Chapter 11

The Printing of Paper Money

The form of early printing that was most widespread in China—the printing that touched all classes of the people, and also attracted the attention of Marco Polo and other European travelers—was paper money.

Some Chinese writers, in treating of paper money, consider it to have been a natural development from other forms of representative currency. They frequently refer to "white deerskin money" which the Han emperor Wu in 120 B.C. compelled all nobles to buy and then present to him as tribute; but, as Dr. Yang remarks, the deerskin was not intended for circulation, and so cannot properly be considered in this context.

A more likely beginning starts with the first years of the ninth century, when "flying money" or certificates were given to merchants depositing cash in government offices called chin-shou yuan. These certificates guaranteed reimbursement in places designated by the merchant. Whether these certificates were made of paper or not is unknown. The official sources are silent on the point, but the assumption is not unlikely as both the Sui and Tang histories record the use of paper for currency in the years just prior to 618. Paper money for use at funerals—probably an imitation of metallic currency—is also recorded in the biography of an eighth-century figure. "Flying money," later called "credit cash," was in use for some centuries, and so far as is known was not printed.

The first tentative steps taken in the direction of genuine paper money may be credited, like so much in the early history of printing, to the provincial capital known as I-chou (the Ch'eng-tu of today) in Szechuan. The record runs as follows: After the rebellion of Li Shun in 994 the offices in several districts of Szechuan, includ-
ing I-chou, stopped making iron money for a season. This brought about a shortage of currency among the people and helped the circulation of paper chiao-tsü, or "exchange media." But the shops which handled chiao-tsü had no financial backing, so the government decided on supervision. In 1009 the prefect of I-chou, Chang Yung (946-1015), was concerned with this supervision, but it is not—in the opinion of Ichisada Miyazaki—the creator of the system of supervision. After 1011, government control became really effective. The chiao-tsü were then declared good for three years. At the end of this period they had to be converted either to currency or to fresh chiao-tsü. This system made supervision easy. At this time sixteen rich families in I-chou were given the right of monopoly over the chiao-tsü. For this right they had to bear some obligation towards the government.

But these families had their troubles. Forgery became common and loss of confidence ensued. Thereupon the government decided to do away with the privilege and once more circulate iron money. Nevertheless, in spite of some lack of confidence, the people considered the chiao-tsü necessary. Iron money depreciated in value and silver money was considered too costly. So the government in 1023 brought an end to the private system and in the following year, after due preparation, took it over—to be precise, on the twentieth day of the second month, or April 7, 1024.

Prior to 1024, the question of government control of the system was frequently argued. Around 1016 Hsieh T'ien, then a censor of the I-chou circuit, made the first proposal, but the court refused to act. When K'ou Ch'en became prefect of I-chou he asked for permission to discontinue the private handling of chiao-tsü, and this was granted. He went further and asked the court for the power to suppress all chiao-tsü, but this was not done. After K'ou's transfer, the use of chiao-tsü revived.

These notes were printed with copper seals fashioned by government order. In one year there was issued a total of chiao-tsü amounting to 3,884,600 kuan. In his description of the earliest privately circulated notes in I-chou, Li Yu specifically states that the printing was done on paper of one kind or color.
The decade from 1068 to 1078 witnessed an attempt at thoroughgoing renovation of China's fiscal system under the administration of the reformer Wang An-shih. In spite of intense opposition from the conservatives, the whole incidence of taxation was changed and placed on a more democratic basis. Certain of the decrees of Wang An-shih indicate that it was no easy task to keep the paper currency at par and that various expedients had to be resorted to. But they were apparently successful, for it was nearly twenty years after Wang's retirement and after his laws had been rescinded, that serious depreciation began.

Rapid inflation started sometime between 1094 and 1107. At the latter date it is recorded that twenty times as much money was in circulation as in 1024, and in the same year a new issue was put forth with the regulation that each thousand cash of the new should be equal to four thousand cash of the old. A few years later the statement is made that a thousand cash note had the purchasing power of only one hundred cash.

The history of the twelfth century is the story of a constant struggle between the Chinese and the Jurchen Tatars, whose rulers after their conquest of North China called themselves the Kin dynasty. It is also the story of constant—losing—warfare with high prices and falling currency. There were times when the printers of Hangchow must have been almost as busy as those of Berlin in 1923. Again there were times when inflation seemed to be checked for a while, only to break loose once more with a mad issue of notes that quickly became worthless.

In the year 1127 the former Emperor Hui-tsung and his son, Emperor Ch'in-tsung (reigned 1126–27), were taken captive by the Tatars, and all northern China ceded to the Tatar power. From this time the Chinese dynasty ruled only South China. It was known as Southern Sung, and the period was one of general demoralization in which continued and increasing currency inflation played no small part. The constant wars between the Chinese and the Kin usually ended in Chinese defeat and large war indemnities, payable partly in gold and silver, partly in silk and other articles of merchandise. To meet this drain on its resources, China had recourse to in-
flation on a hitherto unprecedented scale. From 1161 to 1165, twenty-eight million taels worth of notes was issued, in denominations ranging from two hundred to a thousand cash. In 1166 between fifteen and sixteen million taels were added. (A tael was then considered equal to a thousand cash.) From this time the amount increased steadily year by year. In 1209, the year after the most humiliating treaty with the Kin, when the annual tribute had been increased, and a special additional war indemnity of three million taels imposed, the pitiful experiment was tried of issuing a new kind of note, promising to pay in gold or silver, instead of copper as in previous issues. To show that this issue was something new, and to make it popular, it was printed on perfumed paper, made partly of silk.

But it was all in vain. The new money was no better than the old. Ma Tuan-lin, China's great historian, who himself witnessed the fall of the Sung dynasty and the financial condition that hastened that fall, describes the final paroxysm of inflation in words that have a strangely familiar sound to modern ears:

After having for years tried to support and maintain these notes, the people had no longer any confidence in them, and were positively afraid of them. For the payment for government purchases was made in paper. The fund of the salt manufactories consisted of paper. The salaries of all the officials were paid in paper. The soldiers received their pay in paper. Of the provinces and districts, already in arrear, there was not one that did not discharge its debts in paper. Copper money, which was seldom seen, was considered a treasure. The capital collected together in former days was... a thing not even spoken of any more. So it was natural that the price of commodities rose, while the value of the paper money fell more and more. This caused the people, already disheartened, to lose all energy. The soldiers were continually anxious lest they should not get enough to eat, and the inferior officials in all parts of the empire raised complaints that they had not even enough to procure the common necessities. All this was the result of the depreciation of the paper money.

Meanwhile, a century before the Southern Sung dynasty had come to an end, the Tatar conquerors of northern China had followed the example of their southern neighbors and had begun to issue paper money. The Kin who ruled in the North collected their tribute and indemnities from the Chinese in metal money or bullion which the government stored up, issuing in its place a paper currency. In the beginning at least, this currency fared better than the notes of the defeated Chinese. The first recorded issue by this northern government was in 1153, and from that time the use of paper money in the North became as general as in the South.

The first recorded issue of paper money in the Mongol Empire took place in the years around 1224–27, shortly before the death of Jenghis. From 1260, when Kublai Khan completed the conquest of China and took the title of emperor, the issue of paper money became a settled and permanent feature of the Mongol government's financial policy. In the first year of his reign Kublai issued smaller notes ranging from ten cash to two thousand cash in value, and larger notes representing a thousand taels (ounces) of silver which were considered to be the equivalent of fifty taels of silver. In 1264 a treasury for the issuance of paper money was established in each circuit. Records have been preserved showing year by year the amount of notes issued through Kublai's reign and that of his successors for ninety-seven years (1260–1356).

