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Author(s): C. W. Bishop

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THE RISE OF CIVILIZATION IN CHINA WITH REFERENCE TO ITS GEOGRAPHICAL ASPECTS*

C. W. Bishop

THROUGHOUT the historical period the centers of civilization in the West have been moving ever farther away from the equator. But in China the advance has been in the reverse direction. There alone in antiquity a high civilization arose in a region of really cold winters, the basin of the Hwang Ho, and spread thence over the warmer lands to the south.

In the diffusion of culture the lay of the land has played a prime part. Generally speaking, China proper has a rugged relief, only about ten per cent of its surface, mainly in the north, being occupied by plains. In primeval times unbroken forest united the Yangtze basin with the Himalayan and Indo-Chinese regions, while the faunal evidence shows that continuous strips of woodland must have extended across northern China right up to Manchuria.¹ The loess soil, however, filling the valleys of the northwestern uplands and extending far eastward across the "Great Plain"² discouraged a heavy tree growth; hence these areas, like similar ones in Central Europe and elsewhere, included great tracts of open grassland. A fact of preëminent significance to the cultural advancement of ancient China was the existence of a Eurasian steppe zone opposing no transverse barriers to the free eastward flow of stimuli from the far older culture lands of the West. Likewise important was the presence in northern China of a fertile and comparatively open lowland region of temperate climate, well fitted to become the seat of a high civilization.

THE EARLIEST CHINESE

Thus far no sign in China proper of any early phases of the New Stone Age has been found. They may possibly come to light in the course of further archeological research. On the other hand, it is perhaps more likely that the proto-Chinese had already passed through these stages elsewhere. Ethnologists seem agreed that the Mongoloid

*In this paper have been embodied the more important conclusions regarding cultural diffusion in southeastern Asia that have been reached since "The Geographical Factor in the Development of Chinese Civilization" appeared a decade ago in the *Geographical Review* (Vol. 12, 1922, pp. 19-41).

¹ Regarding the former existence of wooded areas in northern China see A. de C. Sowerby: *The Natural History of China, Journ. North-China Branch of the Royal Asiatic Soc.*, Vol. 53, 1922, pp. 1-20; specifically p. 3; also *idem*, *A Naturalist's Note-Book in China*, Shanghai, 1925, pp. 12 *et seq.*

² On the extent of the loess in northern China see V. K. Ting: Prof. Granet's "La Civilisation Chinoise," *Chinese Soc. and Polit. Sci. Rev.*, Vol. 15, 1931, pp. 265-290, specifically p. 268.

or Xanthoderm branch of the human family was specialized in Inner Asia. That region—after a last period of intense cold had given place to warmer conditions—became and long remained genial parkland and meadow, with lakes and streams fed by the melting glaciers of the neighboring mountains. Such an environment was favorable for human progress, and in Mongolia evidence has been found of development from a purely hunting and fishing and food-gathering economy into a cultural stage that practiced the rudiments of planting.³

It was apparently after some at least of the Mongoloid stocks had achieved this degree of progress that slow desiccation of their homeland started them drifting southward into moister regions. The movement thus inaugurated carried them over most of southeastern Asia. The earliest of these peoples yet known who can in any sense be called Chinese are found already in possession of a fairly advanced Neolithic culture. In the valley of the Hwang Ho its remains occur perhaps more abundantly in the loess but are widely distributed in the alluvium as well.

These proto-Chinese of the north⁴ probably had a social organization based on matrilinear descent. How far they had developed the institution of chieftainship, either male or female, is uncertain. They were not pastoral nomads but sedentary planters, practicing a milpa type of cultivation with the aid of stone-bladed hoes. Millet seems to have been their only cereal, while their domestic animals were the dog, the pig, and possibly the fowl. Clothing they made from skins, bark cloth, and perhaps hemp; and they used a coarse pottery, shaped by hand. During the long cold winters they lived in villages of beehive-shaped earth lodges partly excavated in the ground, while in summer they appear to have occupied huts raised on stilts near their cultivated patches. Religion was animistic and orgiastic, with fertility rites which included human sacrifice and perhaps ceremonial cannibalism.

Distinct but allied cultures, associated with certain ethnic differences, existed in the more rugged and densely wooded south. There communal pile dwellings were in use; and, owing largely to the more mature character of the river systems, canoe navigation attained a greater development than it did in the Hwang Ho region. These and other local specializations were in part the result of climatic and physiographical differences. Broadly speaking, however, all the New Stone Age cultures of southeastern Asia were fundamentally of the same type.

³ Regarding this development see N. C. Nelson: *The Dune Dwellers of the Gobi*, *Natural History*, Vol. 26, 1926, pp. 246–251, specifically p. 251; also *idem*, *Archaeological Research in North China*, *Amer. Anthropologist*, Vol. 29, 1927, pp. 177–201, specifically p. 197.

