man on the one hand and *Sinanthropus* on the other. (**L.**)

Tzŭ-yang Man is not the only *Homo sapiens* found in South China. In 1956 a fragment of the skull of an old male was unearthed in a cave at Ch'i-lin-shan in Lai-pin, Kwangsi. It is known as Lai-pin Man (*PC*, 37). Two years later a rather complete skull and some bones of a middle-aged male were excavated in a cave at T'ung-t'ien-yen in Liu-chiang, also in Kwangsi. This is known as Liu-chiang Man. A comparative study of the three *Homo sapiens* fossils from South China shows that they were in various stages of development, Liu-chiang Man being the oldest, followed by Tzŭ-yang Man and Lai-pin Man in chronological order. They all bear some primitive features, characteristic of the Mongoloid race, giving the impression that these *Homo*

sapiens were in an evolutionary stage towards racial specialization. It is thus suggested that the Mongoloid race might have its cradle in South China. With these new data for comparative study the validity of Weidenreich's classification of the Upper Cave population into three races (*PC*, 34–35) may be questioned. Like the *Homo sapiens* in South China the Upper Cave population are also of transitional types, fundamentally a Mongoloid but in various degrees of specialization. They may be regarded as some of the youngest *Homo sapiens* in China. (**K**, 60. 2; **G**, 5–6.)

The industries of *Homo sapiens* in South China may also be mentioned. A bone awl, 10·82 centimetres long, was found in the same layer as Tzŭ-yang Man. It is made of a triangular bone splint. The lower end had been broken off before it was fossilized and the surface was scraped with a piece of stone and the tip was cut into a short point, blunt and polished through long usage. The technique of manufacture is characteristically Late Palaeolithic. In Kwangsi the human fossil of Lai-pin was found together with a quartz chopper and two stone flakes. In Liu-chiang no stone artifact was met in the excavation of the fossil deposit, but some chipped stone tools have been reported from other caves nearby. (**K**, 60. 1; **G**, 6.)

V. Mesolithic and Early Neolithic Periods

Our knowledge of Mesolithic and Early Neolithic China remains rather vague. Some finds of the Tou-chi-t'ai culture in Pao-chi and the Sha-yuan culture in Ch'ao-yi and Ta-li (Fig. 3, facing p. 9), all in Shensi (*PC*, 68–69), exist, but concrete and detailed data of this stage in North China are still lacking. The general impression is that the Chinese world was now clearly divided into two spheres, the Gobi Steppe north dominated by the microlithic culture which began to use a brown pottery with incised patterns, and the wooded south where the pebble-flake culture associated with a grey or red cord-marked pottery prevailed. They were both survivals of the Palaeolithic past, and their struggle against each other occurred mainly in Middle Huangho.

Hsi-chiao-shan culture

Early Neolithic of the wooded south may now be represented by a large number of sites investigated in Kwangtung and Kwangsi. New data confirm that Kwangsi Cave Dwellers, formerly regarded as Mesolithic (*PC*, 48–50), were actually Neolithic in date. The contents of this type of remains, many in caves, though mainly of chipped stones in the pebble-flake tradition, include polished stone artifacts and pottery fragments of a coarse gritty ware. The site of Hsi-chiao-shan in Nan-hai, Kwangtung, is typical. The ancient dwelling site covering an area of twelve square kilometres was located on a circular hill in the Sikiang delta. The stone artifacts are mainly chipped flake tools with either secondary trimming on both sides or alternate flaking (Fig. 4, facing p. 9). The short deep scars indicate that retouching was made with a bone or wooden 'hammer'. The types of implements are the axe with a rounded or double-shouldered butt, the triangular point and the discoidal scraper. Pecking and polishing were also practised, producing axes, knives and whetstones which usually retain patches of the original chipped

surface. Fragments of pottery which are of red or black paste and decorated with cord-marks and fired at a low temperature, are not abundant. (*KKHP*, 59. 4. 1–15.)

Ma-lan-chui culture

The Early Neolithic people of Kwangtung and Kwangsi were mainly fishermen and their settlements in the open or in caves were usually strewn with shells, burnt bones and ashes. Along the sea coast the people seemed to have led a richer life. The shell-mounds of Ma-lan-chui in Tung-hsing, Kwangtung, are good examples. Here the chipped stone implements are heavy choppers, points, handaxes and net-sinkers, while the polished artifacts include shouldered axes, adzes, chisels, mealing stones, pestles and whetstones. There are also fragments of bone arrowheads and awls. The pottery is red or black in colour, coarse and gritty in texture, decorated mainly with cord-marks and rarely with mat impressions and incised patterns, and baked at a low temperature. It is also possible that Ma-lan-chui represents a more advanced type of the Hsi-chiao-shan culture. (*KK*, 61. 12. 644–688; cf. 11. 577–598.)

This type of Early Neolithic culture has a wide distribution also in the Yangtse valley. They might have continued to flourish in the Late Neolithic days and will be described below.

VI. Late Neolithic Period

GOBI CULTURE (*PC*, 52–59)

Neolithic China north of the Great Wall still presents a puzzling problem. Extensive investigation has been made from Northern Manchuria through Inner Mongolia and Sinkiang to Tibet, and hundreds of additional sites have been listed, but the picture still remains vague and indistinct. The standard finds are mainly microliths in the Gobi tradition, Brown Pottery with comb and other markings, and some bone artifacts, shell and bone of fish and animals. Local variations can be observed, but they are as before not distinct and abundant enough to be ascribed any independent development. The general impression is that the vast territory was then teeming with hunter-fishermen who moved from station to station, and when favourable situations were encountered, coinciding with satisfactory climate, they tried their hands at agriculture. Under such conditions, new elements such as polished stone and other agricultural implements, advanced pottery techniques and underground dwelling pits and stores appeared. Most of these may be correlated with the Late Neolithic Huangho. As in the Yellow River basin cultural mixing often took place, probably as the climate fluctuated. Stratigraphical data are few but as a whole, sites with Yang-shao, Lung-shan and Hsiao-t'un influences are younger than those of pure Gobi stock. The extent of the enormous cultural area in China extends now into Tibet and the situation continued into historical times. (Cf. **G**, 36–42.)

YANG-SHAO CULTURE IN MIDDLE HUANGHO (*PC*, 73–86)

The beginning of Yang-shao culture is still unrecovered in the river terraces of Middle Huangho. Its origin continues to provide an exciting exercise for imaginative students of ancient China. (Cf. **A**, 151–168.) New data that have been accumulated in recent years have indeed revealed some of the main characteristics of the culture, giving a more complete picture of its nature and the extent of its influence. Yang-shao was one of the two major cultures of Late Neolithic Huangho, the other being Lung-shan. So far more than a

Fig. 5. Reconstruction of House 1, Pan-po-ts'un, Shensi (*see p.* 17). After I,19.19

Fig. 6. Reconstruction of House 24, Pan-po-ts'un, Shensi (*see p.* 17). After I,21.21

Fig. 7. Reconstruction of House 22, Pan-po-ts'un, Shensi (*see p.* 17). After I,27.26

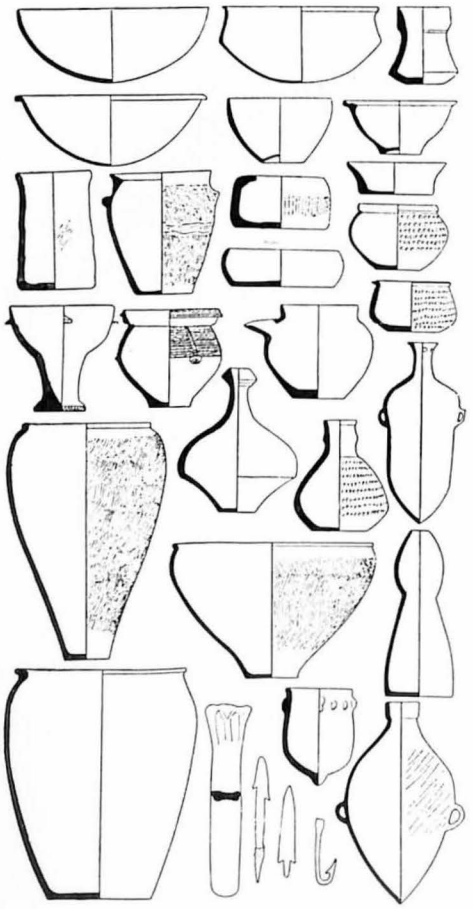

Fig. 8. Pottery vessels and stone and bone artifacts of Pan-po-ts'un, Shensi (*see p.* 18). After **G**,13.6

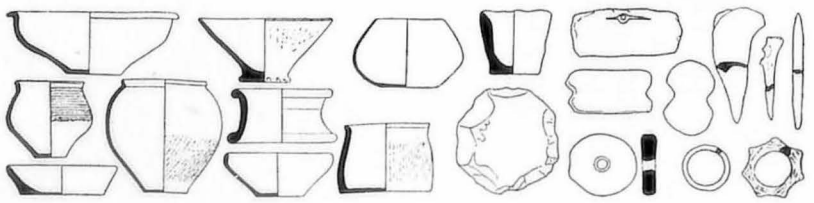

Fig. 9. Pottery vessels and stone and bone artifacts common to Pan-po-ts'un, Shensi and Miao-ti-kou I, Honan (*see pp.* 18 & 22). After **G**,13.6

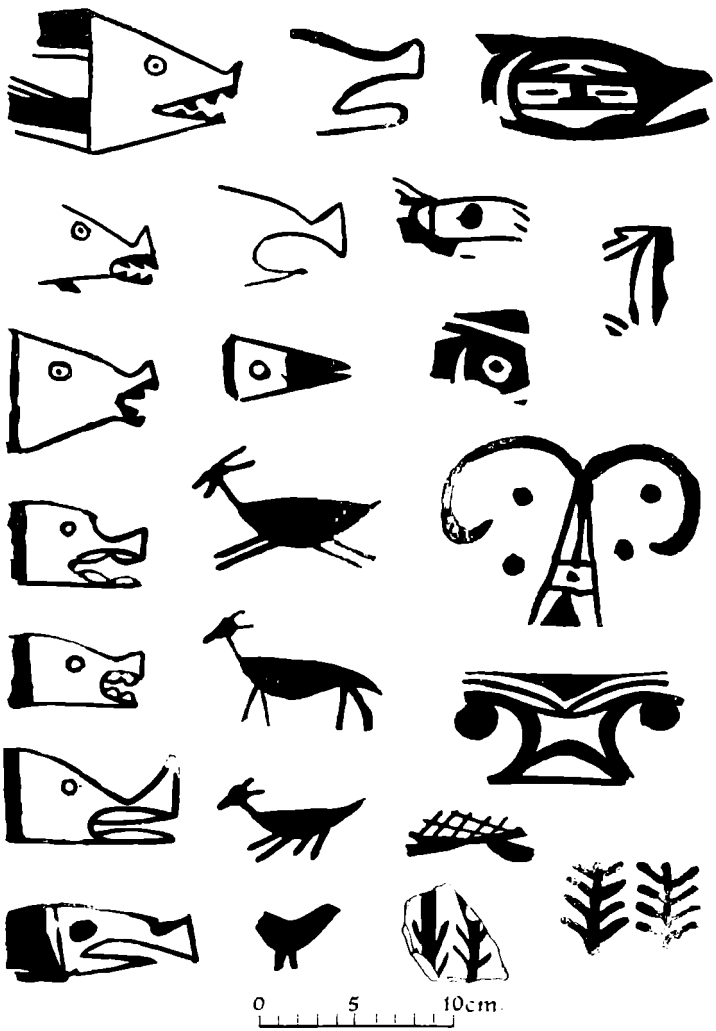

Fig. 10. Painted designs on Pan-po-ts'un pottery (*see p.* 19). After **I**,168.122