What this represented in real value is hard to say. There was, of course, depreciation, but in a successful empire, receiving tribute instead of paying indemnities, depreciation was not rapid. Marco Polo distinctly states that in his time the notes passed for full face value and Pegolotti half a century later says the same. Other authorities disagree. According to one Chinese source there was a depreciation of 60 per cent between 1287 and 1399. According to others the depreciation was still greater. But it is everywhere indicated that the Mongol money held its own remarkably as compared with that of the previous century, and that an annual issue of thirty-seven million taels, at a time when the total budget of the wealthiest sovereign in Europe could hardly have exceeded one million taels, makes Marco Polo's statement that "the Great Khan hath more treasure than all the kings of the world" not a great exaggeration.

The subsequent fortunes of Chinese paper money may be briefly stated. In the last half century of the Mongol dynasty, the period of
decline, more paper money was issued than ever, and depreciation was rapid. Under the able administration of the first Ming emperor, Hung-wu (1368-98), the amount of paper currency issued was decreased, and it was put on a firm and stable basis. Paper money continued to circulate for at least a century thereafter. In the sixteenth century silver displaced paper, but in the troublesome years during the middle of the seventeenth century paper money was again printed for a short while.

In this résumé certain facts stand out that are of interest in the history of printing:

First, as to date. China had been issuing paper money for more than a century when Christendom saw its first paper. China had been on a paper money basis for four hundred years when block printing began in Europe. Chinese paper money was still being issued during Gutenberg's lifetime.

Second, as to amount. The average annual issue of paper money during the early years of the Mongol dynasty—before heavy depreciation began—was over thirty-seven million taels. It is evident that in the various issues small denominations prevailed, sometimes as low as two cash. Hence there must have been more than thirty-seven million separate notes printed each year. In other words, printing was being done on a very large scale, and specimens of printing were in the hands of everyone who bought or sold.

Third, as to geographical distribution. Marco Polo's statement is, "He makes them [paper notes] to pass current universally over all his kingdoms and provinces and territories and whithersoever his power and sovereignty extends." On the other hand, while Marco Polo has a regular formula with which he introduces his descriptions of Chinese cities, "The people are idolators and subjects of the Great Khan, and have paper money," this formula is not used of places outside of China. De Rubruquis' statement and certain Russian sources indicate that another form of representative currency, made of sable fur, was used in Russia. An important issue of printed paper money took place in Persia in the year 1294, but the language used to describe it indicates that it was something unusual. (See Chapter 17.) Marco Polo's apparently conflicting state-

ments may be reconciled if we consider that paper money was the ordinary medium of exchange only in China and in the territory immediately adjoining China, but that in other parts of the empire it was known and used by merchants having dealings with China. Outside the Mongol Empire there was an issue of paper currency in Japan between 1319 and 1327.

Paper money was the first form of Chinese printing met with by European travelers, was independently discussed by at least eight pre-Renaissance European writers, and, so far as is known, is the only form of Chinese printing described in European writings of pre-Gutenberg days. Marco Polo's description is the most detailed, The Emperor's Mint is in this same City of Cambaluc, and the and of interest because of the publicity his writings received.

way it is wrought is such that you might say he hath the Secret of Alchemy in perfection, and you would be right! For he makes his money after this fashion. He makes them take of the bark of a certain tree, in fact of the Mulberry Tree, the leaves of which are the food of the silkworms—these trees being so numerous that whole districts are full of them. What they take is a certain fine white bast or skin which lies between the wood of the tree and the thick outer bark, and this they make into something resembling sheets of paper, but black. When these sheets have been prepared they are cut up into pieces of different sizes. The smallest of these sizes is worth a half tonsense; the next, a little larger, one tonsense; one, a little larger still, is worth half a silver great of Venice; another a whole great; others yet two greats, five greats, and ten greats. There is also a kind worth one bezant of gold, and others of three bezants, and so up to ten. All these pieces of paper are issued with such solemnity and authority as if they were of pure gold or silver; and on every piece a variety of officials, whose duty it is, have to write their names, and to put their seals. And when all is prepared duly, the chief officer deputed by the Kaan smears the Seal entrusted to him with vermillion, and impresses it on the paper so that the form of the Seal remains printed upon it in red; the Money is then authentic. Any one forging it would be punished with death. And the Kaan causes every year to be made such a vast quantity of this money, which costs him nothing, that it must equal in amount all the treasure in the world.

With these pieces of paper, made as I have described, he causes
all payments on his own account to be made; and he makes them to pass current universally over all his kingdoms and provinces and territories, and whithersoever his power and sovereignty extends. And nobody, however important he may think himself, dares to refuse them on pain of death. And indeed everybody takes them readily, for whithersoever a person may go throughout the Great Kaan's dominions he shall find these pieces of paper current, and shall be able to transact all sales and purchases of goods by means of them just as well as if they were coins of pure gold. And all the while they are so light that ten bezants' worth does not weigh one golden bezant.

Furthermore all merchants arriving from India or other countries, and bringing with them gold or silver or gems and pearls, are prohibited from selling to any one but the Emperor. He has twelve experts chosen for this business, men of shrewdness and experience in such affairs; these appraise the articles, and the Emperor then pays a liberal price for them in those pieces of paper. The merchants accept his price readily, for in the first place they would not get so good an one from anybody else, and secondly they are paid without any delay. And with this paper-money they can buy what they like anywhere over the Empire whilst it is also vastly lighter to carry about on their journeys. And it is a truth that the merchants will several times in the year bring wares to the amount of 400,000 bezants, and the Grand Siye pays for all in that paper. So he buys such a quantity of those precious things every year that his treasure is endless, whilst all the time the money he pays away costs him nothing at all. Moreover, several times in the year proclamation is made through the city that any one who may have gold or silver or gems or pearls, by taking them to the Mint shall get a handsome price for them. And the owners are glad to do this, because they would find no other purchaser give so large a price. Thus the quantity they bring in is marvellous, though those who do not choose to do so may let it alone. Still, in this way, nearly all the valuable in the country come into the Kaan's possession.

When any of those pieces of paper are spoiled—not that they are so very flimsy neither—the owner carries them to the Mint, and by paying three per cent on the value he gets new pieces in exchange. And if any Baron, or any one else sober, hath need of gold or silver or gems or pearls, in order to make plate, or rings, or the like, he goes to the Mint and buys as much as he list, paying in this paper money.

Now you have heard the words and means whereby the Great Kaan may have, and in fact has, more treasure than all the Kings in the World; and you know all about it and the reason why.

The question naturally arises what this paper money looked like that was issued in such quantities for four hundred years before the invention of printing in Europe, and that was regarded with such interest by so many of the early European travelers in China. Among the many Chinese notes held by museums and private collectors that claim early date, it is necessary to select those whose genuineness is unassailable.

The Russian expedition under Koslov discovered at Kharakhoto in Mongolia several of the notes that were in use there during the period of Mongol domination. The inscription on them is in the square Mongol character. They represent not the currency of China that was described by Marco Polo, but the currency that was in use in Mongolia itself. The notes are badly damaged, but are still in part legible. A few years later the Sino-Swedish Expedition under Sven Hedin found at Kharakhoto "a couple of specimens of Yuan dynasty paper money," but unfortunately did not describe them. Our best information as to the notes used under Kublai is derived from the bronze blocks used for their printing.

A considerable number of notes of a later issue, found at Peking, are valuable for the next period of Chinese history. During the looting of the palace precincts at Peking after the Boxer Uprising in 1900, an image of Buddha had been thrown down by some European soldiers, and in the pedestal were found gems, jewelry, ingots of gold and silver, and a bundle of notes. The notes, being of no intrinsic value, were handed to a bystander, a surgeon in the United States army, and notes from that bundle have now found their way to museums in Shanghai, New York, London, Berlin, and elsewhere. These notes were found to have been issued during the reign of Hung-wu (1368-98). That they are genuine notes of Hung-wu's reign has not been questioned.