⁴ On the essential similarity of the Neolithic populations of northern China to the present-day inhabitants of that region see Davidson Black: *The Human Skeletal Remains from the Sha Kuo T'un Cave Deposit in Comparison with Those from Yang Shao Tsun and with Recent North China Skeletal Material*, *Palaeontol. Sinica*, Ser. D, Vol. 1, fasc. 3, Peking, 1925, pp. 1–120, specifically p. 98.

The communities of Neolithic Chinese peasants, like those of people everywhere at a similar cultural stage, seem to have been largely self-sustaining. The rarity on their village sites of objects or materials foreign to the locality indicates that trade was undeveloped, while the scarcity of weapons suggests that there was little warfare. But supplies of workable stone for the manufacture of tools, as important to Neolithic man as deposits of metal are to us, were wholly lacking in the alluvium and hardly less so in the loess. They had to be sought in rugged and densely wooded regions which would otherwise have offered slight inducement to penetration. Some of the stone implements found on prehistoric Chinese village sites must have been brought there, whether in their finished state or in the shape of raw material, from very considerable distances.

NATURAL DEFICIENCIES OF SOUTHEASTERN ASIA

A culture of this type, especially in a region like southeastern Asia naturally deficient in wild animals and seed-bearing grasses susceptible of domestication, could scarcely of itself have developed into a high civilization. This point should be stressed, for it has been much neglected. Most if not all domestic animals and cereals that form the economic basis of present-day Chinese life are demonstrably of foreign origin, and many of them were not introduced until after the beginning of the Chinese historical period. Wherever the aboriginal inhabitants of China have achieved any marked progress in historical times it has been without exception through culture borrowing. The groups that live today in various isolated districts have signally failed to advance themselves through their own efforts. The truth seems to be that the Late Stone Age peoples of the southeast of Asia, including the proto-Chinese, had developed a culture pattern too rigid and inelastic to permit of progress beyond a certain point. This pattern had adjusted itself closely to its environment; but in so doing it had hardened into a routine from which escape was possible only through the aid of external stimuli. Such a cultural phenomenon has occurred time after time in the world's history. It is being repeated today in China itself on an unprecedented scale.

The requisite impetus from without was provided by two streams of influence. One of these flowed from Indian regions, the other through Central Asia but from ultimate sources in lands farther west. The two currents met and mingled in the Yangtze basin, with interpenetrations in both directions.

CULTURAL MIGRATIONS FROM THE SOUTH

The more important of the Indian culture elements entered China, so far as can be told at present, during and perhaps before

the second millennium before the Christian era. The course they followed was from northeastern India, across the upper basin of the Irrawaddy, and so into the central and northern portions of the western Chinese province of Yünnan.⁵ They thus reached the

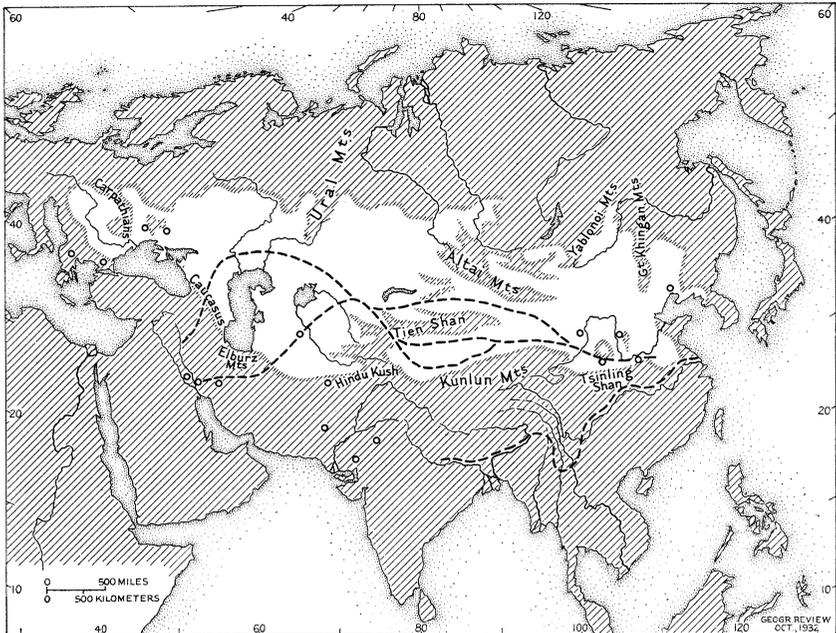


FIG. 1.—The northern steppe belt of the Old World (unshaded). Routes of cultural migration to China are shown by dashed lines; regions where painted pottery has been found are marked by a small circle. Scale of map approximately 1:90,000,000.