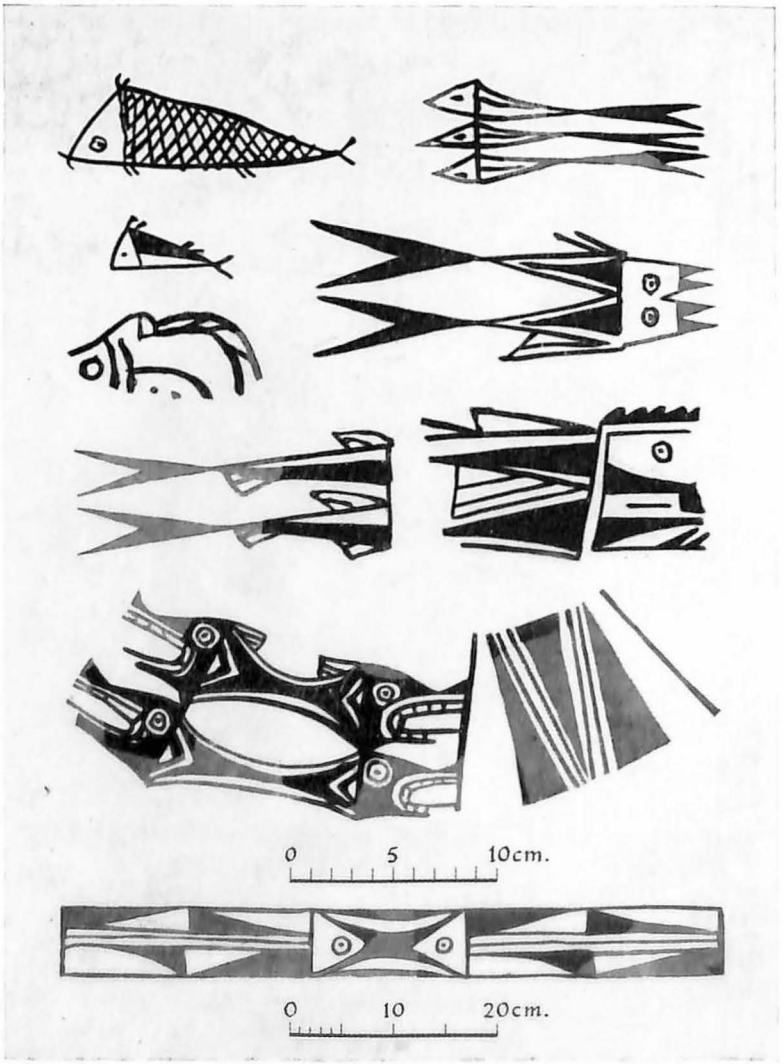

Fig. 11. Some painted fish designs on Pan-po-ts'un pottery (*see p.* 19). After **I**,167.121

thousand sites have been found and a number of important localities thoroughly excavated. They are all located on the river terraces and represent invariably a rather mature stage of the culture's development. Its centre was clearly in the region around the southern bend of the Yellow River where it takes in Fên-ho from the left and Wei-shui from the right, comprising modern eastern central Shensi, western Honan and southern Shansi, but in the outlying territories it reached T'ao-ho valley in Kansu in the west, Honan in the east, middle Han-shui valley in Hupei in the south, and Ordos beyond the Great Wall in the north. All these new discoveries show that the development of Yang-shao was not as simple as summarized in *Prehistoric China*. They have indeed rendered obsolete the classification of Yang-shao into three stages. For the present, the Yang-shao sites in Middle Huangho alone may be classified into two groups. They represent two stages and are named after two key sites, Pan-po-ts'un in Shensi and Miao-ti-kou in Honan.

PAN-PO-TS'UN (*PC*, 75–81)

The report of Pan-po-ts'un appeared in 1962. With detailed descriptions of all the finds, it is in every respect an excellent account of the excavation. It is possible now to supplement the preliminary reports with many essential facts, giving an almost complete picture of this type of Yang-shao culture.

The Pan-po-ts'un dwelling site covers an area of about 70,000 square metres. In the centre of the settlement is a large communal hall with a floor space of about 160 square metres (Fig. 5, facing p. 16). Around this cluster dwellings and storage pits forming a roughly circular settlement of about 30,000 square metres which is surrounded by a defence ditch. Beyond this ditch are the ancient cemetery and several kiln sites. Forty-six houses and over 400 post-holes and 89 fireplaces have been investigated. The houses are either quadrangular (Fig. 6, facing p. 16) or circular (Fig. 7, facing p. 16) in shape with entrances from the south. Inside the entrance is a square porch separated from the rest of the house by low walls. At the centre of the dwelling floor is a fireplace. The floor and the walls are covered with plaster of mud and straw.

The settlement was used for a long time. The houses may be classified stratigraphically into two stages, 22 to the early and 24 to the late period. Although both quadrangular and circular houses can be found in either period, early houses are all semi-subterranean in structure and mostly square in outline, and the floor with a shallow circular fireplace is smooth. Houses of the late period are often oblong in the ground plan, the fireplace deep and

circular, and the floor divided into two parts on different levels which are sometimes partitioned into several rooms. On the other hand the fireplace of the circular houses is square, shallow and flat-bottomed in the early period and gourd-shaped in the late period. It is estimated that at the height of its settlement the ancient village probably had over 200 houses with a population of between 500 and 600 people.

The Pan-po-ts'un people used more than 200 storage pits. The majority are pocket-like circular pits, each with a contracted opening on top, while others are either oblong in shape or are just circular shafts. The late storage pits are at least twice as large as the early ones, indicating that there was an increase in production in the later part of the settlement.

The defence ditch measures 6 to 8 metres in width at the top, 1 to 3 metres at the bottom and 5 to 6 metres deep. There are also two small ditches, very well built with smooth sides, in the middle of the dwelling compound. All three ditches were made in the early stage showing that there was careful planning before the site came into use. The ditches served not only as defence but also as a drainage system.

Some 8,000 pieces of implements of production have been unearthed at Pan-po-ts'un. They are made of all sorts of materials: stone, bone, horn, animal tooth, shell and potsherds. Among the farming implements are hoes, spades, knives and axes. The hunting and fishing equipment comprises arrows, spearheads, fish-hooks and net-sinkers. Other working tools range from choppers and scrapers, adzes and chisels, needles and awls, spindle whorls and 'pottery files', hammers and pestles to mealing stones, pigment mortars and knives. It is interesting to note that a large number of palaeolithic-looking pebble-flakes, choppers and bolas are found side by side with chipped-pecked-and-polished artifacts, and that polished stone tools with perforation and traces of sawing are also common.

Pan-po-ts'un has yielded more than 500,000 pieces of pottery, nearly a thousand being well preserved (Figs. 8 and 9, between pp. 16 and 17). They are mostly red in colour with some reddish-brown and a few greyish-black pieces, and may be grouped into three types. The majority, some 60 per cent of the entire collection, are of a coarse gritty ware with a rather brittle paste, and are mainly cooking utensils and storage jars. About 35 per cent are of a fine clay, consisting largely of food and water vessels. The rest are of a comparatively hard ware, tempered with fine sand, and are used as water vessels. There is also a marked tendency to make pottery vessels specifically for funerary use in the late period. With the exception of a few

modelled pots which are always small, all the vessels are hand-made by the ring-building method. The fact that there are many standardized shapes adapted to various uses, and that six kilns have been found together outside the dwelling compound, indicate that the industry had reached a high level of development. Pottery was already a well-established specialized craft.

The Pan-po-ts'un pottery takes a wide variety of decorations. Apart from the most common cord-marked design, there are basket impressions and incised and appliquéd patterns. Some of the incised designs are done by pricking with the finger-nail or other implements, making circular, triangular, square or grain-like elements. On the base of the vessel textile impressions are sometimes found.

The painted pottery vessels of Pan-po-ts'un are rather attractive. The colour is mainly black and occasionally purple or red. With the exception of some slipped ware, painting is done directly on the paste. The patterns are mostly geometric, but zoomorphic designs are also used. The latter depict the human face, some horned animals or deer, birds, fish and reptiles. Some of the herring-bone designs may be taken as botanical patterns (Fig. 10, between pp. 16 and 17). The geometric patterns, dominated by vertical lines, are composed of a wide variety of other elements, bands, triangles, slanting lines, circles and zig-zags. They may be classified according to the composition into four types: 1. Symmetrical groupings of one or more elements; 2. Asymmetrical grouping of one or more elements; 3. Bands of one identical motif at the base of the vessel; and 4. Patterns of different motifs connected in pairs. (Fig. 11, facing p. 17.)

The painted designs of the Pan-po-ts'un pottery deserve special attention. Vessels of the early stratigraphic period are decorated mainly with zoomorphic elements, while those of the late period are usually dominated by geometric patterns. The realistic fish motif appears in the early stage but exists usually in groups in the late stage. The fish and the patterns of triangles and vertical lines are the two most common designs, and a careful study shows that the latter is actually developed from the former in at least four ways: 1. By combining two or more fish in one band; 2. By isolating the various parts of the fish; 3. By blending these parts into new patterns; and 4. By modifying the parts to form new motifs which are geometric in appearance. The fish was probably connected with some ancient forms of totem worship.

The Pan-po-ts'un potter also tried his hand at sculpture. A few clay figurines of birds and animals, a small human head and some zoomorphic

handles and covers of vessels have been reported. They are crudely made in the style of primitive naturalism.

The Pan-po-ts'un people practised all sorts of arts and crafts. Impressions of textiles, mats and basket show that they produced several patterns: twilled, twill-and-wrapped, twined and check. Hairpins and beads and pendants are also common. The most interesting remains are 112 pieces of pottery with 22 different types of incised marks. A single mark may be repeated several or even dozens of times. As they are simple in structure, regular in shape and uniform in size, they were possibly some standardized symbols, and taken together with the fish, bird, animal and animal head, they might have paved the way for the invention of writing.