These notes are a foot long by eight inches wide. They are printed on heavy paper of a dark slate color. The value, one thousand cash, is shown not only by the text, but also by a picture of a string of cash, divided in piles of a hundred each. What is of greatest interest is the clear distinction between print and seal. The text and ornamentation is in black and is a good example of careful
NOTES

2. The prime sources on the history of flying money see Chiu T'ang shu 48/19a and Hsin T'ang shu 54/13a. The contemporary official and poet Po Ch'i (772-846), in his Ch'ung ch'ing chi 46 (T'ie lin 20)/58-6a, corroborates the official histories in certain details. (The last reference was furnished by the Rev. Eugene Fehrle, author of a monograph on Po as an official, published in 1952 in microfilm.)

5. This account is based largely on Ichisada Miyazaki, 1943:235-37. His principal sources for data on the chiou-chu in early times are Li Tao (1114-83), Hsin T'ao chi chien chien ch'un pien 59/esp. 7b ff, and 101/esp. 118b; and Li Yu (twelfth century), Sung ch'iao shih shih 19/222-53. One may also glean something from the biographies of two of the principals, Hsieh T'en and Kou Ch'en, in Sung shih 301/9-9a, particularly the former.
6. See also Yang, 1952b:52a. Kracke, 1953: Chapter 2, has some useful comments on the economic situation at this time.
7. Neither his biography in the Sung history, nor the Sok-ch'un t'ung chih (edition of 1868) 99/3a mentions him as a prefect of Fuchow, but Li Yu, op. cit. 15/223 deems.
8. For some accountable reason Miyazaka writes the name Kou Hsun.
9. Theoretically a kwun is a string of 1,000 cash, but actually a smaller number frequently. Cf. Yang, 1952b:34-37.
10. Sung ch'ao shih shih 15/232. T'ang yung i chih yin tsoo. This would appear to dispose of Moule's criticism, 1952b:146, that paper was not employed at this time.
11. For a description of the notes issued in these years see Yang, 1952b:54. Moule, 1952:46-47, draws attention to passages in the Lin-an chih of 1206 (reprinted 1880) 9/7a-8a telling of the founding of the banknote office in Hangchow in 1161. The evidence presented by Ma T'uan-lin in Wen hien t'ung Kuo 9/7b-8a makes it clear that paper money was printed from copper plates at least in 1163. In that year Wang Yü, an official charged with the upkeep of the army in Hsi-chou, requested the emperor that the military expenses of his province be paid in kwun, which were to be printed for the purpose. The emperor ordered the provincial government to transfer to the court the copper plates from which the kwun were to be printed. For the year 1176 there is record of another printing of money (kwei-tzu, 200,000 in all) from copper plates. Ma, ibid., 9/6b. (See Fuchs, 1950:69-70. See also Yang, 1953:353-73.)
13. Bowker, 1950:313-15, has published and illustrated a paper note of the Kiu period, now in private hands in Hong Kong. It is one of 5 kwun of the Ch'ien-tyun era, 1153-54.
For an illustration of a block for printing of Kiu dynasty notes see Mullie, 1957:250-57.
See also the illustration of an ink-squeeze of an undated Kiu block for printing money reproduced by Lo Ch'en-yü, 1914.

On paper money economy under the Yuan, see Franke, 1949:34-166. The review of H. F. Schurmann, 1920:244-55 supplies additional data. Franke, 1949:101-3, basing himself on the valuable paper of Liao Bao Seong, 1941:177-216, supplies a year by year table of issues from 1260 to 1396. See also for the years 1260-94 the table supplied by C. S. Gardner to Robert P. Blake, 1937:322.

Very inferior illustrations of two paper notes for the period of 1260-64 (denomination of one string of 1,000 cash) and 1269-94 (denomination of 100 cash) may be seen in the Japanese encyclopedia Tōyō rekishi dai-jiten, Tokyo 1937-39, Vol. 2, p. 454 and Vol. 4, p. 38. Better ones appear in Sogabe Shizuo, Shōki kaiatsu-shi, Plates 1-3, illustrating the following: a two kuan note of 1272-73, a one kuan note of 1260-64, and a two (?) kuan note of 1264-94. The last note is mutilated, and is one of those preserved in Leningrad. (This information was received through the kindness of Mr. H. F. Bowker.)

Because of the size of the issue of paper money, roughly 500,000 t'ing to two million t'ing each year (a t'ing was then referred to as equivalent to 50 ounces of silver), Fuchs, 1930:70, thinks that from 1276 on for the next eighty years paper money was exclusively printed from copper plates. The Yuan shih 93:11a states specifically that in 1276 copper plates were used for printing paper money.

15. Depreciation was certainly considerable. Gardner points out in Blake, 1937:219-21, that the issue of 1260 was replaced one for five by that of 1287, and the latter was replaced one for five in 1390. As to real value, it is clear from the Yuan shih 93:20b that in 1260 one ounce of silver was equal to twenty ounces of silk, and the paper money with the denomination of one string of 1,000 cash was equal to one ounce of silver. Ibid., 37-18.

16. Morse, 1907:32.

17. Paper notes of one kuan (or string of 1,000 cash) were first issued in the eighth year (1375) and continued to circulate through the Ch'eng-hua and Hung-chih periods (1465-1505), according to Wang Chi, Hui wen hsien t'ung k'ao (published 1631), cited by Fuchs, 1930:71.

18. Fuchs, 1930:71-72, gives evidence of further printing in 1659 and in the years 1656-61. In the last mentioned decade, insurgents against the Manchus were in control of the copper mines which supplied the imperial mints, so the incidence of paper money was imperatively.

19. But some paper money passed into non-Chinese hands. Pelliot, 1922:67, cites a passage from Yuan shih 33 which relates that in 1329 Eligtai, prince of the Western Region, was granted 2,500 ounces of gold, 15,000 ounces of silver, and a certain quantity of paper money. Also Rockhill, 1914:244, relying on the T'ao t'ieh li chieh of 1249, indicates that notes were current in the early decades of the fourteenth century at such remote places as India and Siam. Blake, 1937:291-328, however, makes a good point in demonstrating that for the most part the foreign merchants wanted specie and as a result silver, not paper, was drawn off in huge quantities to the west.

20. The Japanese notes were quite different in form from the Chinese, being only about six inches by two. They seem to have been well secured by a metallic reserve. See Yule 1903:1, 427-28, and idem, 1913:16:11, 150.

21. These writers are: William de Rubruquis (ca. 1215-70); Roger Bacon (1214-94); Marco Polo (1250); Hayton (1307); Odoric (ca. 1330); the archbishop of Sultania (ca. 1330); Pogolotti (ca. 1340); and Josafat Barbara (ca. 1345). The more important of their statements are as follows:

De Rubruquis: "The ordinary money of Cathay is made of cotton paper, as large as a hand, upon which they imprint certain lines and marks made like the seal of Mongo (imprimatur lineae sicut est sigillum Mongo)."

22. The Russians, the money which is current among them is made of little pieces of leather, marked with colors."

Odoric: "...They have an edict from their lord that every fire [i.e., household] shall pay to the Great Khan annually a tax of one bali, i.e., of five pieces of paper like silk, a sum equal to one florin and a half." Pogolotti: "...There [at Casai, i.e., Hangchow] you can dispose of the sommi of silver [silver ingots] that you have with you, for that is a most active place of business. After getting to Casai you carry on with the money which you get for the sommi of silver which you sell there; and this money is made of paper and is called balshi. And four pieces of this money are worth one sommi of silver in the province of Cathay."