Yangtze; then worked their way down that stream, creeping laterally up its tributaries the while, until by this roundabout route they eventually arrived at the coast. It may be remarked that within the past two or three centuries maize, a plant of American origin, has entered China from India by this same route, whose importance in the cultural history of southeastern Asia has scarcely been appreciated. The extremely rugged and forest-clad hill country of southwestern China formed a barrier to more direct penetration, as it still does in large part.

It is possible that millet and also "dry" or upland rice, the former at least grown from very early times, may have entered China in this way, for neither of them seems indigenous there, while on the other hand there is some reason to believe that both are natives of India. But of all the latter's gifts to China by far the most important was

⁵ Burma and Yünnan form a geographical unit. See C. W. Bishop: *The Geographical Factor in the Development of Chinese Civilization*, *Geogr. Rev.*, Vol. 12, 1922, pp. 19-41, specifically pp. 23 and 26.

“wet” or irrigated rice. The cultivation of this plant appears to have begun in some region near the head of the Bay of Bengal.⁶ Thence it spread both west and east. Peculiarly suited to monsoon regions, it became in time the dominant crop in much of central and southern China and even extended itself into parts of the north.

The fowl, first domesticated in Upper Burma or thereabouts, must have penetrated China by the same route; but being less subject to climatic limitations it spread much farther north than did the growing of irrigated rice. It is uncertain as yet whether fowls were kept in China during the Neolithic period, although it is likely. They had at all events become perfectly well known in the basin of the Hwang Ho by the latter part of the second millennium before the Christian era, when the Chinese Bronze Age had already begun.

China seems also to have owed to India the water buffalo, or carabao, as well as that zebu strain in her domestic cattle especially noticeable in the southwest and south. The practice of taming elephants, once so abundant in most parts of China,⁷ may have been borrowed from the same source. It is by no means impossible, too, that from India some knowledge of metals reached the Yangtze Valley.

These and other Indian influences profoundly modified the economic life of southern and central China. They had comparatively little direct effect on the growth of civilization in the valley of the Yellow River, for many of them were unsuited to the drier and colder climate of that area.

THE NORTHERN CULTURAL ROUTE

Quite different in character were the culture traits that at various times reached northern China through Central Asia. For not only had they been originally evolved in cooler and less humid regions than those coming from India; but many of them, particularly those pertaining to social and political organization, were of a nature not affected by climatic conditions. Hence they became the principal factors in the shaping of the historical Chinese civilization, and their influence gradually pervaded almost the entire country.

The manner in which these cultural migrations across Inner Asia took place and the extent to which they were accompanied by actual ethnic movements are questions still awaiting definite answer. The more important of them had already occurred before the dawn of

⁶ On the origin of irrigated rice culture see E. B. Havell: *The History of Aryan Rule in India from the Earliest Times to the Death of Akbar*, New York, 1918, p. 15; also S. V. Mosseri: *Sur l'origine du riz et l'histoire de sa culture en Égypte*, *Bull. l'Union Agricole d'Égypte*, Vol. 20, 1922, pp. 5-15. Attempts to show on botanical grounds that irrigated rice culture must have begun in the East Indian Archipelago ignore the historical and ethnological evidence.

⁷ Regarding the former existence of elephants in China see C. W. Bishop: *The Elephant and Its Ivory in Ancient China*, *Journ. Amer. Oriental Soc.*, Vol. 41, 1921, pp. 290-306.

history in China, and there is in consequence no written record of their arrival in that country.⁸ Individual culture traits were transmitted in the usual way, through contacts, peaceful or hostile, between intervening peoples. In certain cases, however, organized invasions, followed by conquest and settlement, undoubtedly took place. These have occurred time after time during the historical period, and there is every reason to believe that they did so in prehistoric times as well.

MOVEMENTS IN THE GRASSLANDS

The Eurasian steppe zone has been traversed over and over again in all ages by both faunal and human migrations.⁹ Its chief routes cross Dzungaria, between the Altai and the Tien Shan mountain systems, while others pass through the Tarim basin, north of the Kunlun Range. The primary causes of the migrations of various kinds which have repeatedly flowed along this great natural thoroughfare have undoubtedly been climatic.¹⁰ Periods of humidity, bringing about an increase in numbers of both man and beast, have alternated with others of drought that led to general turmoil and unrest. The movements thus set up profoundly affected the western portions of the ancient world. More pertinent to our inquiry is the fact that, allowing time for their influence to travel across Inner Asia, they synchronize strikingly with certain important developments in northern China.