A total of 250 burials have been excavated. Of these, 76 belong to small children who were placed in pottery urns and buried in the settlement. The only exception is Tomb 152 in which the child was buried in a rectangular pit lined with woodwork on the four sides. This is probably the earliest wooden coffin excavated in China. The adults are buried in the cemetery beyond the defence ditch, to the north of the settlement. The majority of the tombs are irregular pits with the skeleton lying fully extended on its back and orientating to the west. There are two exceptions, one with two males and the other with four females. Among the others 15 are prone burials, with the face down, and four are hocker burials with contracted limbs. The most interesting are five secondary burials in which groups of skeletons were gathered, assembled and buried again in large pits, three with the skeletons in orderly positions and two in a rather confused state. They are all provided with mortuary furniture. These tombs seem to indicate that communal burial customs of some kind were practised not only in the primary but also in the secondary burial.

Other archaeological finds from Pan-po-ts'un show that farming was the main activity in the ancient village, millet being the main crop. There are also the remains of chestnuts, hazelnuts and pine seeds. Hunting and fishing were also popular and among the wild animals brought into the settlement were bamboo rats, water deer and sika deer. Domesticated animals were pigs and dogs. Trade contacts were maintained with other clans in the neighbourhood and raw materials such as nephrite and serpentine were imported from distant lands for local industry.

Among the Pan-po-ts'un human skeletal remains there are 3 complete and 32 partially preserved skulls, 12 mandibles, 2 of which are in association with their skulls, 7 femora, 8 tibiae, 2 humeri and 1 radius. They represent at least

61 individuals, 51 adult males and 10 adult females. The stature of the former is estimated as around 169·45 centimetres and his cranial capacity ranges from 1330 to 1450 c.c. To quote from the report:

Observations reveal that the majority of the skulls are oval and pentagonal in shape, simple in sutures, weak in browbridge, round-oval in shape of orbits, in addition to being associated with the predominance of the infantile form of pyriform aperature[*sic*], the projection of the malar bone and the inconspicuous canine fossa. All these indicate that this series of skulls is Mongoloid.

Measurements show that the male skulls are mesocranial (73.38), hypsicranial and acrocranial (77.27, 99.37) metrimetopic (fronto-parietal index 65.94). The face is characterized by the moderate size of upper facial height (7·95 cm) and small size of the bizygomatic diameter. According to the facial index, the face is leptene. The whole facial angles and the nasofacial angle show mesognathic, and the horizontal facial angles (146·7 × 136·7) are well within the limits of the variation of the Mongoloid (145–149). All the measurements of the female skulls, both absolute and relative, are smaller than those of the male, though the measurements of the maximum breadth, the least frontal breadth and the cranial index are higher than those of the latter.

The racial type of this group of people is generally Mongoloid. In comparison with the other Neolithic series such as the Indo-China series (H. Mansuy et M. Colani), Near Lake Baikal series A (Дебец) and Kansu-Honan series (Black), the Pan P'o Neolithic series bears a closer resemblance to the Indo-China series than to the Kansu-Honan series and the Near Lake Baikal series A. A comparison with such modern Mongoloid series as the South China series (Harrower), North China series (Black), Alaska Eskimo series (Hrdlička), Mongol series (Чебоксаров), Indonesian series (Чебоксаров) and Tibetan B (Morant) shows that the South China and Indonesia series are closest to the Pan P'o Neolithic series, with North China series coming next and all the rest bearing practically no likeness at all. [**I**, 252–253; cf. *KKHP*, 62. 2. 85–104.]

Apart from the Pan-po-ts'un remains, similar types of cultural deposits have been reported from many other sites. The important ones are Pei-shuo-ling in Pao-chi, Yuan-chun-miao in Hua-hsien, Hêng-chên-ts'un in Hua-yang, Shensi; San-li-ch'iao in Shan-hsien, Honan; and Tung-chuang-ts'un in Nei-ch'êng, Shansi. At Yuan-chun-miao and Hêng-chên-ts'un, the communal secondary burials are more elaborate than those found at Pan-po-ts'un. Tomb 405 of Yuan-chun-miao, for example, is a square pit of 2·1 metres sides, taking twelve skeletons (*KK*, 59. 2. 74). Tomb 1 of Hêng-chên-ts'un is a large rectangular pit, 10·4 × 2·8 × 0·7 metres deep, in which are five small pits each containing four to twelve skeletons, totalling 44 individuals. Tomb 2 of the same site has seven small compartments at the bottom of a

large rectangular pit. One of them contains three layers of skeletons one on top of the other. The total number of skeletons in this burial is 42 (*KK*, 60. 9. 7). Moreover, another rectangular burial of an old man is lined with pebbles on the four sides. This was probably the beginning of the pebble or stone grave burial in China. (*KK*, 59. 11. 591; **G**, 9–10.)

Miao-ti-kou I

The site of Miao-ti-kou is located on a loess terrace on the southern bank of a small stream, Ch'ing-lung-chien, to the south of Shan-hsien city in western Honan. It extends over an area of 240,000 square metres, of which 4,480 square metres were excavated in 1956–57 (**F**). Three levels have been recognized and they represent three cultures as follows:

Miao-ti-kou I: Yang-shao culture;
Miao-ti-kou II: Lung-shan culture;
Miao-ti-kou III: Eastern Chou culture.

The Yang-shao layer of Miao-ti-kou has yielded two rather well-preserved foundations of houses, 168 storage pits and large quantities of artifacts from which 690 pottery vessels were restored. The houses are both rectangular shallow pits with an entrance from the south. The dwelling floor measures 6 × 7 metres, the remaining wall being 0·86 metre high. They are both plastered solid and smooth with straw-tempered mud. There are many post-holes at regular intervals along the four walls and four additional ones each with several cobbles in the middle of the house serving as post base. It is evident that such houses had a pyramid-shaped roof supported by pillars—a common type of house in Late Neolithic and early historic times.

Among the underground pits, used originally as stores, which appear in large numbers in the settlement, four have been found to contain human skeletons. None of them had been provided with any funerary furniture. This shows that it was common to appropriate storage pits for burial.

The pottery vessels of Miao-ti-kou I are mainly of a fine red ware (Fig. 9, between pp. 16 and 17; Fig. 12, facing p. 24). There are also some coarse gritty red ware, fine grey ware and a few fine black-and-white wares. They are all hand-made. The majority are decorated with cord-marks, others with incised patterns, appliquéd designs and open-work, while 14 per cent of the finds are painted. The painting is generally done directly on the paste in black, but some are in red and a few are painted over a white or deep red slip. The painted designs are almost all geometric compositions with bands,

spirals, triangular spirals, dots, trellis, etc., as the basic elements. Zoomorphic decorations are represented by a painted frog, and by some birds perching on branches. Again, some of these birds are becoming transformed and blended into geometric patterns (Fig. 13, facing p. 25). Three appliquéd lizards in high relief and three sculptured bird heads are used as ornaments. The most common pottery shape is a deep *p'ên* bowl with contracted base. Others include the dish, bowl, cup, vase, bottle, steamer, kettle, oven, tripod, etc., as well as spinning whorl, net-sinker, knife and ring.

The stone implements of Miao-ti-kou I are made by chipping, pecking and polishing. Perforating and sawing are also employed. Choppers, discoidal scrapers and knives are mostly shaped only by chipping in the palaeolithic tradition. Other artifacts are axes, adzes, chisels, knives, hoes, rings, etc. Two flint blades are actually fashioned in the microlithic fashion. There are few bone and horn chisels, needles, awls and arrowheads, but there is a wide variety of small ornaments, stone and pottery rings, turquoise pendants, shell rings and bone tooth-shaped ornaments.

The artifacts recovered from Miao-ti-kou I show that the ancient population was a farming community with fishing and hunting as subsidiary occupations. Fragmentary remains of pigs and dogs indicate that these animals were domesticated.

The Yang-shao finds of Miao-ti-kou represent a common type of Late Neolithic culture. Many other sites yielding similar remains have been reported, notably Wang-wan to the east of Lo-yang (*KK*, 61. 4. 175–178), and Ch'uan-lu-ts'un to the west of Hua-hsien (*KK*, 59. 2. 71–74; 11. 585–587). Wang-wan has yielded houses with prepared foundations for the walls on the ground level, while Ch'uan-lu-ts'un produced remains of millet. As a whole the Miao-ti-kou type of houses are larger than those of Pan-po-ts'un, and consequently most of the Miao-ti-kou settlements are larger in area.

It may be noted here that the famous Yang-shao-ts'un (*PC*, 72–74), which is only 50 kilometres to the east of Miao-ti-kou, is almost a replica of the site under discussion, but the brief excavation conducted by Andersson failed to establish the stratigraphical sequence and he had taken the remains of Yang-shao, Lung-shan and Eastern Chou together as his 'early Chinese culture'.

The neolithic remains of both Pan-po-ts'un and Miao-ti-kou I represent not the primitive beginnings of a neolithic culture but a highly advanced village community. It is interesting to note that among a wide variety of neolithic cultural traits there remain the pebble-flake, the microlithic, and

the bone and shell industries of the palaeolithic past. This seems to indicate that cultural mixing was probably responsible for the rise of neolithic China. The process could have taken place in Middle Huangho where the northern and southern cultures met and struggled for supremacy in the mesolithic days. A comparison of the simple artifacts used by the mesolithic hunting-and-fishing wanderers and the rich varieties of agricultural and industrial output of the Yang-shao settlers shows that there was a large gap between them. Many stages must have gone by before such an advanced culture could be established. How and where the process first began remains obscure.

The geographical distribution of the Pan-po-ts'un and the Miao-ti-kou cultures are almost the same. They seem to have existed one after the other in the same region. Recent excavation of Hsia-mêng-ts'un in Pin-hsien, Shensi, by the Provincial Archaeological Team (*KK*, 62. 6. 293–295) reveals that a stratum of Pan-po-ts'un remains is overlaid by some Miao-ti-kou deposits. This may be supported by another sequence found at Ma-chia-yao in Kansu, where the Shensi type of Yang-shao deposit is followed by some Ma-chia-yao remains quite similar to those of Miao-ti-kou I. For the present, it might therefore be concluded that Yang-shao in Middle Huangho is represented by two stages as follows:

Early Yang-shao: Pan-po-ts'un;
Late Yang-shao: Miao-ti-kou I.

Apart from the two sub-stages of Pan-po-ts'un, a more detailed chronological sequence for the development of Yang-shao in this region has yet to be investigated. It is clear, however, that the Yang-shao culture in Middle Huangho was supplanted by a new culture, Lung-shan, exemplified by the stratified position of Miao-ti-kou II to be described in due course.