23. Paper money was mentioned also by a number of Arabic writers, including Ibn Batuta (1348) and Ahmed Shibah Eddin (d. 1338).

Hayton is here included among European writers, because his writing was done in France and in the French language. His book is an account of the visit of his relative, the king of Armenia, to the court of the Great Khan. Moule, 1926:145, contends that these eight writers describe only the "imprint of seals." But may not such remarks as those of De Rubruquis be the result merely of limited knowledge of the printing process?"
printing the bank-notes of the Kin dynasty. I have had the opportunity of seeing a print of these bank-notes. They are of the same size and the same shape as the bank-notes of the Ming.” The last sentence raises a question. The Ming note of 1375 measures .345 m. by .235 m., whereas Father Muller, 1937:150–57, gives the dimensions of the copper plate of 1214 as .192 m. by .105 m. We know that the Kin dynasty issued paper notes at several times and in several denominations (cf. Yang, 1952:38–61), but is it likely that any one of them was identical in size and shape with the large ones issued in the Hung-wa period?

24. Professor Basil M. Alexeev of the Soviet University of Leningrad very kindly examined and described the Mongol notes found by the Kostyev expedition. Sogabe Shizu, 1951, Illustrates one of them.


27. Dr. Yang 1952b:65, makes this interesting observation: “Together with paper notes, Chinese banking practices became known to the West. Max Weber states that the accounting system (Verrechnungswesen) of the old Hamburg Bank was set up on a Chinese model. Robert Eitel suggests that the old Swedish system of banking and money deposit vouchers may have been influenced by Chinese examples, transmitted by medieval merchant travelers and, possibly, by Jewish silk merchants.”

Part III
THE WESTWARD COURSE OF BLOCK PRINTING
Chapter 12

COMMERCIAL THOUGHT AND WARES
ALONG THE GREAT SILK WAYS

To understand the westward movement of printing it is necessary to form some picture of the ways by which culture passed between the West and Eastern Asia. The idea that the history of China has until recent times been a closed compartment, affected by nothing and affecting nothing in the Western world, is being rapidly dispelled by investigation. Each new journey of exploration into Central Asia and each new study of ancient literature makes it possible to follow a little further the silken thread that has bound the civilization of the West to that of the distant East. Imperial Rome wanted silk, China had it. Here is the key to the development of a great caravan route that crossed Turkestan, Persia, and Syria, and reached the Mediterranean at the ports of Phoenicia and Palestine.

Modern scholarship has not yet answered the question why the birth of thought—in the age of Confucius, of Buddha, of the Hebrew prophets, and of the early Greek philosophers—came to the widely separated lands of ancient culture at the same time. Much less has it explained the earlier Neolithic precivilization that developed similar stone implements and even similar pottery designs at various places along the route from Greece to China.

With the establishment of Roman dominion in the West and the Han dynasty in China, the connection between East and West first begins to emerge into the light of history. Somewhere about 170 B.C. a tribe known to Chinese annals as the Yüeh Chih, and later to the Greeks as Indo-Scythians, a people possibly of Indo-European tongue, living within the borders of China in what is now the province of Kansu, left their home and moved westward. Within a little more than two centuries they had conquered the eastern provinces
of what had been Alexander’s empire, and had shown their ability to absorb diverse elements of culture by striking coins in Greek style, bearing the effigies of the gods of Greece, of Persia, of Egypt, and of India, and even portraits of Augustus Caesar and of Buddha. All the gods, including Buddha (who looks strangely like Apollo), are clearly labeled in Greek. It was in this Indo-Scythian empire that Buddhism was transformed to suit its more cosmopolitan environment and the new Buddhism started on its long journey eastward to China and Japan. At the court of one of the Indo-Scythian kings, some time before their Buddhist and coin-striking days (ca. 128 B.C.), Chang Ch’ien, an emissary of the Chinese emperor, gained for China its first clear reports of the lands of the West. Chang Ch’ien also brought back the seeds of alfalfa and the grape vine, which were planted in China by the Emperor, and are, so far as is known, the first plants introduced into China from the West. In the wake of Chang Ch’ien’s mission came the Chinese conquest of Eastern Turkestan, opening up the pathway across the Indo-Scythian kingdom to the Roman Orient, and with this conquest came an enlarged silk trade. Armies, ambassadors, and caravans were sent frequently to the West. One Chinese embassy in the year A.D. 97 reached the Persian Gulf and was deterred from going on to Rome only by the reports they heard of a “kind of homesickness which men have when they are long upon the sea.” The first travelers recorded from Rome to China came by sea as far as Tonking in the year A.D. 166, and were led there overland to the Chinese capital, Loyang. They are known in the Chinese annals as envoys from the Emperor An Tun, who has been identified as Marcus Aurelius Antoninus.4

During this period silk was the chief article of export from China, the Chinese keeping the process of silk production a strict secret. The first Roman writers thought of silk as a vegetable product, which was stated by Virgil to be combed from trees. Only in the second century of our era did they become better informed; Pausanias (f. 177-186) described the silkworm with fair correctness. Silk came into the Roman Empire in ever-increasing quantities during the classic period, and continued to come into Constantinople after Rome had fallen. The re-opening of the silk routes
was one of the central features of the foreign policy of Justinian (A.D. 527–65) and his immediate successors. These routes had been closed by the Sassanian power in Persia out of fear of the fast-growing Turkish kingdom on the northeast, first heard of in Western history at this time. Justinian tried to interest the king of Abyssinia and certain Christian princes in India in a project to open a new trade route with the East that should avoid the Persian dominion altogether. When this plan fell through owing to the lethargy of the king of Abyssinia, advantage was taken of an embassy from the Khan of the Turks, and a return embassy was sent in 568 by a route north of the Caspian Sea to the Turkish court (in Turkestan) and an alliance formed, the purpose of which was to compel Persia to allow a resumption of the silk trade.

Meanwhile some Nestorian priests returning from the East had brought to Justinian the news that silk was produced by caterpillars, whose eggs they believed they could obtain. With the emperor’s encouragement they proceeded either to China, or—more likely—to the kingdom of Khotan in Chinese Turkestan, whither silk culture had been brought in the year 419 by a Chinese princess. To avoid detection as they carried the precious eggs over the frontier, they hid them in the long bamboo staff that one of the priests carried. From the eggs carried in this bamboo staff—if the story told by the Greek chroniclers is to be credited—are descended the silkworms that have been reared in Europe down to modern times.

The century after Justinian saw marked changes in the face of Asia. Two great empires, that of the T’ang dynasty in China and that of the Caliphs in the West, had divided most of Asia between them, and the two empires had met in Turkestan. From this time on it was the Arabs who supplied Europe with silk. Imported silk they drew from China through Samarkand. Silk culture they learned from Constantinople. Throughout the Middle Ages Europe bought the bulk of its silk—both Chinese silk and silk of Arabic manufacture—from the Arabs. Not until the end of the first millennium did the art of silk culture become known in Western Europe, being first introduced into Italy in the tenth century.
Silk was thus, so far as is known, the first of China's great gifts to the West, reaching Europe some time before the Christian Era; but the art of producing silk, unlike most Eastern arts, reached Western Europe before the Crusades.