The intervals between these epochs of disturbance in the West and the corresponding events in the Yellow River valley grew steadily shorter, a fact pointing to the operation of accelerating causes. One of these, perhaps the most important of all, was the increasingly effective utilization of the horse by the peoples of the western grasslands. It was probably during the latter half of the third millennium before the Christian era that they began to yoke that animal to the chariot,¹¹ thus devising the most efficient instrument of predatory war that had so far been invented by man. During the next thousand

⁸ For an appraisal of our written sources for early Chinese history see L. C. Goodrich: *The Canonical Books as Source Material*, *Chinese Student Bulletin* (Columbia University, New York), Vol. 2, 1928, p. 3; Henri Maspero: *La Chine antique*, Paris, 1927, Introduction, pp. xii *et seq.* Also Bernhard Karlgren: *The authenticity of Ancient Chinese Texts*, *Museum of Far Eastern Antiquities (Ostasiatiska Samlingarna) Bull. No. 1*, Stockholm, 1929, pp. 165-183. It is only fair to say that the last word on this subject is still very far from having been said.

⁹ A historically recent example of such a migration was the flight of the Torguts from the Volga region to the province of Ili in 1771. Regarding these routes across Eurasia see A. M. Berthelot: *L'Asie ancienne central et sud-orientale d'après Ptolémée*, Paris, 1930, Ch. 2, *La route du nord*, pp. 34 *et seq.*

¹⁰ On the connection between climatic fluctuations and ethnic movements in Inner Asia see Ellsworth Huntington: *The Pulse of Asia*, Boston and New York, 1907, *passim*; also J. C. Curry: *Climate and Migrations*, *Antiquity*, Vol. 2, 1928, pp. 292-307; also Owen Lattimore: *Caravan Routes of Inner Asia*, *Geogr. Journ.*, Vol. 72, 1928, pp. 497-531, *passim*, and especially pp. 519 *et seq.*

¹¹ Regarding the effects of the utilization of the horse see Harold Peake and H. J. Fleure: *The Steppe and the Sown*, New Haven, 1928, *passim*; also V. Gordon Childe: *The Aryans: A Study of Indo-European Origins*, London, 1926, Index, *s. v.* Horse; also *The Cambridge Ancient History*, Vol. 1, New York, 1923, p. 107; also Berthelot, *op. cit.*, pp. 18 *et seq.*

TABLE I—PARALLELISM OF EVENTS WEST AND EAST

OCCIDENT	CHINA
<p>Bronze weapons and chariots drawn by asses used in Mesopotamia and perhaps on the Iranian plateau, before 3000 B.C.</p> <p>Era of turmoil in western steppe region begins <i>ca.</i> 2700 B.C.</p> <p>Overthrow of Dynasty of Agade in Mesopotamia <i>ca.</i> 2570 B.C.</p> <p>Fall of Old Kingdom in Egypt <i>ca.</i> 2450 B.C.?</p> <p>Western steppe people acquire from their southern neighbors use of bronze and chariots, and yoke horses to latter, before 2000 B.C.</p> <p>Horse known in Mesopotamia by 2000 B.C.</p>	<p>Neolithic Period.</p> <p>Appearance in Hwang Ho basin of painted pottery made on wheel <i>ca.</i> 2500 B.C.?</p> <p>Use of copper begins in extreme north-western China <i>ca.</i> 2100 B.C.?</p> <p>Legendary Hsia Dynasty founded <i>ca.</i> 1800 B.C.? Bronze Age civilization perhaps introduced into China then.</p>
<p>Unrest in western steppes <i>ca.</i> 1800 B.C.</p> <p>Kassites introduce horse-drawn chariot into Mesopotamia <i>ca.</i> 1760 B.C.</p> <p>Hyksos introduce both horse and chariot into Egypt about this time.</p> <p>Chariot-using Vedic Indians invade Punjab during same period.</p>	<p>Semi-historical Shang Dynasty founded <i>ca.</i> 1500 B.C. High Bronze Age civilization, with chariots and writing, in northern China.</p>
<p>Renewed turmoil in steppe zone <i>ca.</i> 1200 B.C.</p> <p>Use of mounted troops and of iron weapons begins about this time.</p>	<p>Historical Chou Dynasty founded by invaders from west <i>ca.</i> 1050 B.C. Use of bronze weapons and chariots continues.</p>
<p>Disturbances in West <i>ca.</i> 800 B.C.</p> <p>Horse-riding invaders from the steppes appear in eastern Europe and southwestern Asia.</p>	<p>Chou Dynasty driven eastward by attack from west 770 B.C.</p> <p>Use of iron and of mounted troops begins in China <i>ca.</i> 500 B.C.</p>

years or so the horse-drawn chariot spread into almost every part of the eastern hemisphere north of the equator where conditions permitted its use, from western Europe and northern Africa to north-western India, central Siberia, and northern China. It appeared latest and survived longest at the two extremities of the Eurasiatic continent, in those regions most remote from its original center of distribution. The process of its diffusion affords one of the master clues to the history of ethnic movement in the ancient world.¹²

The parallelism of events in the West and in China is shown in the table on the preceding page, an expansion of that presented earlier by the writer.¹³