Yang-shao culture in Upper Huangho

It is well known that Andersson had gone to Kansu to trace the origin or diffusion of the Painted Pottery from the West to China. He was richly rewarded because he found a string of Painted Pottery sites all the way from western Shensi through Kansu to Chinghai. Unfortunately his field-work was brief and his preconceived idea had set the course of his investigation which was based mainly on the Painted Pottery. He found that this decorative art was a common feature of practically all the sites in this region, and the characteristics of the finds from each site could be easily distinguished. Thus the Kansu sites were grouped chronologically according to the relative

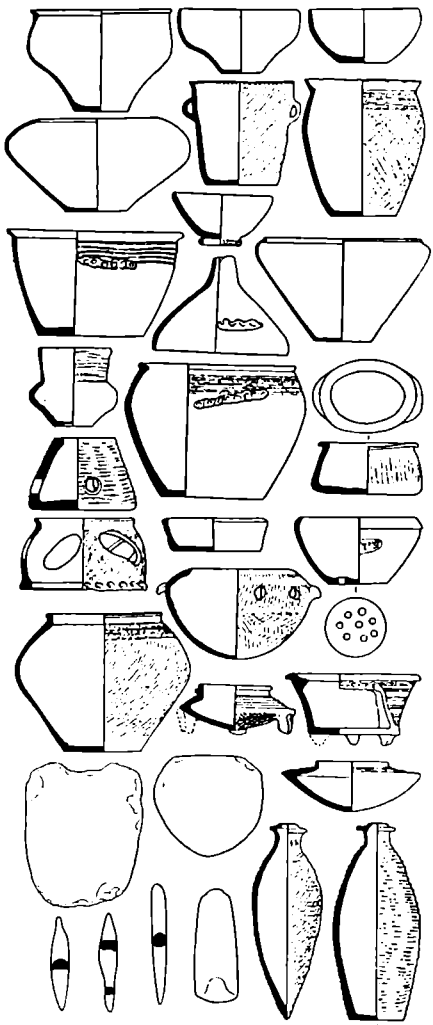

Fig. 12. Pottery vessels and stone and bone artifacts of Miao-ti-kou I, Honan (*see p.* 22). After **G**,13.6

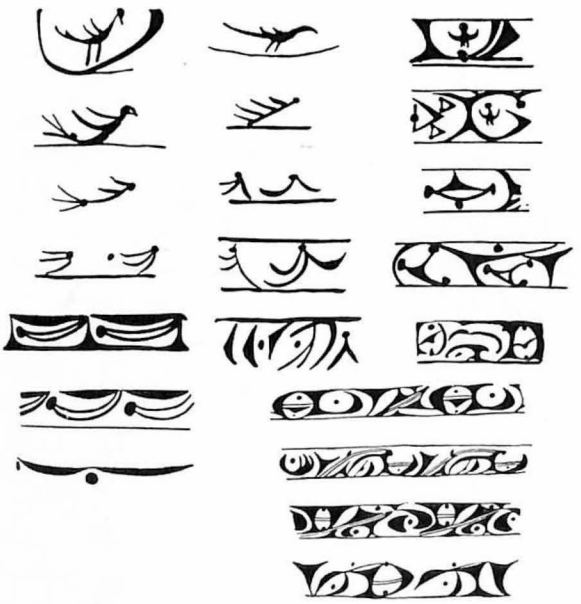

Fig. 13. Some painted bird designs on Miao-ti-kou I pottery (*see p.* 23). After **E**,63.7.37

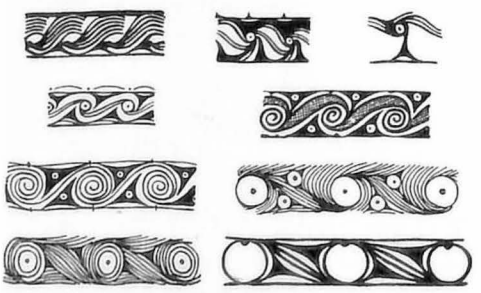

Fig. 14. Some painted bird and spiral designs on Ma-chia-yao pottery, Kansu (*see p.* 27). After **E**,63.7.38

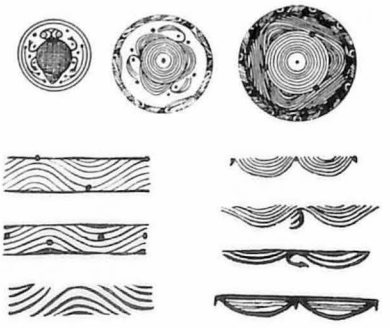

Fig. 15. Some painted frog and wave designs on Ma-chia-yao pottery, Kansu (*see p.* 27). After **E**,63.7.38

maturity of their artistic expression. The discoveries of Andersson were indeed spectacular and the chronological sequences which he and his followers had established, epoch-making. But since the foundation was laid mainly on the thin ground of a comparative study of some decorative patterns, his chronological structure for the area did not stand for long. It has been crumbling bit by bit ever since as his sites have been re-examined and new sites excavated. Now the facts are clear and abundant that Upper Huangho is but a marginal area of the Yang-shao culture. The Middle Huangho Yang-shao was probably forced to move westward when Lung-shan rose to prominence in its home territory. Yang-shao was then at its height and the westward expansion was made by a fully matured type comparable to Pan-po-ts'un. Recent investigation has revealed that the type of Yang-shao remains has a wide distribution in this direction, reaching the upper Ching-shui (*KK*, 60. 1. 1–3; 62. 6. 292–297) and the T'ao-ho valley in eastern Kansu (cf. *KK*, 58. 5. 1–5). The culture flourished in this new home and continued to develop in its own way. Upper Huangho became a stronghold of Yang-shao for a long time, ever expanding to the north and west. The advanced type of Yang-shao in Upper Huangho is now represented by Ma-chia-yao, the remains of which have been found distributed over a wide territory. The sequence of this development is now established by stratigraphy at several well-defined points.

Ma-chia-yao was first investigated by Andersson in 1923. He recognized at once that it 'occupies a key position in our Kansu research' (*BMFEA*, 15 (1943). 97). The materials he took back to Stockholm were fully described by Sommarström in 1956 (*BMFEA*, 28 (1956). 55–138). The site was excavated by the Kansu Provincial Committee for the Preservation of Cultural Relics in 1957. The excavators found that the Ma-chia-yao remains are closely similar to those of Miao-ti-kou I, including the decorative designs on its painted vessels. It could probably be the second wave of Yang-shao expansion westwards. At one locality a stratigraphy with a Shensi type of Yang-shao deposit underneath a Ma-chia-yao stratum has been noted. The report (*KK*, 58. 9. 38–39) gives the following description:

> On the First Terrace (10–30 meters) at the northern bank of the Ma-yü ravine, south of Ma-chia-yao, the cultural deposits are fairly deep. A clear section is seen on an exposed surface. The uppermost layer is a stratum of disturbed modern humus. Beneath the humus, about one meter in thickness, is a layer of prehistoric cultural deposits, about 3·5 meters thick. The upper meter and a half of this layer is composed of loose ashes, from which were derived a great number of potsherds.

These are of fine or coarse paste, tempered or not tempered, some with painted designs. The paint was applied in black pigment. The designs are in most cases composed of thick lines, and include many parallel lines and black dots. Sherds painted on the inner surface, and rim sherds with complicated painted patterns are also found. The forms of the painted sherds include bowls, jars, basins, and pots. The unpainted, fine pasted red or gray sherds are mostly parts of bowls. The sand-tempered sherds are mostly cord-marked, and are in the forms of pots and basins with out-curving, flaring mouths. These types are similar to the Ma-chia-yao types excavated from Yen-êrh-wan, near Lan-chou. The ashy layers below this stratum consist of compact earth, about two meters thick. Cultural remains from the lower layer include polished stone chisels, bone artifacts, gray rings of baked clay, and potsherds. Some of the sherds are painted in black pigment in the designs of wavy triangles, hooked dots, thin parallel lines, thick bands, and net patterns. There are also some rim sherds with simple painted patterns, sherds of basins with inwardly curved mouths, plain fine-pasted red and gray sherds, and a great number of cord-marked pointed bottomed jars and thick-rimmed basins and pots. In short, this lower cultural stratum is similar to the Yangshao types of the Upper Wei. [Chang translation, **A**, 72–73.]

In a second locality, a Ma-chia-yao stratum is followed by another of Ch'i-chia remains, and in a third the Ch'i-chia is overlaid by a stratum of Ssu-wa finds (*KK*, 58. 9. 38–39). Moreover, the stratigraphical sequence established at Ma-chia-yao is fully supported by additional data from sites in districts of the same province. These show that the Ch'i-chia deposits are also succeeded stratigraphically by a Hsin-tien or a Ch'ia-yao stratum. The sequences indicate that Hsin-tien, Ssu-wa and Ch'ia-yao were each an independent culture and they flourished side by side at the same time. Ch'i-chia was probably contemporaneous to the Shang dynasty while the three latter cultures existed during the Chou dynasty. They were therefore all Neolithic Survivals with various degrees of Shang and Chou influences. (Cf. *KKHP*, 60. 2. 11–52.)

MA-CHIA-YAO

The Ma-chia-yao culture is known in the field as Kansu Yang-shao. Its distribution covers a wide territory from the upper Wei valley in Shensi (*KK*, 58. 5. 1–5; 7. 6–16) to the source of Huangho in eastern Chinghai (*WW*, 60. 6. 35–40), and from Min-hsien in southern Kansu to the Islam Autonomous District of Ning-hsia (*KK*, 59. 7. 329–331; **G**, 21–22).

Like all the Yang-shao villages in Middle Huangho, the remains of Ma-chia-yao show that the foundation of the Kansu settlements was based on hoe-farming with hunting, fishing and domesticating of pigs and dogs as

subsidiary livelihoods. Their lithic industry is characterized by polished stone artifacts, though microlithic and pebble-flake implements are also present. The dwellings are mainly semi-subterranean pits, either rectangular or round in outline, with a fireplace in the dwelling floor which is plastered with mud and straw. The post-holes around the house and in the floor indicate that the roof was supported by a series of pillars. Quadrangular houses are generally about four metres wide on each side, while the circular ones have a diameter of four metres. Apart from these dwelling foundations the settlement is spotted with underground storage pits of various sizes and shapes.

Pottery kilns are usually found concentrated at one locality outside the settlement. The kiln-site of Hsü-chia-p'ing near Lan-chou has a collection of twelve kilns (*KKHP*, 57. 1. 5–6). Among the ruins are a stone mortar for the grinding of colour materials and a pottery dish with several partitions for mixing different pigments.

The Ma-chia-yao potter produced two types of ceramic wares, a fine and a gritty ware, mostly red in colour. The vessels are all hand-made, chiefly by coiling, and the shapes include the *wêng*, *hu* and *kuan* jars and the *p'ên*, *po*, *yü*, *tou* and *wan* bowls. Most of the gritty wares are covered with cord-marks and occasionally appliquéd patterns, while the majority of the fine ware are decorated with painted black, rarely red, designs which are mainly geometric with some zoomorphic elements. Those reported from Ma-chia-yao itself are similar to those of Miao-ti-kou I not only in geometric compositions, but also in the zoomorphic elements, especially the frog and the bird (Figs. 14 and 15, facing p. 25). The latter is often depicted with simple strokes in profile perching on a branch, flying or pecking at food.