Today there are few parts of the world less known and less often traversed by civilized man than the lands that lie between China and the Near East. This is the one great trade route of the world where the means of communication are poorer today than they were one or two thousand years ago. Other ways of commerce by sea and land have been opened and have left the ancient route from China to the Western world scarcely even a memory. It is hard today to imagine that great highway over which the world's long distance caravans pried to and fro. Two or three years were spent on the journey—often more, for it is seldom that one man or one caravan made the whole trip. Men of all races and creeds relayed the silks of China and the varied wares of the West stage by stage over the long road. Great cities grew up, both in the fruitful lands and in the oases of the desert along this now deserted trail. Turfan and Capernaum, cities at the two extremes, that once profited by being near the great trade route, today are ruins. Samarkand and Baghdad have lost their glory. But there was a day when that whole road lay through the lands of prosperous peoples who gathered together the elements of culture from all the East and all the West, an eclectic and cosmopolitan culture that has been buried and preserved wherever the route lay across what is now desert, especially in Chinese Turkestan.

Nor was it through a short period that this prosperity of the cities along the Silk Ways continued. Whether ruled by Caesar or Caliph, Western Asia loved to clothe itself in silk, and it had products that it was willing to send in exchange. Great empires—the Roman, the Indo-Scythian, the Caliphate, and the Tang of China—facilitated the trade, which continued to grow until finally, just before the Crusades, Europe broke through and began to have her part also in the traffic along the Great Silk Ways.

Owing to the fact that until the later Arab period goods were generally carried by relays and few caravans went the whole dis-
tity of Manichean scriptures and other writings in Persian, Sogdian, Chinese, and certain dialects of Turkish. It is now known to have been the state religion of the Uighurs, whose capital was at Turfan. Certain of the Manichean scriptures were printed in China before the year 1000 (see Chapter 19).

Christian missionaries of the Nestorian sect came from Persia and Syria into Chinese Turkestan sometime in the fifth or sixth century. In almost every site excavated in Turkestan, remains of Christian churches were found, with manuscripts in Syriac and Persian as well as in Chinese and the languages of Central Asia. Even the correspondence of some of these priests with their mother churches in Syria has been unearthed. Discoveries tend fully to confirm the record contained in the famous Sian inscription of the introduction of Christianity into China in the seventh century and of its persistence, both in Central Asia and in China, down to Mongol times. The metropolitans of Central Asia and of China were subject to the Nestorian patriarch of Baghdad, a dignitary who, strange to say, was given by the Moslem Caliphs great freedom in the exercise of his authority. By special dispensation during the latter part of the period, the metropolitan of China was relieved of reporting to his superiors in Baghdad except once in four years. At one time (during the Mongol period) a Christian of Turkish extraction from northern China was made patriarch of Baghdad. The exaggerated reports that reached the Crusaders of the exploits of Prester John have now been traced as referring to the Nestorian king of one of the tribes of Central Asia.

The Moslem penetration of the Far East began within a few years after the death of the prophet, when about the year 652 the first Moslem envoys reached the Chinese court. From that time Arab trade with China steadily increased. How the early Arabic trading posts flourished is indicated by Abū Zeyd, who, writing about 916, stated that in the rebellion of 878 in the city of Canton,29 one hundred twenty thousand Moslems, Jews, Christians, and Mazdeans, who were there on business of traffic, were killed. Even allowing for Arab exaggeration, there is evidence here that trade be-

between China and the Saracen Empire had already reached large proportions.

The infiltration of religious ideas from the West is again illustrated in the account of the Arab traveler Ibn Wahab,30 who visited China in the latter part of the ninth century and described his audience with the emperor. The emperor, after discoursing with considerable accuracy on the five great kingdoms of the world—the Chinese, Turkish, Indian, Arab, and Greek—is said by the Arab narrator to have pulled from a box beside his throne pictures of Noah in the Ark, of Moses and his rod, of Jesus upon an ass, and of the Twelve Apostles. The surprising modernness of this Chinese emperor as seen by his Moslem visitor is illustrated by the fact that though he marveled at what Jesus accomplished in the short space of thirty months, he combated the idea that there had ever been a universal deluge and laughed heartily when his Arab visitor tried to tell him that the world had been created only six thousand years.

The Moslems in China always retained a close connection with their home base either by sea or across Central Asia. They were under a system somewhat similar to extraterritoriality, and it was not until after Mongol times that they began to be submerged as an integral part of the Chinese people. The large number of Moslems in China today, who as a rule are of mixed Arabic ancestry, shows the extent of this early infiltration and indicates how close must have been the contact between China and the West that was thus established.

In return for religious ideas, which were moving eastward and northward across Asia, China sent back her inventions. Some of the inventions with which the Chinese have been credited still await the research student and nothing clear and definite can be stated until much careful study has been made. The invention of paper, which has been more fully studied than the others, is described in Chapters 11 and 13. Though gunpowder and the compass are still obscure in their beginnings, a few words about them as well as about porcelain may present some useful analogies to the student of printing.
It is known that explosive powder was used in the T'ang dynasty, though probably not for warfare. Its first use in battle was in the form of explosive hand grenades, or grenades thrown by various mechanical devices. When the use of these grenades first began is not certain. They are apparently described in a military handbook published in 1044 and may have been used in the year 1000 against the Khitan, and again in the wars against the invading Jurchens in 1126–27 and 1161–62. Following the Mongol conquest of much of Asia the Arabs became acquainted with saltpeter sometime before the end of the thirteenth century. They called it Chinese snow, as they called the rocket the Chinese arrow.

Roger Bacon (ca. 1214 to ca. 1294) is the first European writer to mention gunpowder, though whether he learned of it through his study of Arab lore or through his acquaintance with de Rubruquis, the Central Asiatic traveler, is uncertain. All that can be said with assurance is that the use of gunpowder in warfare became known among the Saracens and in Europe very quickly after its first use in warfare in China. 18

With respect to the compass, the Chinese had known the properties of lodestone since before the Christian era, and during the first millennium after the Christian era there are many curious stories, the interpretation of which is still unsure (but which seems to point to the development of the differential gear), with regard to the construction of "south-pointing chariots." 19 The earliest clear mention in Chinese literature (or any literature) of a magnetic needle is by Shên K'au (1030–93), the same man who first described movable type printing. The first mention in Chinese literature of the use of the compass for navigation is a little after 1100 but refers to the period from 1050 to 1102.

At this time, according to the statement of Chu Yü, it was used by Chinese navigators between Canton and Sumatra. The first mention of the compass in Europe is in a poem by Cuyot de Salins about 1190 and again around 1204 by Cardinal de Vitry, who visited Palestine in the fourth Crusade, and who describes lodestone as having been brought from “India.” The indications would seem to be that the Chinese first knew the use of the compass and had applied it to navigation and that other traders, possibly Arabs, had carried the secret to Europe during the Crusades. 20

The gradual evolution and westward movement of porcelain is better known. As far back as the Han dynasty (i.e., before A.D. 220) the Chinese had discovered that at a sufficiently high temperature a very fine glaze could be obtained with powdered felspathic rock mingled with lime. 21 It is not, however, until about the seventh or eighth century that this glazed pottery was so perfected that it can be called porcelain. Its first appearance in the Near East was in the ninth century. 22 Porcelain manufacture was not known in Europe until after the Crusades. It is first mentioned in 1470 in Venice and the statement is made that the Venetians learned the art from the Arabs.

It is in this world of varying and increasing currents of trade and intercourse that block printing started on its westward way. The trade that began under the wide empires of the Caesars and the Han and was furthered by the Caliphs and the T'ang, reached its culmination in the time of the Mongol Empire and the Crusades. Immediately after the Crusades new ideas of all sorts, some of which had their origin in the East, began to sweep over Europe. Whether or not the discovery of printing, that foundation stone on which modern education is built, is one of the gifts which Europe received from the East through the medium of the Mongol Empire and the Crusades, will be the subject of investigation in the next chapters—the discussion in Part Three being confined to block printing and in Part Four to the use of movable type.