PAINTED POTTERY AS EVIDENCE OF RELATIONS WITH THE WEST

During the Neolithic period types of hand-shaped earthenware were used in all parts of the country, north and south alike. But associated with them in a particular region there has been discovered a fine polychrome painted ware, in part at least turned on the wheel and displaying in other respects also very different and far more highly specialized characters.¹⁴ The mere presence of such a superior ware would in itself lead us to suspect cultural infiltration if not actual ethnic intrusion. Other circumstances strengthen this probability. The painted ware has so far been found only in the upper and middle portions of the Hwang Ho Valley and its vicinity, the very section of China most open in ancient times to invasion by cultural elements from the west. Moreover, the undeniable resemblances existing between this ware and certain Occidental ceramic types become more marked farther west in the area where it has been found. Of an independent origin of painted pottery in China no indication has so far come to light; it seems rather to have been already fairly well developed when it first appeared there. The use of some form of the potter's wheel in its manufacture is also significant; for that instrument was known in the more advanced parts of the Occident far earlier than it was in China. It is to be remarked that one of the known consequences of the disturbances that agitated the grasslands in the third millennium before the Christian era was the dispersal of the painted pottery makers of the Occident far and wide.¹⁵

¹² On this see C. W. Bishop: *Man from the Farthest Past* (Smithsonian Sci. Ser., Vol. 7), New York, 1930, pp. 285-289 and *passim*.

¹³ Bishop, *The Geographical Factor in the Development of Chinese Civilization*, p. 31. The dates there assigned for the beginning of the three earliest Chinese dynasties were calculated retrospectively from the first century of the Christian era and are without precise historical significance.

¹⁴ An interesting series of papers on the painted pottery culture of prehistoric China is to be found in the *Palaeontologia Sinica*, Ser. D, Vol. 1, Peking, 1923-1925; see also J. G. Andersson: *An Early Chinese Culture*, *Bull. Geol. Survey of China*, No. 5, Peking, 1923; also Davidson Black: *A Note on the Physical Characters of the Prehistoric Kansu Race*, *Memoirs Geol. Survey of China*, Ser. A, No. 5, Peking, 1925, pp. 52-56.

¹⁵ See Peake and Fleure, *op. cit.*, pp. 41 *et seq.*; also *The Cambridge Ancient History*, *loc. cit.*

THE BRONZE AGE IN CHINA

That distinctive phase of material culture commonly known as the Bronze Age in marked contrast to the ages of Stone and Iron was far from being a world-wide phenomenon. On the contrary it occurred only in a relatively small but continuous portion of the earth's surface corresponding roughly to the North Temperate Zone of the Old World.¹⁶ In southwestern Asia it had already begun by 4000 B.C., and it lasted until about 1000 B.C. or slightly longer. In northern China it did not begin until much later, most probably some time after 2000 B.C., but continued nearly down to the opening of the Christian era. The attention of students has frequently been drawn by its fundamentally similar character in both these regions.¹⁷ In the West the Bronze Age has been traced by archeologists through several successive periods of evolution. In China no trace of the earlier of these has been found; on the contrary bronze working appears there quite abruptly as an already matured art. It does so, moreover, not as an isolated phenomenon but as an integral element of a whole well-knit culture complex whose individual traits occur centuries and in some cases millenniums earlier in the Occident than they do in China. These circumstances taken together can only be explained as indicating repeated eastward migrations along the steppe zone during the Bronze Age, certainly of cultures and in some instances of peoples.

There was of course no mass transference of either from the banks of the Euphrates and Tigris, or even of the Oxus and Jaxartes, direct to those of the Hwang Ho. The process, like all great human movements, was long and complicated and is only beginning to be grasped in part. What must have happened was something like this. Certain culture traits, including the knowledge of bronze working and the use of wheeled vehicles, spread from southwestern Asia before the close of the third millennium before the Christian era to the grasslands north of the Caucasus, the Elburz, and the Hindu Kush. There they underwent local modification and were then still further disseminated in various directions, among them to the river basins of northern China. There they were able to take root and develop along specialized lines under the influence of a new and favorable environment.

The civilization which thus arose in the valleys of the Yellow River and its chief affluents comprised many features quite alien to the aboriginal Neolithic culture. Among these were the knowledge of bronze, the organization of society on a rigidly patriarchal basis,

¹⁶ Bronze was being used to some extent in Peru at the time of the Spanish Conquest; but that historical fact by no means justifies us in ascribing to the Incas a true Bronze Age civilization comparable to the one that had come to an end in the Old World something like two thousand years before.