At a first glance the painted pottery of each locality in Upper Huangho, including Pan-shan and Ma-ch'ang in Kansu and Lo-han-t'ang and Chu-chia-chai in Chinghai, seems different from each other. But closer examination shows that they are all following the Ma-chia-yao tradition in which the geometric designs, whether simple or complex, seem to have developed from some zoomorphic elements, especially the bird and the frog. (**E**, 63. 7. 37–39.) Typological studies, especially in decorative art motifs alone, can never supply a reliable chronology. Without any stratigraphical reference it would be impossible to establish a relative sequence. For the time being, Ma-chia-yao remains the cultural type which exemplifies all the Yang-shao sites in Upper Huangho. (Cf. *KK*, 62. 6. 318–329.)

The Kansu Yang-shao people maintained also a cemetery outside their settlement. The tombs that have been excavated near Lan-chou are mainly

rectangular pits with the body lying on its side in hocker position. The funerary furniture mainly comprises pottery vessels containing animal bones and grains (cf. *PC*, 82). In one case the dead has a string of 1,830 beads of bone around the neck, and in another there are two vertical slabs of stone on the southern side of the burial pit. Many secondary burials have also been reported from various sites. (Cf. *KKHP*, 62. 1. 49–80; 65. 1. 31–82.)

LUNG-SHAN CULTURE IN MIDDLE AND LOWER HUANGHO (*PC*, 82–95)

In the past Lung-shan was generally considered to be an independent culture in the Lower Huangho, but the excavation of Miao-ti-kou has demonstrated most clearly that Lung-shan was developed directly from Yang-shao (cf. *WW*, 60. 5. 36–39). More than 300 additional Lung-shan sites have been excavated, covering the entire Middle and Lower Huangho from Shensi to the coast. In the Loess Highlands Lung-shan sites are located on the river terrace, but on the Flood Plain they are mainly low mounds near streams. The size of the settlement is generally smaller than the Yang-shao village site. (**G**, 14.)

The Lung-shan economy was based on hoe agriculture. The farming implements comprise not only polished stone, but also shell, bone and wooden tools. Domesticated animals, pigs, dogs, cattle and sheep occur in large numbers and some sites have yielded horses and chicken as well. Hunting and fishing activities vary in intensity with various sites. Their settlements are covered with semi-subterranean house foundations and underground storage pits. Round houses appear more often than quadrangular ones. In Shensi, compound houses with two adjacent dwelling floors and a large storage pit are known. Moreover, a white plaster is widely adopted for paving the floor and surfacing the wall.

The advanced Lung-shan industry may be represented by its pottery. The wheel was expertly used, producing thinly potted vessels. The majority are grey in colour, but the most typical ones are black; red and white wares are also made. Some of the black wares are actually of eggshell thinness and highly burnished on the surface. Cord- and mat-marks are the most common forms of decoration, while impressed checkers, pie-rim appliqués, incised lines and open-work designs are also used. In some regions, polishing is predominant, and occasionally painted designs are found. The shapes range from the *ting*, *li*, *chia*, *hsien*, and *kuei* tripods to *kuan*, *tou*, *p'ên*, *p'an*, *pei* and various types of ring-footed vessels. A large number of pots are provided with handles.

Some social and religious changes have also been noticed. A number of Lung-shan villages are surrounded by a wall of stamped earth and the cemetery is found at the edge of the settlement. The dead are buried individually in rectangular pits, fully stretched on their backs. Occasionally a man and his wife are found together side by side in one pit. Scorched bones of pig and cattle show that scalpulimancy was practised and there are also *tsu* pottery figures for ancestral worship. There is no doubt that Lung-shan represents a more advanced Neolithic culture than does Yang-shao. (**G**, 14.)

The rapid development of Lung-shan culture in North China accounts for its many variations that have been found. So far, five different types have been established, represented by K'ê-shêng-chuang II in Shensi, Miao-ti-kou II and Hou-kang II in Honan, and Pao-t'ou-ts'un and Jih-chao in Shantung.

K'Ê-SHÊNG-CHUANG II

K'ê-shêng-chuang, some 20 kilometres southwest of Sian, was excavated in 1955–57 by the members of the Institute of Archaeology (*KK*, 59. 10. 516–521). The deposits contain four distinct levels:

K'ê-shêng-chuang I: Yang-shao;
K'ê-shêng-chuang II: Lung-shan;
K'ê-shêng-chuang III: Western Chou;
K'ê-shêng-chuang IV: Chan-kuo.

The lowest level contains only traces of Yang-shao culture (**H**, 43–69). This seems to indicate that the excavation was made on the outskirts of a large Yang-shao village site. The overlying layer is rich with Lung-shan remains showing that the Lung-shan settlement was established on a site previously occupied by the Yang-shao people. The settlement is characterized by compound houses with white plastered floors, scorched bones and pottery *tsu* figures. The pottery (Figs. 16 and 17, facing p. 32) is dominated by the fine grey ware, amounting to about 80 per cent of the total finds. There are some 18 per cent of red and about 1 per cent of black ware. It has also a number of Ch'i-chia features. All these indicate that the deposit represents a rather late phase of Lung-shan. This type of Lung-shan culture is distributed mainly in Shensi and occasionally in western Shansi. (**G**, 17–19.)

MIAO-TI-KOU II

Miao-ti-kou II is also laid over a stratum of Yang-shao deposits (**F**, 64–82). The fact that the dwelling floors are mainly plastered with mud and straw;

that a number of the pottery vessels (Fig. 18, facing p. 32), such as *p'ên*, *tou*, *ting* and *chia* retain the Yang-shao shapes, mostly hand-made, and show the continued use of slips and painted designs; and that a few stone artifacts are chipped, indicates that the new culture evolves directly from the earlier cultures without a distinct break. There are, however, a number of new features, such as the burial of the dead at the edge of the dwelling compound, new types of agricultural implements, advanced techniques in pottery making and the increase in types and numbers of domesticated animals, that mark a fresh departure from the Yang-shao culture. Hence, Miao-ti-kou II is taken as a transitional stage between Yang-shao and Lung-shan, or Proto Lung-shan. Sites of this type of Lung-shan culture are found chiefly in eastern central Shensi, southern Shansi and Western Honan. (**G**, 15–16.)

Hou-kang II (*PC*, 93, 95)

According to the more recent investigations, sites with Lung-shan remains of the type found at Hou-kang II are distributed in Honan, Shansi and southern Hopei. The culture is basically similar to Miao-ti-kou II. The dwelling floors are either paved with a white plaster or baked hard with fire. The finds are especially rich in shell and wooden implements, fragments of pig bones and occasionally a few microlithic implements. At the kiln site in Chien-kou, Han-tan, Hopei (*KK*, 59. 10. 531–532), a well has been found with some 50 pottery jars at the bottom (Fig. 17, facing p. 32; Fig. 19, between pp. 32 and 33). It is also common to find discarded storage pits or wells inside the settlement being used as burials. One of these contains as many as ten skeletons of both sexes, young and old in age, and in a rather confused state. The burial was sealed on top with a layer of burnt-red earth. (**G**, 16–17.)

Pao-t'ou-ts'un

The site of Pao-t'ou-ts'un, located in Ning-yang, western Shantung, was excavated by the provincial authority in 1959. The cultural remains as a whole are in the Lung-shan tradition, but there are many extraordinary features. At the cemetery more than 120 tombs of various sizes and showing a standard burial practice have been investigated. The tombs are generally rectangular pits, each with some traces of a wooden coffin and an *êrh-ch'êng-t'ai* platform. The majority contain only one skeleton lying fully extended on its back and orientated to the east. There are a few in hocker position and several composite burials with two skeletons lying side by side. The mortuary

objects comprise a wide variety of pottery vessels and animal bones, especially those of the pig. One or two pig's or dog's teeth are associated with the hand.

The pottery (Fig. 20, between pp. 32 and 33), most of which is very well preserved, deserves special attention. The pots are mainly hand-made but a few are shaped with the wheel. Grey ware is predominant (47 per cent) with red ware occupying second place (27 per cent), black ware about 12 per cent, white ware 8 per cent and painted ware 6 per cent. The shapes, especially the *ting*, *kuei*, *ho*, *hu* and *tou*, are similar to those of typical Lung-shan, but painted pottery has a style of its own, either red on black, or black and white on yellow, or white on red or yellow. The designs are clearly in the late Yang-shao tradition, characterized by zigzag bands, connected spirals, triangular patterns and other geometric motifs.

The bone and horn industry was also in an advanced state of development. Most of the harpoons, hooks, awls, saws and spades, as well as needles, combs and hairpins, are all very well shaped, carved and polished. Artifacts of hard green stone are also common. (*WW*, 59. 10. 61–64; 60. 2. 1–4; **G**, 19–20.)

JIH-CHAO (*PC*, 88–95)

The Jih-chao culture is generally known as the typical Lung-shan culture. It is characterized by the predominance of the burnished black ware. In the past it was thought that Shantung was the centre of this culture but now similar sites have been found along the coast from Shantung northward through Hopei to the Liao-tung peninsula and southward to Kiangsu.

Jih-chao has a rather advanced industry (cf. *KKHP*, 58. 1. 25–42). In pottery (Fig. 21, between pp. 32 and 33) the wheel is expertly employed and a large number of vessels are trimmed on the wheel to egg-shell thinness with a burnished surface. Fine grey ware is also common and there are a few red and white wares. Stone and bone implements are finely shaped and polished, and there are also microlithic implements including scrapers and arrow-heads. The cemetery contains rectangular burials in systematic array, and the dead always lie singly, fully extended on their backs, with the heads orientated to the east. The funerary furniture mainly comprises pottery vessels and containers without any tools or implements. (**G**, 19.)

The discovery of so many types of Lung-shan culture in Middle and Lower Huangho presents a number of interesting problems. There is no doubt that the culture had evolved from Yang-shao in western Honan as shown by the Miao-ti-kou deposits. It might have spread from there westwards to the Wei

valley in Shensi and eastwards into the Huangho flood plain. (Cf. *KK*, 63. 7. 347–380.) The development took place necessarily in many stages, but a chronology that covers them all is still lacking. For the time being it seems reasonable to conclude that the rise of Lung-shan was again a result of cultural mixing. It had the benefit of all the earlier cultures, including Yang-shao and Gobi. Contrary to the general assumption regarding the distribution and succession of the various types of culture in North China, they all survived and co-existed side by side for a long time. By the end of the Neolithic period Huangho valley was populated by roughly the same type of culture in various degrees of admixture, thus setting the stage not only for the rise of Hsiao-t'un and subsequently the Shang dynasty (*PC*, 96–106), but also for its expansion southwards into the Yangtse and South China.

