

Chapter II

GEOGRAPHY OF KOREA*

The peninsula of Korea extends slightly east of south from the Asian continent, from north latitude 40° to almost 34° . Between the west coast and the mainland lies the shallow Yellow Sea. The Liaotung and Shantung peninsulas jut into the north and east of the Yellow Sea respectively, making the shortest distance between Korea and China less than 200 km.

The islands of Japan enclose the Sea of Japan on the east, and the southernmost of these islands, Kyushu, is also within 200 km. of Korea. From one small island to another the greatest distance is 50 km., so that on a clear day it is possible to navigate across without losing sight of land. The Ryukyu chain is a continuation of the arc of Japanese islands toward the southwest, again with no great distance between islands all the way to Taiwan and the southern coast of China.

Korea thus forms an east-west link between Japan and China, and a north-south link from Manchuria through the Ryukyus to south China by way of Taiwan. While the seas on three sides and mountains in the north provided barriers to movements of people and cultural exchange, they were by no means impenetrable, but served instead as natural boundaries for the unusually homogeneous Korean language and culture (Figure 2).

*The information in this chapter is derived from Bartz (1972) and McCune (1956).

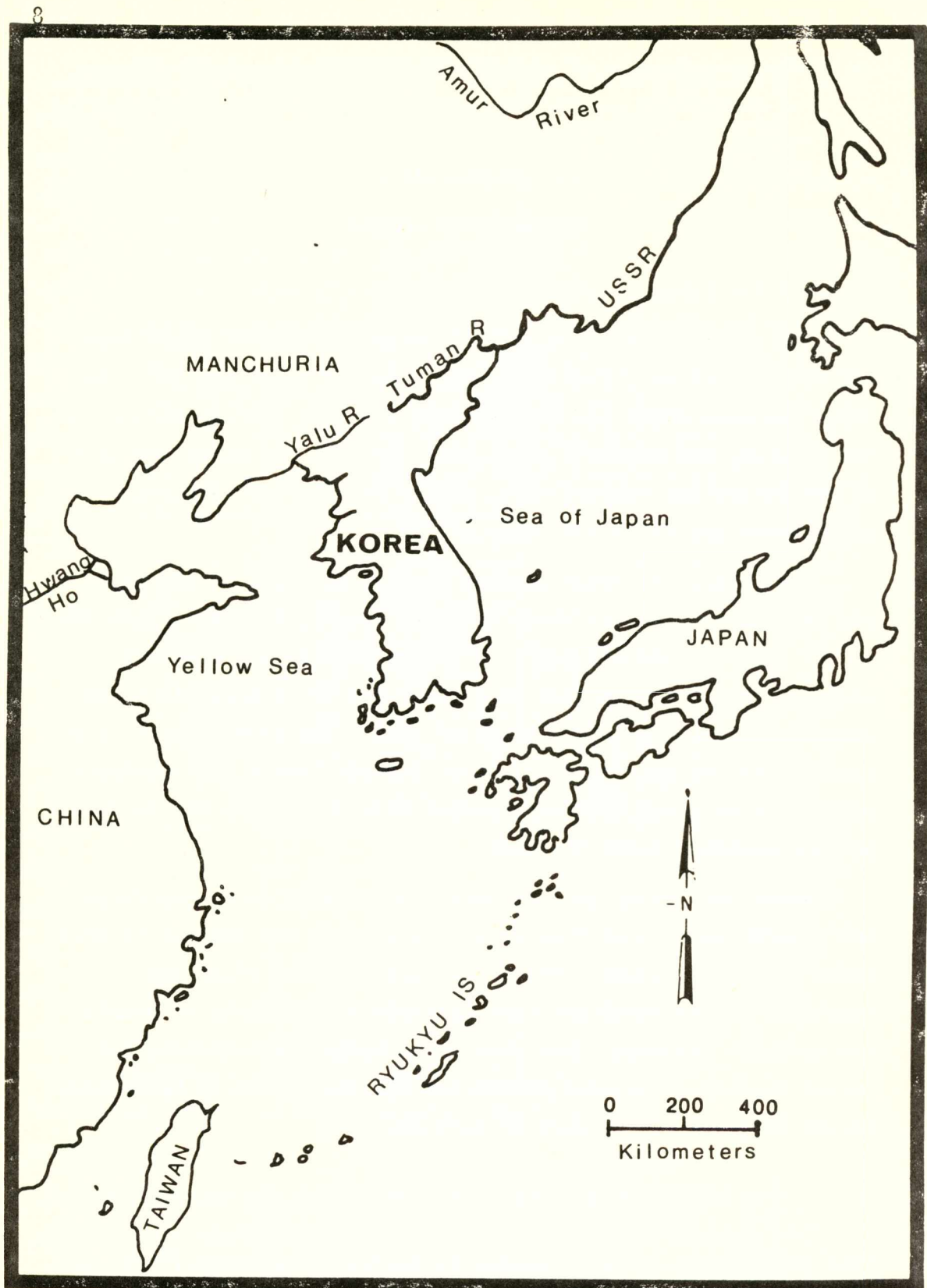


Fig. 2. Korea in its East Asian Setting

Geology

Geologically, Korea consists of the outermost edge of the ancient bedrock of the Asian continent. Because there has been more erosion than deposition, the exposed rocks are principally the granite-gneiss and mica-schist of the ancient pre-Cambrian block. Volcanic activity has largely been confined to the extreme northeast corner of the peninsula and Cheju Island, 100 km. off the southern coast. Therefore igneous rocks are rare. Conglomerates, sandstones, and shales occur sporadically, in thick layers only in the southwestern provinces of Kyongsang Puk Do and Kyongsang Nam Do. There are limestone beds in the southeast and in the far northeast. However, stone that produces a conchoidal fracture when chipped is rare. There is no flint or chert, and obsidian is found only at the north and south borders of Korea.

Topography