¹⁷ On the cultural similarities between China and the West see Berthold Laufer: *Some Fundamental Ideas of Chinese Culture*, *Journ. of Race Devel.*, Vol. 5, 1914-1915, pp. 160-174.

and the habit of living in groups of wooden houses forming quadrangular towns defended by ramparts of tamped earth. Horses, cattle, sheep, and goats, all natives of the West, now appeared. Wheat and other cereals indigenous to the same region were cultivated. Wheeled vehicles, including the horse-drawn chariot and the oxcart, were introduced.¹⁸ It is noteworthy that the archaic Chinese attached

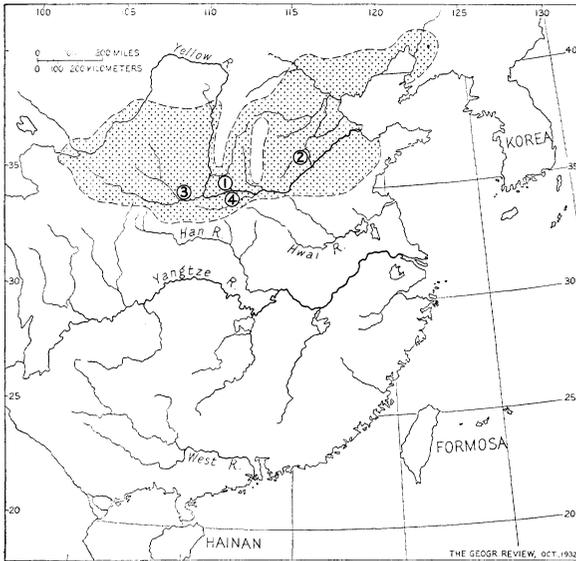


FIG. 2.—Map showing the cradle of the Chinese Bronze Age civilization (stippled area): its northeastward extension is quite uncertain. Numbers have reference: 1, seat of the legendary Hsia Dynasty; 2, final seat of the Shang Dynasty; 3, earlier capital of the Chou Dynasty; 4, later capital of the Chou Dynasty. Scale of map 1:37,000,000.

animals to vehicles but not, apparently, to the plow; for it is just the former that have been used by peoples on the march, while the latter has accompanied the slow diffusion of agriculture. The ox-drawn plow eventually appeared in China but, as recent investigations on the part of Chinese scholars seem fairly to have demonstrated, considerably later than the other traits just named.

BEGINNINGS OF STATE BUILDING

This Bronze Age type of civilization did not at once supplant the old Neolithic culture of northern China. On the contrary it was confined for a very long period to the warlike ruling class of numerous small autonomous city states, dotted about like islands in a wide sea of New Stone Age barbarism.¹⁹ The location of these states was determined by geographical considerations. In the rugged northwest they were situated in river basins like those of the Wei in Shensi and the Fên in Shansi, both draining into the middle Hwang Ho and both very early culture centers. In the Great Plain, areas were sought that were protected by natural frontiers of river and marsh

¹⁸ The Chinese character for "army" contains that for "chariot" as one of the elements. Early forms of the latter ideograph show that at first cars were drawn by two horses; later on in the Chinese Bronze Age teams of four animals, yoked abreast, were used.

¹⁹ These city states are spoken of, retrospectively, in the ancient Chinese writings as "ten thousand" in number, but the word used has here its alternative meaning of "myriad."

and were well watered without being exposed to inundation. The aims were similar in all cases: defense against other states and against the enveloping aboriginal populations; possession of as much arable land as possible; and control of trade routes, so vital to the maintenance of a Bronze Age civilization.²⁰

Towns were frequently built on these lines of communication, especially where two or more of them intersected. In piedmont regions they often grew up near points where passes across mountain ranges debouched upon the lowlands. Again, wherever higher relief afforded immunity from floods they were situated close to streams and particularly in their forks. On the plains, owing to the recurrent inundations, there could be little permanent settlement near the rivers.

It was probably in connection with this superposing of a Bronze Age civilization upon the antecedent Late Stone Age culture that a sharply marked social division arose into a privileged and an unprivileged class.

At the head of every city state there seems to have been a hereditary priest chieftain claiming divine or superhuman descent, one of whose principal functions was to conduct the worship of the supreme deity, the Sky God. The nobles from their fortified towns wielded seigniorial authority over the surrounding districts. They delighted in battle and hunting, both conducted in chariots as in the contemporary West. The breeding of horses and cattle was one of their chief concerns. They worshiped the spirits of their ancestors with elaborate rites. After death their bodies, covered with red pigment and accompanied by those of attendants, male and female, and by much treasure, were interred in wooden chambers under barrows or grave mounds, counterparts of the *kurgans* of the steppe region.

A class of rural serfs who dwelt apart in their own village communities formed the bulk of the population. Down to a late period these retained their old Neolithic culture, doubtless considerably truncated and impoverished.²¹ They were greatly oppressed by their feudal lords with heavy imposts and *corvées*, rigorously exacted. It was they who tilled the soil, apparently with foot plows²² and mattocks shod with stone; for bronze never became cheap enough to be generally used for agricultural implements.