Late Neolithic Yangtse (*PC*, 111–126)

Like the Huangho basin, the valleys in the Yangtse saw the rise of several types of Late Neolithic and Proto-historic cultures. As a whole they were immigrants from the north bringing with them Yang-shao, Lung-shan and Hsiao-t'un in various degrees of admixture. Apart from a number of comparatively pure Yang-shao or Lung-shan (*KK*, 61. 10. 519–530; **O**, 4–5) sites, six distinctive Late Neolithic cultures have been established, namely Ta-hsi in Szechwan, Ch'ü-chia-ling in Hupei, Ying-p'an-li in Kiangsi, Ch'ing-lien-kang and Liu-lin in Kiangsu, and Liang-chu in Chekiang.

Ta-hsi (*PC*, 120)

Located at the juncture of Yangtse and Ta-hsi in Wushan, the site was excavated in 1959. The dwelling site and the cemetery are found side by side. The stone tools recovered include both the chipped and polished implements such as hoes, chisels, axes, scrapers, arrowheads, discs and spindle-whorls. Among the bone artifacts are needles and spearheads. There are also many tiny beads which were strung as a necklace.

The cultural debris is composed of two layers. The lower level yielded a gritty red ware, the shapes being the *fu* pot, *ting* tripod, *kuan* jar and *wan* bowl. In the upper level, the gritty red ware is mixed with some fine black and red and, occasionally, painted wares. The latter is evidently a mixture of the northern cultures.

The burials at the cemetery are arranged very near to or sometimes on top of each other. The dead are placed singly in pits without any coffins. The head points to the north with the body mostly fully extended on its back,

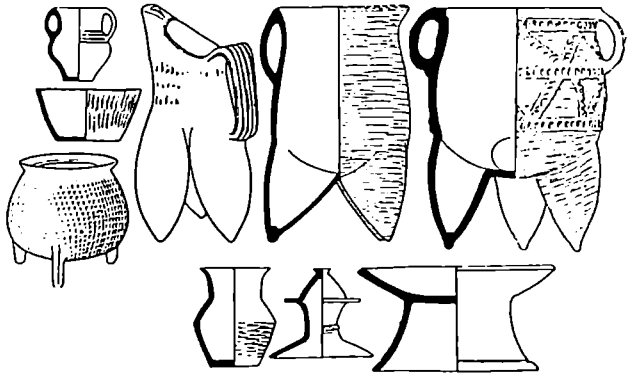

Fig. 16. Pottery vessels of K'ê-shêng-chuang II, Shensi (*see p.* 29). After **G**,18.9

Fig. 17. Pottery vessels common to K'ê-shêng-chuang II, Shensi, and Hou-kang II, Honan (*see pp.* 29 & 30). After **G**,18.9

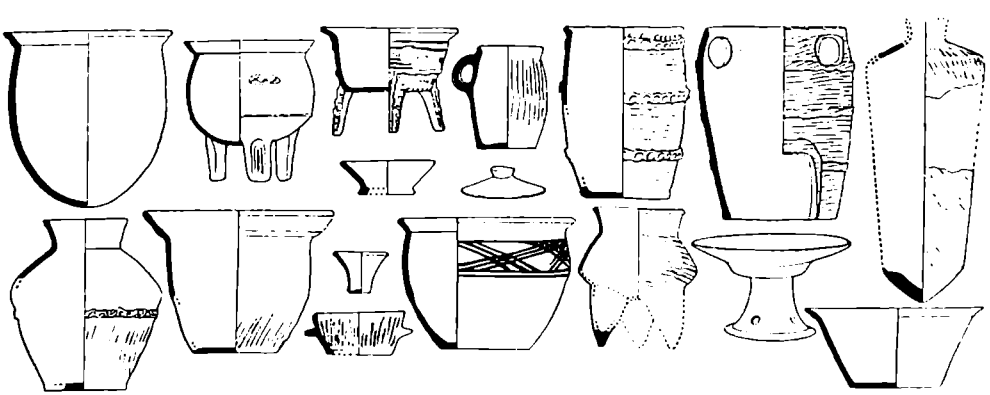

Fig. 18. Pottery vessels of Miao-ti-kou II, Honan (*see p.* 30). After **G**,18.9

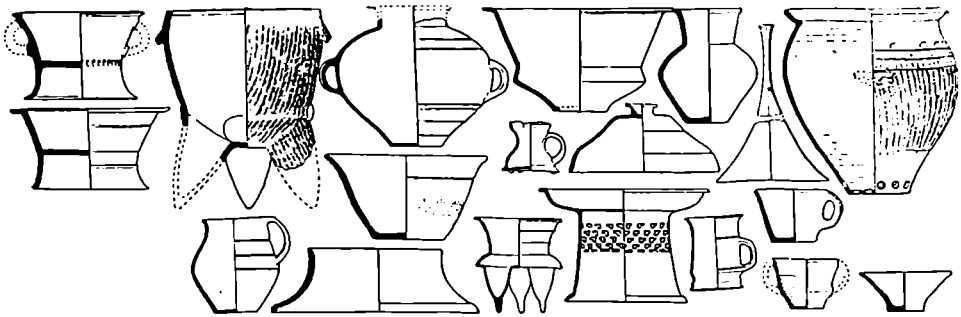

Fig. 19. Pottery vessels of Hou-kang II, Honan (*see p.* 30). After **G**,18.9

Fig. 20. Pottery vessels of Pao-t'ou-ts'un, Shantung (*see p.* 31). After **G**,20.10

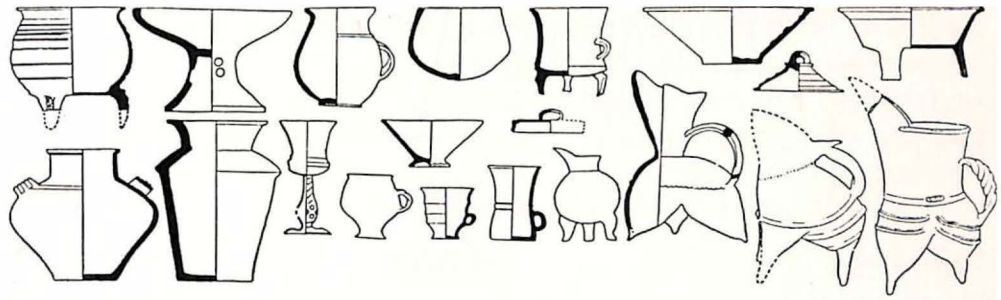

Fig. 21. Pottery vessels of Jih-chao (typical Lung-shan), Shantung (*see p.* 31). After **G**,18.9

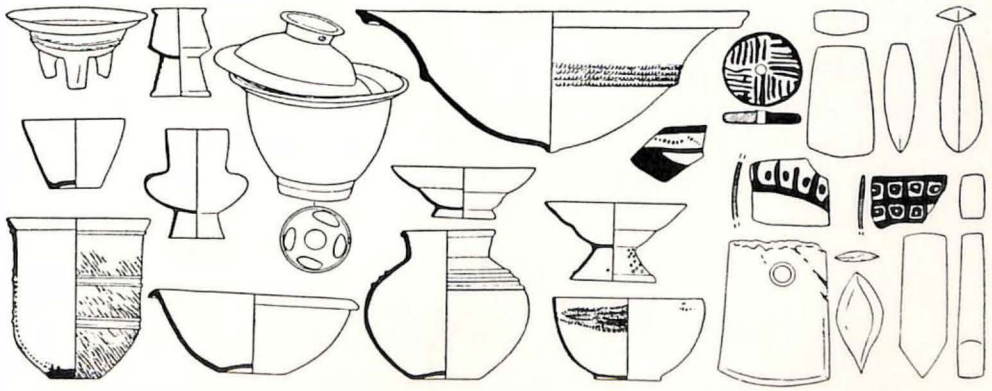

Fig. 22. Pottery and stone artifacts of Ch'ü-chia-ling, Hupei (*see p.* 34). After **G**,29.14

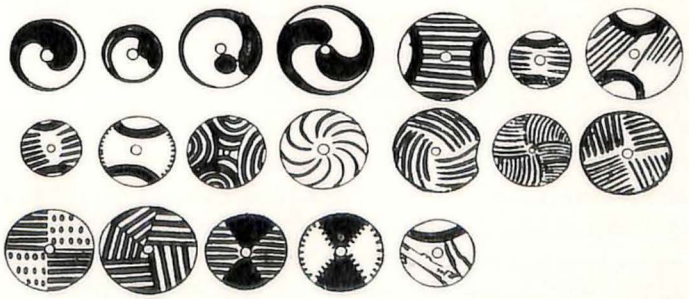

Fig. 23. Some painted spindle-whorls of Shih-chia-ho, Hupei (*see p.* 34). After *KK*,56.3.14

Fig. 24. Pottery vessels and stone artifacts of Ch'ing-lien-kang, Kiangsu (*see p.* 35). After **G**,29.14

Fig. 25. Pottery vessels and stone artifacts of Liang-chu, Chekiang (*see p.* 36). After **G**,29.14

but some are in hocker and a few in prone positions. The mortuary objects include daily utensils, tools and implements and ornaments. Pottery vessels are placed by the sides of the body, stone implements and ivory articles at the head, fish in the mouth, turquoise pendants at the ears, jade, bone and shell beads and rings around the neck and arms and over the chest. In Tomb M1, two pottery bowls are placed on the chest. In some cases the dog is used as a sacrificial victim. (*WW*, 61. 11.15–20; 60.)

Some 30 sites of the Ta-hsi type of culture have been reported in the Yangtse Gorges from I-chang in western Hupei to Chung-hsien in eastern Szechwan. Some of these are even later in date than Ta-hsi itself and the finds include oracle bones and bronze articles showing that they are some Neolithic Survivals. (*KK*, 59. 8. 393–403.)

Ch'ü-chia-ling (*PC*, 118–119)

Extensive investigations of the Han-shui and Middle Yangtse valleys have revealed a large number of Ch'ü-chia-ling type sites. They are distributed in the lake districts of Hupei, extending as far north as Yun-hsien in Hupei and Nan-yang in Honan (**G.** 28–30). The stratigraphy at Ta-ssu in Yun-shien shows that the ancient site contains four levels (*KK*, 61. 10. 519–30) as follows:

Ta-ssu I: Yang-shao;
Ta-ssu II: Ch'ü-chia-ling;
Ta-ssu III: Lung-shan;
Ta-ssu IV: Ch'un-ch'iu.

The Yang-shao finds in the Han-shui valley are of two types. The early one is similar to that of Pan-po-ts'un and it is followed by a late type with more advanced artifacts. Ch'ü-chia-ling may thus be regarded as a local development of Yang-shao. The Lung-shan culture which evolved later has also some marked differences from its prototypes in the Huangho basin.