**NOTES**

1. For early reports of discoveries of Neolithic culture in China and a discussion of its relation to Neolithic culture in other countries see J. G. Anderson, 1925, b. The bibliography on this subject since 1925 is very rich. Anderson's own final reports may be found in *Bull. of the Museum of Far Eastern Antiquities* 15 (1945), 17 (1945), and 19 (1947).

2. For full discussion of what Chang Ch'ien's mission meant in the opening up of trade, see Lauer, 1919:535 ff. Chang Ch'ien found bamboo
staves and cloth from Szechuan already in use in Bactria, which he concludes
came by way of India. His conclusion, of course, need not be taken at face
value. Both bamboo and cloth may have come from India.

3. For additional details, and translations of the Chinese sources on which
these statements are based, see Hirth, 1888. The contacts of Roman culture
bearers with the estuary of the Mekong River have been confirmed by archaeo-
logical discoveries made since 1944. Cf. Coedès, 1937:93-99; and Maler,
1947-901, 189-99. One find of a medal of gold represents the effigy of one
of the Antonines and bears a mutilated legend in which the name of the
emperor Marcus Aurelius (reigned A.D. 161-180) may be made out. Another
medal carries the name of Antoninus Pius (Titus Aurelius, reigned 138-61)
and indicates the fifteenth year of his reign, or 152.

4. The two authorities for the introduction of silkworm eggs during
Justinian’s reign are Theophanes and Procopius. Theophanes refers to
the country from which the silkworm eggs were introduced as the “land of
Seres,” Procopius as “India.” Both terms were at that time used very loosely
by Greek writers. It is known from Chinese sources (one source is the narra-
tion of the travels of Hsian-tsung [602-64]; cf. Beal, 1906, II, 338-39; see
also Hsin T’ang shu 22a/23b) that silk culture was introduced into Khotan
in 419, and it is probable that it was from here that the eggs were introduced
into Constantinople.

5. For fuller details and references to sources, see Beazley, 1897-1906, I,
188-9. Hennig-Düssel, 1933:295-312, concludes that the monks men-
tioned in Procopius secured the silkworms and learned their culture in Sog-
diana, not in China, or, as is sometimes suggested, in Ceylon. The story has
been most recently examined by Lieberman, 1953: chap. 6.

6. Lopes, 1952:72-73, reports that the earliest mention of the domestic
production of raw silk in northern Italy (in the Po valley) dates from the
first half of the tenth century; “a little later we hear of production in the
island of Arbe (Rab, now Yugoslavia).” Spain and Sicily may also have
produced raw silk about the same time.

7. Some efforts to improve the situation have been made during the last
two decades, particularly by the Chinese. Cf. Goodrich, 1935.
9. The chicken (or its prototype) is indigenous to northern India and
Burma. The date of its introduction into China cannot be determined; it was
already known in the pre-Christian period. It is first mentioned in Buddhist
inscriptions in the seventh or sixth century, B.C. It is not mentioned in
Homer or the Old Testament, but is constantly mentioned in the New Testa-
ment.

No bones of the domestic fowl have been reported from Shang or pre-
historic sites in China proper, but Japanese archaeologists, who uncovered
a prehistoric site near Port Arthur, characterized by both painted and black

10. The first mention of tea in Chinese literature, so far as is known, is in
the biography of Wei Chao in the San kuo chih. Wei Chao died in A.D. 273
and the author of the San kuo chih in 297. Pelliot, 1924:42-34, contended
that tea had not spread through North China until about the tenth century.
This date seems too late. See the evidence collected in Goodrich and Willard,
1942:195-97. To those mentioned may be added one more. Tea drinking is
frequently mentioned in connection with Pu Chü-i (Waley, 1939:79, 77,
200), and Po's cousin, Po Min-chung, who served as chief minister at the
court at Ch'ang-an in 846, was called “Tea-boy.” Tea was very little known
among the Mongols until the thirteenth or fourteenth century. On the other
hand, tea is described by an Arab traveler in China in the ninth century (cf.
Sauvaget, 1948:63), and its use apparently spread to Russia and Western Asia
dering Mongol times. In consequence of this the name for tea in Russian,
Turkish, Persian, and Modern Greek is based on the north Chinese ch'i. It
is not mentioned in European literature till 1588 when it was imported from
South China by the Portuguese, whose tea trade was soon superseded by that
of the Dutch. Hence the word “tea” and its variations, derived probably from
the dialect of Fuhkien, is used in the languages of western Europe.

11. The carrot is apparently a native of northern Europe. It was cultivated
by the Anglo-Saxons before they invaded Britain. It was carried by the
Arabs into Persia in the tenth century. From there it entered China during
the Mongol Empire (Lauffer, 1919:451-54).

12. Several discoveries of glass beads of pre-Han date have been made.
See especially White, 1934:50, 50. The dating is uncertain but it must be
prior to the third century before our era, and may be as early as mid-sixth
century B.C. The specimens of Chinese glass generally contain barium while
Mediterranean glass does not. It would seem therefore that, while there is
the strongest resemblance between Chinese and Mediterranean glass beads and
the technique of making them may have been imported from West to East,
the Chinese knew the art of manufacture. Cf. Ritchie, 1937:209-20 and
Seligman and Beck, 1938:61-64.

13. All true alphabets in the world appear to have sprung from one early
source in Phoenicia and Palestine. This alphabet reached India from its source
by the Mediterranean almost as soon as it reached Greece. Through the early
centuries of the Christian era the Indian forms of the alphabet vied with	hose coming directly from Syria for supremacy in Central Asia. The Tibetan
alphabet, one of the Mongol alphabets, and the Korean alphabet were based
on Sanskrit; while the alphabet of the Manchus goes back ultimately to a
Syracuse source, through Sogdian, Uigur, and Mongol as intermediaries.

14. The history of spinach and of sugar is also interesting as showing
how ideas found their way in these early days through Asia and Europe. The
earliest known reference to spinach in any literature is contained in the
annals of the T’ang dynasty, where it is stated that in the year 647 the king of Nepal sent some spinach to the Chinese Emperor T’ai Tsung. There is some evidence that Nepal got its spinach from Persia. At any rate it was in Persia that the Arabs found the vegetable not long after their conquest of the country. By the eleventh century it had spread through the Arabic dominions as far as Spain, but it was not until the fourteenth or fifteenth century—after the Crusades—that its entrance into Christendom is recorded. (Laufer, 1919: 392-98.)

Sugar cane was imported into China as early as A.D. 285 from Indochina and was again imported into China from Persia during the seventh century. During the seventh century also a special mission was sent by the Chinese emperor to Magadha in India to learn the process of boiling sugar, and this Indian method was adopted by the sugar-growers of Yang-chou. Through the Middle Ages the Saracen empire was the center of sugar production. Sugar cane was introduced by the Arabs from Persia into Egypt, Sicily, and the south of Spain. As late as the thirteenth century sugar refineries from Cairo came to China to teach the superior methods of sugar refining that were practiced in Egypt. From Cyprus and Sicily sugar production was carried to Madeira about 1420 and to the Canaries in 1503. Sugar production in Brazil and Haiti began also very soon after the discovery of America. To this digest of the remarks of Laufer, 1919:376-77, may be added one later reference: Lippmann, 1926, esp. Chapter 7. He considers that the poet Ssu-ma Hsiang-ju (d. 117 B.C.) refers to sugarcane.

Other examples of the spread of ideas through the Euro-Asiatic continent are found in the study of such games as dice, chess, and backgammon. The spread of playing cards, as more closely related to printing, is studied in Chapter 19.