This command of large bodies of forced labor made possible the undertaking of the work of development that in the long run transformed China into the land of intensive cultivation it is today. The

²⁰ On trade during the Bronze Age see V. Gordon Childe: *The Bronze Age*, New York, 1930, pp. 7 *et seq.*

²¹ The manufacture of painted pottery, for example, apparently died out about the beginning of the Chinese Bronze Age, while the old coarse Neolithic ware long continued to be made. The pottery of the nobility seems to have been very different from either.

²² Foot plows are still used in some parts of China and are identical in principle with the *caschrom*, for example, used until recently in northwestern Scotland. See E. Cecil Curwen: *Prehistoric Agriculture in Britain*, *Antiquity*, Vol. 1, 1927, pp. 261-289.

accomplishment of this task required much more than local and desultory effort. The imperative need especially for unifying and coördinating water control over wide tracts of country contributed powerfully to the eventual formation of larger territorial units under a single authority. Exactly the same thing had happened something like two thousand years earlier in Mesopotamia.

The ancient Chinese nobles were able to maintain themselves over their own peasants and against the barbarian communities around them largely through the possession of superior weapons. In earlier times their principal offensive arms, beside the compound bow, were the socketed spear and the dagger ax or "halberd," both of bronze; while for defense they used hide armor and shields of wood or leather. The bronze sword was late in appearing in China; perhaps it did not appear until around the beginning of the first millennium before the Christian era or even later.²³ The type mainly used there was a short double-edged stabbing blade of unmistakable Scythic affinities;²⁴ it never acquired the "leaf shape" so characteristic of the latest bronze swords of the Occident. Chinese bronze weapons in general display features belonging to various epochs and different culture areas in the West. A complete and detailed analysis of these will some day throw much light on the subject of Chinese origins.

Bronze was likewise employed for the fabrication of numerous classes of objects beside weapons, making all told great demand for the constituent metals of the alloy. But copper and tin, particularly tin, are scarce or entirely wanting in most parts of northern China and had to be procured from a distance through trade or conquest.

THE QUEST FOR METALS

Copper may have been found in more regions than one; for deposits of that metal are somewhat widely distributed. During the early historical period it seems to have been imported mainly from the hilly and well mineralized regions of the south. The ancient book the *Yü Kung*, or "Tribute of Yü," dating back at least to the closing period of the Chinese Bronze Age, names the Yangtze basin alone as the source from which copper was obtained. The demand for it undoubtedly played an important part in the relations, both warlike and commercial, between the ancient Yellow River states and that area.

Analyses of Chinese bronze objects suggest that the amounts of tin available to the metal workers of the Hwang Ho Valley in

²³ Regarding this point see Olov Janse: Notes sur quelques épées anciennes trouvées en Chine, *Museum of Far Eastern Antiquities (Ostasiatiska Samlingarna) Bull. No. 2*, Stockholm, 1930, pp. 67-134, specifically p. 93.

²⁴ For the affinities of the ancient Chinese bronze sword consult *The Cambridge Ancient History*, Vol. 3, New York, 1925, p. 198; also *ibid.*, Vol. 1 of Plates, New York, 1927, p. 256 and plate opposite.

antiquity were fluctuating and irregular.²⁵ That metal is far less generally distributed than copper. The deposits that occur in Khorasan, in the Malay Peninsula, and even in Burma and Yünnan would all seem too remote to have been accessible to the civilized peoples of northern China during their Bronze Age. It is still a mystery whence they procured their tin. We can only be sure that it came from some region outside the Great Plain.

EXTENSION OF TRADE AND TRADE ROUTES

A Bronze Age civilization anywhere presupposes a considerable organization and wide extension of trade. That of China was no exception. To the ancient aristocracies of the Yellow River states the lands to the south were a region of fabulous wealth. Among the riches to be obtained from the Yangtze Valley were slaves, gold, silver, copper, hides for armor, yak tails for standards, ivory, rhinoceros horns, plumes, musical stones, silk, pearls, precious woods, and cinnabar. The mention of yak tails implies trade relations between the middle Yangtze basin and the Tibetan plateau, for the yak is a native of High Asia. Jade, which played such an important rôle in ritual and symbol, seems beyond much doubt to have been procured from the Tarim basin, where it occurs; for it is unlikely that deposits of that much-prized substance ever existed in China proper. Great dogs of a breed probably ancestral to that of the present Mongolian and Tibetan mastiffs were imported from some western region, perhaps the modern province of Kansu. The demand among the landholding class for articles obtainable only at a distance played a large part in the widespread diffusion of culture which we know went on throughout the Chinese Bronze Age.

The routes followed by trade were of course largely fixed by topographical features. The northern Chinese rivers were not of a character to encourage the development of traffic by water, although we know that it occurred. In general, land travel was preferred, and transportation was chiefly by means of pack oxen and oxcarts. The present railways follow some of the principal routes traversed far back in the Chinese Bronze Age. In the south the rivers flow through older and better-defined channels, while on the other hand dense subtropical forests and an extremely rugged relief made movement by land difficult. Hence in that region trade and war were conducted in large dugout canoes propelled by many paddlers. It is interesting to see that in the north today motor buses are coming into general use, while in the south steam launches and motor boats are largely employed.