The most unique feature in the Ch'ü-chia-ling remains is the evidence of rice cultivation (*KKHP*, 59. 4. 31–34). Cracks on the baked dwelling floor of red earth are generally covered with the impressions of rice grains. The common agricultural implements are well-polished axes with a broad cutting edge, and flat rectangular hoes with a perforation at the butt end. Others are stone spades, knives and chipped waisted hoes. There are also large quantities of stone, bone and pottery arrowheads, triangular, flat or diamond in cross-section, and a few stone spearheads. Animal bones found are those of dogs and pigs.

A few foundations of houses have been excavated and they show that the Ch'ü-chia-ling houses were all erected at the ground level. One of them is a rather large two-roomed house, 14 × 5·6 metres in size, with a partition in the middle. Another rectangular house is divided into two sections, the northern one being raised with a layer or baked platform of earth 0·5 metres above the ground. The surviving post-holes around the foundation were probably for pillars that went up to support the roof in the Yang-shao fashion.

For other arts and crafts there are various types of well-shaped stone knives, chisels, axes, adzes and pottery spindle-whorls. These spindle-whorls, which are made mostly of pottery, are orange in colour, soft in texture, and decorated with painted or incised designs, appear in at least ten types.

Ch'ü-chia-ling has a rich ceramic industry (Fig. 22, between pp. 32 and 33). The most outstanding type is a painted black egg-shell ware of bowls and cups for daily use. The paste is orange-yellow. The vessels are finely potted, with walls as thin as one to two millimetres. The surface is slipped in black or grey and painted in black, red or purple. The designs are geometric, composed of lines, dots, triangles and circles, recalling the Pan-po-ts'un style. Another type of pottery is seen in the larger vessels such as *hu*, *tou*, *ting*, *p'ên*, *p'an*, *fu*, etc. They are all characterized by prominent horizontal ridges on the wall. A *fu* cooking pot has a wide mouth-rim, 0·9 metres in diameter. The industry also produces pottery pellet balls, rings, and bird and animal figures.

The Ch'ü-chia-ling deposits have now been classified into three stages. The early stage is represented by the lower stratum of Ch'ü-chia-ling. This is characterized by the painted black egg-shell ware, with some geometric designs in the Yang-shao fashion, the large greyish-black spindle-whorl and the large cylindrical stone axe. The stone arrowhead and sickle are both lacking. Middle Ch'ü-chia-ling, represented by Ta-ssu II, is characterized by a large variety of pottery vessels; some well-shaped stone implements, especially the fully polished, stepped and perforated axes, adzes and chisels; and waisted hoes, arrowheads and medium-sized spindle-whorls. Finally, the lower stratum of Shih-chia-ho (*PC*, 118) is taken as late Ch'ü-chia-ling. This stage is marked by the increase in quantity of a coarse red ware, the introduction of a thinly potted *kuei* tripod with a narrow neck, the making of pottery animal figures, small spindle-whorls (Fig. 23, between pp. 32 and 33) decorated with the *t'ai-chi-t'u* or other whorl designs, triangular rod-shaped arrowheads, and the degeneration of the painted designs (*KK*, 56. 3. 11–21).

Taken as a whole the Ch'ü-chia-ling culture is undoubtedly a descendant of Yang-shao, but the majority are dominated by Lung-shan features. The Lung-shan remains that overlie the Ch'ü-chia-ling deposit are a very late Lung-shan, possibly a Neolithic Survival.

YING-P'AN-LI (*PC*, 117)

The Ying-p'an-li site at Ch'ing-chiang has been excavated (*KKHP*, 59. 3. 37–51). The site contains three successive strata. The lower stratum is predominantly composed of potsherds of a red gritty ware, associated with some polished black fine ware. The shapes of the gritty ware are the *ting*, *li*, *kuan*, *tou*, *p'an* and *p'ên*. The surface is generally plain, but some are slipped in yellowish-brown or black and burnished. When decorated, they are incised with trellis patterns or concentric grooves, stamped with cord-marks or appliquéd with strips of clay. Net-sinkers and spindle-whorls are usually made of this type of gritty ware (*KK*, 62. 4. 172–181; cf. *KKHP*, 63. 1. 1–16). It seems that the local Late Neolithic culture was in touch with the typical Lung-shan tradition. The middle and the upper strata contain a stamped soft and a stamped hard ware respectively. They are both of a finely prepared paste and decorated with impressed geometric designs. They are both historical in date. (**G**, 34.)

CH'ING-LIEN-KANG (*PC*, 108–110)

The recent investigation of the Yangtse Delta shows that the Ch'ing-lien-kang culture has a wide distribution (**G**. 30–31; **O**, 37). Sites of a similar type have been found in many parts of Kiangsu, some together with the village cemetery. The arrangement of the tombs is rather standardized, each containing a single individual mostly orientated to the east and fully extended on its back. The mortuary objects include daily utensils (Fig. 24, facing p. 33), tools and implements, ornaments of jade and bone, and sacrificial pigs. (**O**, 1–3, 39–41.)

That Ch'ing-lien-kang represents a mixed culture is further demonstrated by the appearance together of the slipped and painted pottery recalling the Yang-shao style and the characteristic Lung-shan *kuei* tripods and *tou* cups. After comparative studies with the Lung-shan finds of Shantung, the Ch'ing-lien-kang culture has been taken to be the earliest phase of the Late Neolithic culture in Kiangsu, dating relatively as early Lung-shan. (Cf. *KK*, 60. 7. 20–22; *KKHP*, 59. 4. 35–43; 62. 1. 81–102; **O**, 18–23.)

LIU-LIN

The site of Liu-lin, located at P'i-hsien in northern Kiangsu, was excavated by the members of the Nanking Museum in 1960. Fifty-two ancient tombs and a few patches of the dwelling site have been investigated. Apart from a number of stone, bone and pottery artifacts common to all Late Neolithic cultures in China, Liu-lin has yielded some unique specimens. Among the bone articles are many well-shaped and finely carved harpoons, weaving shuttles, spatulas, rings, combs, etc. The most unusual implement is a bone sickle fitted with two reaping hooks which are made of a pair of sharpened roebuck tusks. The handle is decorated with an incised linear pattern and has a perforation to facilitate suspension. The pottery vessels range from cooking tripods of a coarse gritty red ware to eating utensils and containers of the slipped and painted fine red or black ware. The stone artifacts include some jade ornaments. There are also some complete large tortoise shells which are often found over the thigh bones in the burial pit. As they are all provided with series of perforations near the edges for suspension as well as for hanging decorative tassels, they are described as shields for the reproductive organs. Dogs are sometimes used as sacrificial victims in the tombs.

The Liu-lin culture has a rather limited distribution. So far only four other sites have been found in the neighbourhood of P'i-hsien. The cultural deposit at Liu-lin itself has been divided into two levels, representing two stages of development. The earlier stage is quite similar to the Ch'ing-lien-kang culture; the later stage shows some Lung-shan influences. (**O**, 4; 8.)

LIANG-CHU (*PC*, 115–116)

A large number of Liang-chu sites have also been reported in Chekiang (Fig. 25, facing p. 33). A comparative study of the remains from these sites shows that the prehistoric culture in this province underwent at least three stages of development (cf. **O**, 5). The early stage is represented by the lower stratum of Ma-chia-pin in Chia-hsing (*KK*, 61. 7. 345–354), the middle stage by the lower stratum of Ch'ien-shan-yen in Wu-hsing, and the late stage by the upper stratum of Ch'ien-shan-yen (*KKHP*, 60. 2. 73–91).

The lower stratum of Ma-chia-pin is characterized by the predominance of a gritty ware, ranging from grey to red in colour. A house foundation in the form of an oval pit with irregular walls is rather crude. Five posts remain: two in the middle, and one each in the east, south-east and south. The settlement also yields three underground storage pits.

The lower stratum of Ch'ien-shan-yen contains also a large amount of

gritty ware, grey to red in colour and mostly *ting* tripod in shape, but there is also a substantial portion of fine black or grey ware. Large quantities of finely shaped stone, jade, bone and wooden artifacts are preserved; so are fragments of silk and hemp textile fabrics, ropes and threads, brushes of coir palm fibre, and bamboo basket; bones of water buffaloes, pigs, dogs, deer, tortoise and shells; and seeds and stones of eight cultivated plants, including the peach, melon, peanut, two types of rice, sesamum, broad bean and water chestnut. (**N**, Pls. 1–27.)

The lower Ch'ien-shan-yen houses are rectangular in plan. They are built at the ground level. Each has four pillars at the four corners and the wall space is filled with reed work and clay plaster. A wooden beam is laid over the middle of the upper edge of a pair of opposite walls, and bamboo stems or tree branches are arranged on either side of the beam for the roof. Underground storage pits with one or two posts in the centre to support the cover are common remains in the settlement. All these seem to show that prehistoric Yangtse architecture followed a different style from that of the Yang-shao and Lung-shan in North China.

The Liang-chu cemetery is also located near the village. The dead are buried singly, often in the prone position, but a few are found in their natural or hocker position. In one case a couple are buried together and the pit is lined with woodwork. Most Liang-chu burials do not contain any mortuary articles.

In the upper level of Ch'ien-shan-yen, the black ware becomes rare and the cultural finds are mixed with stamped geometric ware and some bronze articles. In this respect, it is clearly historical in date, while the lower level forms another example of a mixed culture in which the Lung-shan black ware exists side by side with the local gritty ware. (Cf. *KK*, 62. 3. 147–157; **N**.)

The discovery of so many types of prehistoric culture in the Yangtse basin shows that the cultural development in this area constitutes a rather complicated affair. There is as yet no stratigraphy to correlate them, but as a whole the development may roughly be divided into three stages. The early stage is represented by a coarse gritty ware, which is probably an advanced type of the Early Neolithic cord-marked ware, widely distributed in China Proper. The middle stage is characterized always by the inclusion of northern elements in various degrees of admixture. In the Upper and Middle Yangtse it is dominated by Yang-shao elements while in the Lower Yangtse the contents are almost purely Lung-shan. This is followed by the late stage with the geometric stamped ware which again was probably a

result of the influence of North China. The introduction of Shang and Chou technology must have given rise to the stamped hard ware, known later as the Hu-shu pottery. This culture expanded in time along the coast to the greater part of South China. It is sometimes known as the Geometric ware culture, a Neolithic Survival.

Late Neolithic South China (*PC*, 127–134)

The Late Neolithic South China is at present represented by a number of sites which yielded a coarse gritty soft ware together with a number of polished stone tools. This type of remains is distinguishable from the Early Neolithic coarse cord-marked ware associated with chipped pebble-flake tools. It has a wide distribution from Hunan in the north (*KK*, 59. 12. 648; 60. 6. 5–8) to Kwangtung in the south (*KKHP*, 60. 2. 107–119). In most cases the cultural deposit is found under a stratum of stamped hard ware which was Shang-Chou to Han in date. Nien-yü-chuan of Shao-kuan, Kwangtung, may be taken as an example. Here the coarse gritty ware has generally a plain black surface, a few sherds being decorated or slipped. The stone implements include polished axes, adzes, chisels and arrowheads. Houses are built over a semi-subterranean pit 3·2 × 3 metres in size, with a passage leading up to the ground surface in the south. Post-holes are found at the four corners for the support of the upper structure. The dwelling floor is paved with a layer of hard red earth. (**G**, 34.)

