INTRODUCTION

FOUR great inventions, that spread through Europe at the beginning of the Renaissance, had a large share in creating the modern world. Paper and printing paved the way for the religious reformation and made possible popular education. Gunpowder levelled the feudal system and created citizen armies. The compass discovered America and made the world instead of Europe the theater of history. In all these inventions and others as well, China claims to have had a conspicuous part. The purpose of the present work is to investigate the truth of this claim in the one domain of printing.

The restlessness of the tribes of Central Asia during the early centuries of our era brought several hundred years of anarchy in China, corresponding to the Dark Ages in Europe; but as these barbarian migrations did not cause quite such a complete rooting up of classical civilization in the Far East as they did in the West, China quickly recovered and was earlier ready for those inventions which came into Christendom with the beginning of the Renaissance. Marco Polo's record shows us a China whose new civilization already in the thirteenth century had come to full bloom and had advanced very much farther than that of contemporary Europe.

When Europe was ready for the new life, she found in the Arabic Empire and Constantinople reservoirs ready at hand where the lore of her own classical world had been stored away, and to these reservoirs she turned with a real thirst. But with the classic lore there was a certain new element that also entered Europe from the East—an essentially modern spirit of invention and practical discovery. The mediators of the inventions that reached Europe at this time were the Arabs and the Empire of the Mongols. But the inventors were neither Arab nor Mongol. There seems to be good reason to believe that certain processes

that had been gradually evolved in China, when joined with the recovered civilization of Greece and Rome, had much to do with starting Europe forward on her course of progress, a course to which the classics alone could never have led. It is the glory of European genius, newly awakened from its thousand years of sleep, that it was able to seize these discoveries, dimly seen in the Far East, and in some cases but dimly understood in the land of their birth, and to make of them the basis for a civilization of which their discoverers could never have dreamed.

Preëminent among these inventions of China, on account of their influence both in Eastern Asia and in Europe, stand paper and printing. The invention of paper has already received considerable attention. The scientific study of the subject in the West was begun by Dr. Friedrich Hirth, who held for many years the chair of Chinese at Columbia University, and its popular presentation has been carried forward by Mr. H. G. Wells in his Outline of History. The facts concerning China's part in the invention of printing, on the other hand, have been almost unknown to European scholarship, except in a few of their larger outlines. The Encyclopedia Britannica (Eleventh Edition), which in its article on typography devotes seventeen pages to the controversy as to whether Gutenberg or Coster invented movable type in Europe, tells all it knows of pre-European printing in less than half a column. And the catalog of the State Library in Berlin, in its two great folio volumes of titles on the history of printing, has just one title that refers to China—a magazine article that appeared in Paris in 1847.

No historical research however can lay claim to complete originality, and this study of Chinese printing may be considered a compendium of the researches of a multitude of scholars, scholars of many centuries, Chinese, Japanese and Western, correlated with certain of the results of recent excavations in Turkestan and in Egypt. The biblography indicates the main sources, and indicates also the debt of gratitude felt by the author to all these investigators, the results of whose labors have been freely borrowed.

On the other hand, the gathering together and correlating of this source material from different ages and different parts of the world has been largely a virgin field. It is this which has made the work at the same time difficult and inspiring.

Apparently, the first mention in European literature of the Chinese invention of printing dates from the year 1550, when the Italian historian Jovius, from an examination of certain printed books brought from Canton by Portuguese travellers and presented by the King of Portugal to the Pope, came to the conclusion that European printing was derived from China.[1] In the eighteenth century Phil. Couplet in the British Encyclopedia, writing evidently on the authority of Roman Catholic missionaries, assigned the year 930 as the date of the Chinese invention. Gerard Meerman in his *Origines Typographicae* in 1765 told of early Chinese printing, basing his statement on Arabic authority.[2]