The whole block of the peninsula is uplifted on the eastern side and tilted down on the west and south, giving the east and west coast lines strikingly different characters. The east coast drops sharply from the mountains to the sea, with neither islands nor bays to disturb its clean lines for most of the coast. The continental shelf is narrow here, and the Sea of Japan plunges to a depth of 1000 m. less than 50 km. off shore. Many islands and bays mark the ragged submerged coasts of the west and south. The Yellow Sea is quite shallow, and this fact combined with the narrow outlet causes enormous tides, the range of which is exceeded nowhere in the world except in Nova Scotia. At Inchon, for example, the difference between high tide and low tide can be more than 10 m., exposing at low tide 2750 square km. of mud flats. As the tide comes in, conflicting currents are set in motion making boating hazardous, although skillful fishermen take advantage of the currents to drive fish into their nets.

The topography of the entire Korean peninsula is rugged and dissected. Seventy per cent of the land is mountainous, about 40 per cent with steep slopes of 40° or more. Although the mountains are not high (less than 5 per cent of the land is over 1000 m.), they form formidable barriers to transport, with their steep sides and narrow river valleys (Figure 3).

The mountains are faulted in two directions, so that even major rivers abruptly veer many times in their courses, and their valleys tend to be useless as major traffic arteries. Even modern highways rarely follow a river for any distance.

Weather and Climate

Because of the shifting Polar Front, the weather of Korea resembles that of Siberia in the winter and the South Pacific in the summer. The actual winter temperatures are not spectacularly low, with a mean January temperature of -5°C (24°F), but the discomfort caused by the strong, dry winds can be severe. These winds are mitigated, however, by the position of Korea at the edge of the continent. As the cold air arrives over the ocean it begins to warm, and this warm air sets up a circular system which brings warm air back to Korea for a few days, until it is so warm that a new high pressure cold wave may move in from the north. This is reflected in the Korean proverb, "three days cold, four days warm." In spite of the warming effect of the sea, however, Seoul, approximately in the center, has three months of mean temperatures below freezing.