The present data indicate that South China had a rather simple culture and was comparatively quiet in Late Neolithic times.

VII. Cultural growth in Prehistoric China

With the recent data (1958–64) we have just reviewed, some observations and conclusions regarding the development of man and culture in Prehistoric China may now be made (see chart on p. 41):

1. Ever since the beginning of Pliocene, China has been a world by itself. Man did not appear until Middle Pleistocene but his roots were deep in the Pontian Coal Beds of Early Pliocene where the 'missing link' of ape and man was found. This ancient creature known as K'ai-yuan Forest Ape may be taken as the common ancestor of *Gigantopithecus* and *Sinanthropus*.

2. The Pleistocene chronology of South China is further supported by the altitudinal classification of the Kwangsi caves, and the Giant Ape may be recognized as an inhabitant of the province in Early Pleistocene.

3. The existence of *Sinanthropus* in South China has yet to be confirmed but by Middle Pleistocene he was already well adapted to the various environments in North China, especially the limestone caves of Lower Huangho and the river and lake marshes of Middle Huangho. The morphological differences between Lantian Man and Peking Man are due partly to the difference in their habitations and partly to the different stages of development in which they were. The natural environment was probably responsible for some of the differences in the lithic industries of Kê-hê and Chou-k'ou-tien.

4. The open country of Middle Huangho with lake shores and river valleys provided a favourable area for the activities of early men. A study of the Palaeoliths in Shansi gives the impression that the earliest stone artifacts occur originally in southern Shansi and its adjoining parts of Honan and Shensi; the middle Palaeoliths mainly in central Shansi; and some Middle and Late Palaeoliths in the northern part of the province. It is also in the last region that the pebble-flake artifacts were found to be associated with the Gobi microliths. There was a tendency for the early man to expand northwards in this province.

5. By the end of Middle and the beginning of Upper Pleistocene the inhabitants of China may be recognized as *Homo neanderthalensis*. The Neanderthal Man had a wide distribution in all the three main river basins in China proper. The fossils of the Neanderthal Chinese in several stages of development provide some valuable data for the research on the evolution of man in this part of the world.

6. *Homo sapiens* appeared in Upper Pleistocene all over China. Morphologically the early man began to acquire some racial affinities, particularly Mongoloid features, and their fossils form a series illustrating the development, and giving the impression that the process of specialization had started probably in South China.

7. The main activities of the Chinese *Homo sapiens* were concentrated again in Middle and Lower Huangho. Culturally South China was rather quiet in Upper Pleistocene, but in the north the ancient man championed at least four different traditions, namely Ting-ts'un, Ordos, Gobi and Upper Cave. The Central Plain of China was already a busy centre and there was some cultural mixing. The situation continued into the Mesolithic and Early Neolithic times.

8. The marginal territories of Manchuria, Mongolia and Sinkiang north of the Great Wall were dominated by the Gobi microlithic culture, but the trend of its development is still buried in the desert sands and appears confused and ill-defined. The extent of this northern culture is now known to cover eastern Tibet also.

9. By the Mesolithic and Early Neolithic times the Chinese world was divided into two cultural spheres, the microlithic industry in the semi-arid north and the pebble-flake industry in the wooded south. The two cultures co-existed in Middle Huangho and began to influence each other. Their contact might have led to the introduction of a new era characterized by the Neolithic way of life, but its beginnings are still unaccounted for.

10. The Late Neolithic period marked a rapid development and cultural mixing in Middle Huangho. The earliest culture was Yang-shao which underwent several stages of development and was later succeeded by Lung-shan. Physically the early Yang-shao Mongoloids had a closer resemblance to the inhabitants of southern rather than northern Asia.

11. The rise of Lung-shan forced Yang-shao to move westwards into Upper Huangho where it continued to survive in different stages into the historical times.

Geological Period	Pleistocene			Holocene	
	Lower	Middle	Upper		
Man	Ape	Ape-Man	Homo neanderthalensis	Homo sapiens	Modern Man
	Gigantopithecus	Sinanthropus: Pekinensis; Lantianensis	Ordos Man; Ch'ang-yang Man; Ma-pa Man	Upper Cave Man; Ting-ts'un Man; Tzŭ-yang Man; Lai-pin Man; Liu-chiang Man	
Culture		Palaeolithic: Early	Palaeolithic: Middle	Palaeolithic: Late	Neolithic: Early / Late
		Chou-k'ou-tien; Loc.13; Loc.1; Loc.3,4	Gobi?; Hsiao-nan-hai; Shui-tung-kou	Gobi; Hsiao-nan-hai; Sjara-osso-gol; Upper Cave; Liu-chiang; Ting-ts'un; Tzŭ-yang	Gobi; Sha-yuan; Tou-chi-t'ai; Kwangsi Caves; Ma-lan-chui; Hsi-chiao-shan
		Kê-hê---Shansi	Palaeoliths		Gobi; Mixed Cultures; Yang-shao; Lung-shan; Hsiao-t'un
Proposed Dating (Years ago)	1,000,000	600,000	200,000	100,000	25,000 — 5,000 — 4,000

Man and culture in Prehistoric China (1963)

12. In turn Lung-shan developed in several stages and was finally replaced by Hsiao-t'un which gave rise to the Shang dynasty (*PC*, 96–103; *WW*, 58. 6. 67–68). During the process Lung-shan moved eastwards and southwards.

13. Although the succession of the three cultures in Middle Huangho is recorded by many stratigraphic sequences, each survived into the following period; together with the Gobi culture they existed side by side for a considerable length of time. The Late Neolithic remains in different parts of North China occur almost always in mixed form with various degrees of admixture of the four cultures. To disentangle this great maze of cultural interflow in Late Neolithic Huangho will remain a challenge to the Chinese archaeologists for many years to come.

14. The same may be said of the Yangtse valley which furnished a suitable outlet for the expansion of Huangho mixed cultures. They arrived in all sorts of combinations and in many more currents than one. At present it is still premature to generalize on the process.

15. Finally, it seems reasonable to conclude that the rise of the historical culture in China was a result of millenniums of cultural mixing in the Huangho valley. Climatic fluctuations at regular intervals on the Gobi Steppes, and floods and famines from time to time in the Huangho basin, were for ever forcing the settlers to move. Floating population was a characteristic feature in the prehistoric landscape just as it was in the historic days. In this way stage after stage of cultural mixing took place, one influencing and succeeding the other over a constantly expanding domain. This process was indeed responsible for the growth of a uniform cultural tradition, beginning with Pebble-flake and Gobi cultures, through Yang-shao and Lung-shan, to Hsiao-t'un and eventually the establishment of the Shang dynasty.

In the early historical days the whole of China, from Shantung to Sinkiang and from Manchuria to Kwangtung, was still teeming with Neolithic Survivals of various kinds. Together with the historical civilization they were all mixed cultures, enjoying either a nomadic way of life when they wandered north into the steppes, or a village organization with self-sufficient economy when they settled in China proper. [Cf. Chang Kwang-chih in *Chronologies in old world archaeology* (ed. by R. W. Ehrich) Chicago, 1965, 503–526.]

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ABBREVIATIONS

BMFEA—Bulletin of the Museum of Far Eastern Antiquities, Stockholm, 1929– .

KK—K'ao ku (*K'ao ku t'ung hsun*, 1955–58), Peking, 1955– .

KKHP—K'ao ku hsueh pao (No. 1: *T'ien yeh k'ao ku pao kao*; Nos. 2–5: *Chung-kuo k'ao ku hsueh pao*), Peking, 1936– .

PC—Chêng Tê-k'un, *Archaeology in China*, Vol. 1: *Prehistoric China*, Cambridge, 1959.

WW—Wên wu (*Wên wu ch'an k'ao tzu liao*, 1950–58), Peking, 1950– .

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Chinese characters in the text

Chao-chia yen	趙家堰
Chia-hsing	嘉興
Chien-kou	澗溝
Ching-shui	涇水
Ch'ang-yang	長陽
Ch'i-lin-shan	麒麟山
Ch'ien-shan-yen	錢山漾
Ch'ing-lung-chien	青龍澗
Ch'ing-shui-ho	清水河
Ch'uan-lu-ts'un	泉櫨村
Êrh-ch'êng-t'ai	二層台
fêng-chien	封建
Fêng-hsi	灃西
fu	釜

Han-shui	漢水
Han-tan	邯鄲
Hêng-chên-ts'un	橫陣村
Hou-kê-ta-fêng	后圪塔峰
Hsi-chiao-shan	西樵山
Hsia-mèng-ts'un	下孟村
Hsiao-nan-hai	小南海
Hua-hsien	華縣
Hua-yang	華陽
Hsü-chia-p'ing	徐家坪
Kê-hè	圪河
Ku-lung	固隆
K'ai-yuan	開遠
K'ê-shêng-chuang	客省庄
Lan-t'ien ..	藍田
Liu-chiang	柳江
Liu-ch'êng	柳城
Liu-lin	劉林

Ma-chia-pin .. .. 馬家濱

Ma-chia-yao .. 馬家窯

Ma-lan-chui .. 馬蘭咀

Ma-pa-hsiang 馬壩鄉

Ma-yü .. .. 麻峪

Miao-ti-kou .. .. .. 廟底沟

Mín-hsien .. .. 岷縣

Nan-hai .. .. 南海

Nan-yang .. .. 南陽

Nei-hsien .. .. 芮縣

Nien-yü-chuan .. 鮎魚轉

Ning-wu .. 寧武

Ning-yang 寧陽

nu-li .. 奴隸

Pao-t'ou-ts'un .. 堡頭村

Pei-shuo-ling 北首嶺

Pin-hsien 邠縣

p'ên	盆
P'i-hsien	邳縣
San-li-ch'iao	三里橋
Shan-hsien	陝縣
Shao-kuan	韶関
Shuo-hsien	朔縣
Ta-hsi	大溪
Ta-ssu	大寺
Ti-shao-kou	滴哨沟
tsu	祖
Tung-chuang-ts'un ..	東庄村
Tung-hsing	東興
t'ai-chi-t'u	太極圖
T'ung-kuan ..	潼関
T'ung-t'ien-yan	通天岩
Wang-wan	王湾

Wên wu kung tso tui .. .. 文物工作隊

wêng .. .. 瓮

Wu-hsing .. .. .. 吳興

Yang-ch'êng .. .. .. 陽城

Yang-chuang.. .. .. .. 楊庄

Yen-érh-wan .. .. .. 雁兒湾

Yin-p'an-li .. 營盤里

Yuan-chun-miao .. .. 元君廟

Yuan-ch'ü .. .. .. 垣曲

yuan-shih .. .. 原始

Yun-hsien .. .. 鄖縣

Index

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

W

Y

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