²⁵ Concerning these see Sueji Umehara: *L'analyse chimique des bronzes anciens de la Chine, Artibus Asiae*, Volume for 1927, pp. 247-264; also W. Perceval Yetts: *Bronzes*, in "Chinese Art" (*Burlington Magazine Monograph No. 1*), London, 1925, pp. 31-46, specifically p. 36 and note 1.

A REVOLUTION IN THE ART OF WAR

Probably during the latter half of the second millennium before the Christian era there began in the western steppes a revolution in the art of war that was destined to produce far-reaching effects on the history of civilization. This was the employment of bodies of mounted men in fighting,²⁶ at first with the spear but later with the bow also. In the beginning such troops were subordinate to the chariot forces; but in time, owing to their greater efficiency in combat, they displaced the latter entirely. The practice of fighting on horseback extended itself in various directions, among them to the confines of China. There is some slight reason for thinking it may have been known to the people who drove the chariot-using Chou Dynasty eastward in the eighth century before our era. Two or three hundred years later we find light cavalry, armed with lances, employed along with the traditional chariotry and foot by the Chinese themselves. The latter, about 300 B.C., borrowed the practice of horse archery from their steppe neighbors, as is specifically told.²⁷ Finally, not long before the beginning of the Christian era, the war chariot disappeared in China, its place in battle being taken by heavy cavalry using shock tactics. This improvement was adopted apparently from the Persians through several intermediaries.²⁸ The different methods of utilizing the horse in Chinese warfare at various periods afford us some of the clearest and most interesting examples we have of the way in which successive advances in civilization have disseminated themselves along the steppe zone.

BEGINNINGS OF THE IRON AGE

Much interesting and valuable work has been done of late by Chinese scholars on the problem of the beginnings of the Chinese Iron Age. The use of iron began in northern China somewhere around the middle of the first millennium before the Christian era. There are reasons for thinking that it was originally obtained from some region outside the basin of the Hwang Ho. An early Chinese ideograph for "iron" is written with the two elements "barbarian" and "metal." The *Yü Kung*, already cited, speaks of it as imported from the upper Yangtze Valley. Some knowledge of iron appears also to have penetrated the Hwang Ho basin by the steppe route; for toward the close of the first millennium before our era, about the same time as the adoption of heavy cavalry, we begin to find

²⁶ The use of the horse as a mount instead of a draught animal may have occurred sporadically far earlier; see R. de Mecquenem: Excavations at Susa (Persia), 1930-1931, *Antiquity*, Vol. 5, 1931, pp. 330-343, specifically p. 332 and note.

²⁷ Édouard Chavannes: *Les mémoires historiques de Se-ma Ts'ien*, 5 vols., Paris, 1895-1905; reference in Vol. 5, p. 81.

²⁸ See Berthold Laufer: *Chinese Clay Figures*, Part I, *Field Museum of Nat. Hist. Publ.* 177 (*Anthropol. Ser.*, Vol. 13), 1914, p. 232 and *passim*.

employed in northern China long straight iron swords of a well known Western and Central Asiatic type.

Iron working developed more rapidly in central China than it did in the north. This may have been due in part to its having begun earlier in the former area; but the better quality of the iron found in the Yangtze Valley and the ample supplies of charcoal for smelting provided by its luxuriant forests were also of great advantage.

In both northern and southern China the spread of civilization was from the interior of the country toward its periphery. It did not reach the coastal region till well after the beginning of the Chinese historical period. Upon its development the sea exerted comparatively little influence until the appearance of sailing craft in Far Eastern waters, around the beginning of the Christian era.²⁹ Nevertheless the culture centers of the Yellow River basin must have had contacts of some sort with the coast much earlier; for on Bronze Age sites hundreds of miles inland and belonging to widely sundered epochs there occur various marine products. Among these are large numbers of cowry shells, obtainable only in distant tropical seas; and also, curiously enough, bones of the whale. It seems certain, too, that the trade in sea salt did much to promote cultural diffusions.

The archaic Chinese civilization, essentially of a lowland and agricultural type, was compelled to limit itself rather narrowly, both in peace and in war, to a particular type of terrain. Hence it spread very irregularly along the belts of easiest penetration. In hilly or wooded or swampy tracts it left enclaves of unsubdued peoples closely akin in race to the basic stock of the Chinese themselves but lagging behind culturally on account of their less accessible geographical position. Their absorption was an extremely slow process, even today far from complete in many parts of the west and southwest.

²⁹ Sailing ships are not mentioned in the Chinese writings until the third century of the Christian era, according to Professor Paul Pelliot (verbal communication of July 21, 1927); but voyages from the Near East to the coasts of Indo-China were being made about the beginning of the Christian era.