15. Yahh-allah III, patriarch of the whole Nestorian church, with seat at Baghdad, 1281-1317. For a discussion of the organization of the Nestorian church in Asia during the Middle Ages see Dauviller, 1948:261-316.

16. This place, rendered Hanfu in Arabic, has sometimes been identified with Hangchow. For its identification with Canton, see Pelliot, 1923:140, and Kuwabara, 1928:10-11. The correct date of the rebellion is 879, according to Chinese records.


Chapter 13

PAPER’S THOUSAND-YEAR JOURNEY FROM CHINA TO EUROPE

Paper has everywhere been the forerunner of printing. Without this strong economical material, printing could never have made headway. Moreover the westward movement of paper not only prepared the way for printing, but its history is often suggestive of the ways in which printing may have traveled. In order to investigate the course of block printing, it is therefore necessary to understand clearly the history of paper. This history of paper is open before us. As compared with that of block printing, the advance of paper was a triumphal progress, hailed by literary men, and displacing quickly the old writing materials in every place it touched. Typography later met with a like welcome, first in Korea, then in Europe. But block printing was always in its beginnings an obscure and despised art, whose history can be traced only with the greatest difficulty. A study therefore of the progress of paper affords the best introduction to the more difficult study of the westward course of the block printing which followed in its wake.

The invention of paper from hemp, tree bark, fish nets, and rags, as officially announced to the emperor of China in the year A.D. 105, has been described in Chapter 1. The history of the later Han dynasty, compiled by Fan Yeh (308-445), states, “From this time on it was used universally.” Other references confirm the impression that its spread through China was very rapid. West China is especially noted by several writers as one of the early seats of the paper industry.1

The first point at which paper is met on the journey from China westwards is at a spot near Kharaklioto (in the modern province of Ning-hsia) together with many wooden documents dated between the years A.D. 93 and 98. Conceivably, therefore, this fragment might belong to the decade in which T'v'ai Lun’s announcement was made. The next is at Loulan, found by Sven Hedin’s expedition, and is believed to date from a little after A.D. 250.2 Each of the older sites excavated in Turkestan yields both wood and paper as writing material. At several places the gradual displacement of wood by paper in the third, fourth, and fifth centuries can be traced. At Loulan, for example, abandoned about 350, some 20 per cent of the many documents found by Sir Aurel Stein are on paper, the balance on wood. For a time it was believed that certain other letters found by him in a ruined watchtower of a western spur of the Great Wall, near Tun-huang, amid a mass of documents written between 58 B.C. and A.D. 153 on wood and silk, might be earlier than those discovered by Hedin. It has recently been shown, however, that they are of later origin. Dr. Henning has tentatively set the date of these letters, all written in Sogdian, at 312-13.3

At Turfan the oldest paper found by the Prussian expedition dates from 399. Here paper coming from the east met the culture currents that were coming from the west and south. From here we have early Aramaic texts on paper, and even some three or four words of Greek. Also written on paper is a fragment of a Bible manuscript (from the Book of Psalms) in Persian, which has been dated by some as early as 450. The early paper from Turfan includes Manichean texts, Buddhist canons, and a variety of Christian literature—among other things a delightful fairy story based on the visit of the Wise Men to Bethlehem.

Step by step, paper penetrated around both edges of the Takla Makan desert, till by the end of the fifth century, through all the Central Asian territory, which then was under Chinese control, except in certain backward spots, the use of wood for writing had stopped and paper was in general use.4

In the early years of the eighth century the Arabs mastered what is now known as Russian Turkestan. Already paper had entered this region somewhere between the fourth and sixth centuries and was in occasional use.5 So far as is known it was all imported from China. In July, 751, however, paper manufacture entered the Arabic
world and started on its career from Samarkand to Spain. The circumstances are related in detail in the Arabic annals. There was war between two Turkish chiefs. One appealed for help to China, the other to the Arabs. The Arabs defeated the Chinese army and drove them back as far as the Chinese frontier. Among the prisoners taken were some papermakers, who taught the art of papermaking at Samarkand. The Chinese annals of the T'ang dynasty describe the same battle and the date exactly agrees.

The Arabic report states that the paper introduced into Samarkand was made of “grasses and plants.” On the other hand, all early Arabic paper that has come down to us, including the great Rainer collection, is rag paper. An examination of a number of papers of just this period (768-87) from Eastern Turkestan shows that they are made of a mixture of rags and raw fibers, the raw fibers predominating. The Arabs seem to have found difficulty in getting all the materials that had been used by the Chinese and made their paper wholly of rags, like the earlier Chinese paper found by Stein in the Great Wall.

“Paper of Samarkand” soon became well known through the Asiatic dominions of the Caliphate—so much so that a century later (869) Juhith wrote, “The papyrus of Egypt is for the West what the paper of Samarkand is for the East.” A writer of the eleventh century, Tha'alibi, writes:

Among the specialties of Samarkand that should be mentioned is paper. It has replaced the rolls of Egyptian papyrus and the parchment which were formerly used for writing, because it is more beautiful, more agreeable, and more convenient. It is found only here and in China. The author of the work “Journeys and Kingdoms” tells us that paper was brought from China to Samarkand by prisoners. It was Ziyad, son of Salih, who took those prisoners, among whom were found the papermakers. Then the manufacture grew and not only filled the local demand but also became for the people of Samarkand an important article of commerce. Thus it came to minister to the needs and well-being of mankind in all the countries of the earth.

But long before this a rival factory had started at Baghdad. In the year 793-94 Harun-al-Rashid of Arabian Nights fame brought Chinese workmen for the starting of the first paper factory in the capital. Baghdad, however, does not seem to have seriously rivaled Samarkand as a source of supply.

Already in the tenth century we find Arabic scholars debating with warmth whether the Omnis or the Abbassids had the honor of the introduction of paper at Samarkand, the change of dynasty having occurred in 750.

The third factory recorded in the Arabic empire was on the southeast coast of Arabia. The fourth was Damascus, which was for several centuries the main source of supply for Europe, paper in Europe being generally known as charta damascena. Mambij or Bambyx, another Syrian town, seems also to have given its name to paper in Europe, with strange consequences. For charta bmbysca, paper of Bambyx, was corrupted to charta bombycina, paper of cotton, and from the time of Marco Polo down to 1885, when the view was disproved by the microscopic investigations of Dr. Wiesner, Arabic paper and early European paper were known as “cotton paper” and the invention of rag paper was attributed to the Germans and Italians of the fifteenth or sixteenth century.

But while Damascus became the center of the export of paper to Europe, the secret of its manufature was destined to enter Christendom by a longer route. It had come the full length of Asia; it was yet to go the full length of North Africa and enter Europe through Spain.

Paper in Egypt has special interest because it is here in the desert that almost all the old Arabic paper has been found—just as the desert of Turkestan has been the storehouse for old Chinese paper. The Erzherzog Rainer collection at Vienna contains about 12,500 documents, mostly written on paper, dating from about 800 to 1388. It is the examination of this Egyptian paper which has thrown the greatest light on the history of paper manufacture.

The steady displacement of papyrus by paper is interestingly illustrated by the dated documents in this collection. Of the second century of the Hegira (719-815) there are thirty-six dated documents all on papyrus. From the following century (816-912) there are ninety-six documents on papyrus and twenty-four on paper.
From the fourth century (913-1099) only nine are on papyrus and seventy-seven on paper. The last papyrus dates from 936.

A polite letter of thanks, whose date lies between 883 and 896, closes with the words, "Pardon the papyrus." As the letter is written on a most beautiful piece of papyrus, the writer is evidently apologizing for not using paper, which although just introduced from Baghdad or Samarkand was already the stylish material for letters.