Winters are dry and there is little snow. Seoul averages only two days per month of snowfall in winter. The first snow occurs toward the end of November and the last is usually in late February, although spring snowstorms do occur. The rivers freeze over. For example, at Seoul the Han River is frozen for about 3-1/2 months each year.

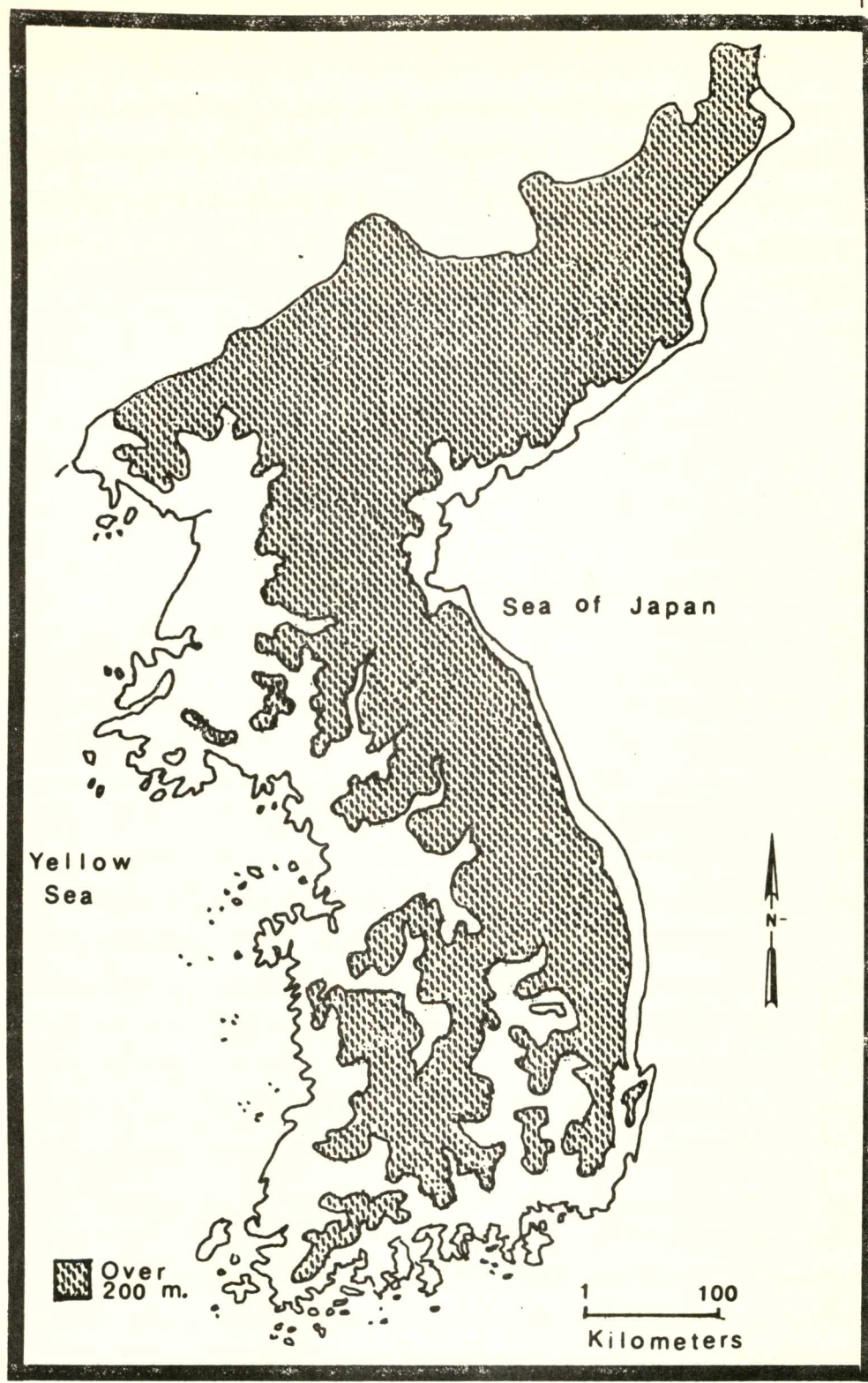


Fig. 3. Topography of Korea

Summer temperatures, in contrast, are high, as in the humidity. The growing season at Seoul is short, having only 170 frost-free days. Thus only one grain crop per year can be grown in the Han River Valley, although in the southern provinces double cropping is practiced.

In summer when the Polar Front shifts far to the north, drenching monsoon rains arrive with the warm air from the south. Average precipitation, almost entirely in rainfall, is 1203 mm. per annum at Seoul. Sixty-four per cent of the rainfall occurs from June to September. The amount of precipitation, however, is quite variable from one year to another, diverging as much as 40 per cent from the mean. Several dry years can occur in a row. On the other hand deluges are known: Seoul once had 1357 mm. of rainfall in the month of June alone.

River Regime

These patterns of precipitation have a profound effect on the rivers and their flow patterns. Since there is little snow, snow melt in the spring does not raise the rivers significantly above their very low winter levels. Greatly increased volume does occur with the rain, however, accentuated by rapid runoff due to the granitic bedrock covered by shallow soil and the steepness of the slopes. These higher summer river levels occur regularly, not just in years of exceptional precipitation. The average flow of the Han River at Seoul in January or February is one-twentieth of the average flow in July. These rapid flows carry great quantities of debris, including large stones. Korean rivers carry an estimated total of 400,000 tons of silt out to sea each year, and the quantity of water markedly diminishes the salinity of the Yellow Sea.

These large seasonal flows cause broad river beds but fail to form deltas. Silt is carried out to the mud flats, leaving sand,

gravel, and large cobbles differentially deposited in the river beds. The lower stream beds, therefore, tend to build up rather than cut down, and some are elevated above the valley floor.

The Paleoclimate

There is general, although not complete, agreement among scholars from various disciplines relating to paleoclimates that the worldwide climate change which marked the end of the Pleistocene culminated in a period which was warmer than the present (Wissman *et al.*, 1956:281). There is some evidence of such a warmer period in East Asia. Tsukada (1966:546) reports warmer plant species in Taiwan in approximately 8000-4000 B. C. on the evidence of pollen cores. Some data from Japan also have been interpreted as evidence of a warmer climate, for there is an early shift from warm water molluscs to cold water molluscs in the Jomon sites near Tokyo Bay (Kidder 1955:40). Chard (1974:57) cites pollen studies in Siberia as evidence for a warmer period in that region, around 8000-4500 B.P.

Only one pollen analysis has been published from Korea (Oh CY 1971). This study indicates that at about 3000 B.C. Korea had a cool moist climate, with deciduous forests. Therefore, until evidence appears to the contrary, it is most reasonable to assume for 3000 B.C. and later a climate roughly similar to that of the present in Korea. In other words, we are probably looking at a period at the end, or toward the end, of a climatic optimum.

Coastal Submergence

Although it is sometimes stated that the west coast of Korea is still sinking, the placement of prehistoric shell mounds on western islands just above the high tide mark would seem to indicate a lack of major change since their deposition. During part of the Pleistocene the Yellow Sea was dry land and a land bridge to

Japan existed, but the seas may have reached their present level by 3000 B.C. or earlier.

During the previous millennia in Japan the land emerged. Japan's geology, however, is significantly different from that of Korea. Volcanic activity accounts for many phenomena of Japan, while Korea has little evidence of volcanic action even in the remote past. The coastal emergence in Japan, therefore, is not pertinent to events in Korea. Chard (1974:56) suggests that in the Amur basin by 8000 years ago, the "modern environment, modern fauna, and present sea levels and geography" pertained. Pending further study by geologists, it may be assumed on the basis of shell mound locations that the submergence of the western coast had occurred prior to the settlement of the islands in the Chulmun Period.

We may, therefore, further assume that both sea level and climate have remained reasonably constant since the Chulmun Period and that the present climate can be considered an indicator of the climate of 5000 years ago. Ancient flora and fauna, partly dependent as they are upon climate, can then be inferred from present remnants and early historic records.