A Persian traveler, writing about 1040, recorded with surprise how in Cairo "the vendors of vegetables and spices are furnished with paper in which everything that they sell is wrapped." A physician from Baghdad, writing a century later, reveals the source of this wrapping paper used by the grocers: "The Bedouins and fellahs search the ancient cities of the dead to recover the cloth bands in which the mummies are swathed, and when these cannot be used for their clothes, they sell them to the factories, which make of them paper destined for the food markets." Mercifully no paper mill was set up to use the textiles in the tomb of Tutankhamen!

From Egypt paper manufacture passed to Morocco and thence to Spain. The first clear mention of the making of paper in Spain—which is also the first in Europe—indicates a well-established industry. It was in 1159 that El-Edrisi said of the city of Xativa, "Paper is there manufactured, such as cannot be found anywhere in the civilized world, and is sent to the East and to the West."

For a century still, the paper manufacture of Spain was altogether in Saracen hands, though Christians seem gradually to have learned the art as the Christian conquest advanced. The first recorded paper mill in Christendom was founded in 1157 by Jean Montgover in Vidalon, not far from Hérault on the French side of the Pyrenees, though for still another century Europe’s paper was largely supplied by the Saracen mills of Damascus and Spain.

So for its first six hundred years papermaking was a Chinese monopoly, until taught to the conquering Arabs by Chinese prisoners at Samarkand. For the next five hundred years papermaking in the West was an Arab monopoly until the Arabs in turn taught their Christian conquerors in Spain, and Christendom made ready to take the lead.

Meanwhile paper was entering Europe by two other routes. Paper of Damascus was becoming a large article of commerce, chiefly through Constantinople, and paper from Africa was entering through Sicily. As there were paper mills in southern France in the thirteenth century, paper, either of Spanish or Arabic origin, may also have come in through this route.

The earliest extant paper document from Europe comes from Sicily. It is a deed of King Roger, written in Arabic and Latin, and dated 1109. A manuscript on paper, a part of which dates from 1154, is still preserved in the archives of Genoa. Emperor Frederick II in 1221 forbade the use of paper for public documents, but the prohibition was not altogether effective. The import into Italy of paper from Damascus increased steadily through the thirteenth century, and by 1276 the first Italian paper factory had been set up at Montefano. Italian paper manufacture spread rapidly, and Italy in the fourteenth century soon rivaled and then outstripped Spain and Damascus as the source of Europe’s supply.

In Germany the use of paper increased steadily during the fourteenth century, especially during the latter half, but all paper was imported—largely from Italy. Toward the end of the century, when block printing first appeared, South Germany was buying its paper supply from Venice and Milan, and the Rhineland from France, though import from Damascus had not altogether ceased. The use of the new writing material was just beginning to be general. Its employment was not yet as common as that of parchment. Nuremberg, which was one of the earliest centers—perhaps the birthplace—of the block printer’s art, has also the honor of being the first place in Germany, so far as is known, where paper was made. This first paper mill was started in 1390. The date of the earliest block printing is uncertain, but it was probably at just about the same time.

The slow advance of paper manufacture in Europe, which can readily be seen from a glance at the chart on page 245, is in startling contrast to the very rapid advance of printing when it once started on European soil. Paper seems to have advanced less rapidly in Europe than it had advanced either in China or in the Arabic world. The European parchment with which paper had to compete was a
far better writing material than either bamboo slips or papyrus. Furthermore, there were few in Europe who read, and the demand for a cheaper writing material, until the advent of printing, was small. While it was the coming of paper that made the invention of printing possible, it was the invention of printing that made the use of paper general. After Europe began to print, first from blocks and then from type, paper quickly took its place as the one material for writing as well as for printing, though, strange to say, the first paper mill in England was not set up until seventeen years after Caxton began to print at Westminster.

NOTES


2. This paper from Loulan, containing a fragment from the Classics, is undated, the date being estimated from the style of writing, etc. The three earliest dated manuscripts from Loulan are of the years a.d. 285, 286, and 310, according to Clapperton, 1947. Of a fourth manuscript he writes: "Another of the documents found at the same time is supposed to date from the second century." Folke Bergman is not convinced by the arguments for the early dating of this manuscript, known as Hedén document 1, and is inclined to put it later. He also omits completely the date of a.d. 292 from his list of dated documents from Loulan. See Bergman, 1937-76-78. Maspero, 1933:524, reports that certain paper documents of the third expedition of Stein also date from the years 263-70 to 312-30. This is likewise true of some found by the Otani mission.

3. The original dating, questioned by Pelliot, 1931:85-59, has apparently been settled by the study of the contents of the letters; see Henning, 1948: 601-15.

4. There are one or two isolated points where the use of wood for writing persisted parallel with that of paper. At Miran it continued until about the eighth century. Otherwise the triumph of paper by the end of the fifth century was complete.

In India, where cloth was commonly used for writing material, paper became known in the seventh century but was not manufactured until about the year 1000. C. J. Godse, 1944:87; and 1952:117. See also Bagchi, 1937:331-59, who demonstrates that the eighth century Sanskrit word for paper, pāta, is based on the Chinese chū, then pronounced ti which, according to Karlberg, 1923: No. 879.

5. Pelliot, in an undated five-page leaflet "Exploitations et voyages dans la Haute Asie," published about 1931, hazards the guess that a collection of Sanskrit texts on paper found by the Citéron expedition at Gilgit in the Kashmir region may go back to the fourth century. Sylvain Lévi more conservatively placed them in the sixth century. See Blum, 1934:45.

6. R. N. Frye, 1951:123, draws attention to Chinese paper found on Mt. Mugh, 120 kilometers east of Samarkand, dating from ca. 709-23. A. von Le Coq, 1923:16, advances the suggestion that the Sogdians may have been largely responsible for the diffusion of the techniques of papermaking. They manufactured paper in large amounts both in Sogdiana and in eastern Turkestan. The Manichæans as well as the Buddhists were users of paper.

7. Hirth, 1850:230; Charavannes, 1900:257. Besides the prisoners taken in 751, Chinese were also captured in 775-85 by the governor of Samarkand. Tamīn Ibn Bahr, writing of this around 821, adds that they "fabricate in Samarkand good paper and various kinds of arms and instruments." See Minorsky, 1948:285.

8. The raw fibers are largely those of paper mulberry, laurel, and China grass (Boehmeria nivea).

9. The following, written in Parma in 1782 by Andrez, and quoted by Thomas, 1810:47-58, indicates one of the views that used to be held with regard to cotton paper, "Paper made from silk was anciently fabricated in China, the art of making this paper was carried from China to Persia about the year 672 and to Mecca in 706. The Arabs substituted cotton and carried the art of papermaking into Africa and Spain."


11. The famous manuscript of the Convent of San Gilos, dating from 1129, has alternate pages of parchment and paper. This may have been paper imported from Africa, though it is more likely that it was Spanish, and would therefore antedate the statement here quoted from El-Edresi.

12. He learned how to manufacture paper at Damascus while a prisoner of the Saracens (Führmann, 1938:30).

13. Hunter, 1947:70-73, gives the following dates for the appearance of paper in various countries of Europe: Spain 950, Constantinople 1100, Sicily 1109, Italy 1154, Germany 1228, England 1295, Holland 1346 (1325?).

14. Cologne and Mainz both claim to have had paper factories as early as 1230, but the claim in disputed. Nuremberg's manufacture of paper is the first that is known with certainty.

15. It seems fitting that Nuremberg should have been the home a century later of Albrecht Dürrer, who was not only Germany's greatest painter, but also a maker of woodcuts on paper.