A further study of the subject from Chinese sources was made by Jules Klaproth[3] in 1834 and by Stanislas[3] Julien in 1847. The results of Julien's work were published in a short article in the Journal Asiatique, which, in spite of inaccuracies, has formed the basis of practically all that has been written on the subject in the West up to the present. A letter from Thomas T. Meadows to Lord Elgin, published as part of a paper by Lord Robert Curzon in the Miscellanies of the Philobiblon Society of London in 1858,[3] contains what is probably the best account of the Chinese invention of block printing that has appeared in any European language even down to our own day, but unfortunately this letter has been hidden away in a little known publication and in an article the balance of which is of doubtful value, and it has apparently escaped the attention of later writers.[4] Since 1858 little if any independent work devoted to printing in China has appeared in any European language until 1923, when Dr. Hermann Hülle[5] of Berlin published in a fifteen-page booklet a clear summary of the history of Chinese typography and its development in Korea, based partly on Julien and Satow, partly on independent research in Chinese sources. The writer had the privilege of working for

some months under the expert direction of Dr. Hülle, who is in charge of the Chinese department in the State Library at Berlin, and who very kindly placed all his source material at the writer's disposal.

Meanwhile an article on the history of early printing in Korea and Japan was published in 1882 in the Journal of the Asiatic Society of Japan by Sir Ernest Satow [2] and has remained to the present the main source of what is known in the West on that subject.

Modern scholarship in Japan and China has produced at least three works [3] which gather up the main historical facts concerning the history of printing in their respective countries, the Japanese work, as is natural, dealing somewhat with Chinese sources and more fully with those of Korea, as well as with the Japanese development of the invention. Unfortunately these books are available only in Japanese and Chinese respectively and have not been mentioned, so far as the writer is aware, in any European work. All are brief but are far more complete than the short sketches mentioned above that have appeared in European languages.

These articles and books in five of the world's leading languages have been used freely in the preparation of the present work, both for the actual information contained and more especially for their references to earlier Chinese literature.

Another important source has been the great Chinese encyclopedias, especially the *T'u-shu-chi-ch'eng*,[3] published in 1726, and the *Ko-chih-ching-yüan*,[3] published in 1735. These too have been valuable largely on account of their quotations from earlier works.[4] Unfortunately, while new improvements in the art of writing, such for instance as the invention of the hair pen and the invention of paper, have called forth a voluminous literature of antiquarian research by Chinese writers, printing has as a rule been taken for granted and sparsely mentioned. Calligraphy has been considered the work of artists, printing that of artisans. However, by supplementing such direct references as have been found with many indirect references, it is possible to gain a fairly clear pic-

ture of the early history of the art, at least as clear a picture as we have of early European block printing, which grew up equally in the dark. Needless to say, further research will probably find very much material in the great mine of Chinese literature that has not yet been unearthed.

A further source, and that which gives us our most certain information, is archaeology. The desert air of Chinese Turkestan, like that of Egypt, has preserved intact the memorials of ancient civilization, and the researches of British, French, German, Russian and Japanese expeditions have made it possible to reconstruct the history and daily life of these western outposts of China during the first thousand years or more of our era. One result of this research has been clear testimony to the accuracy of the Chinese records of the period. Another result bearing more directly on the subject in hand has been the discovery in different parts of Turkestan and its border lands of a large number of block prints and block books of varying date, which shed light both on the progress of the art of printing in China and on its westward course. Excavations in Egypt also have revealed the products of a hitherto unsuspected block printing activity continuing through the time of the Crusades, the significance of which must still be regarded as something of a mystery, but which may eventually lead the way toward the discovery of the connection between the block printing of the Far East and that of Europe. An examination of these archaeological discoveries, in books, in the museums where they are preserved and more especially in personal conversation with the archaeologists themselves, has been the most interesting part of the study on which the present work is based.

Further source material on particular phases of the problem will be found in the bibliography, which, on account of the variety of material, has been arranged by chapters.

As indicated above, it is not only to books that the writer is indebted. A far more personal debt must here be acknowledged. The keenest pleasure in the preparation of the work has been the counsel, guidance and criticism—and the friendship—of some of

the world's leading scholars in the realms of Chinese, Central Asiatic and Arabic history. In this work nationality has been forgotten. In Berlin and Vienna, as well as in Nanking, Paris and London, unfailing kindness and coöperation have been met.

The expert guidance of Dr. Albert von Le Coq, given freely day after day in the study of the Turfan discoveries at Berlin, the inspiration given by Dr. Adolf Grohmann of Prague in the study of the block prints of Egypt at Vienna, the help afforded by Mr. Arthur Waley and Mr. Lionel Giles in the examination of the Tun-huang finds at the British Museum, the well-nigh perfect library assistance afforded by Dr. Hermann Hülle of Berlin, and the patience of my colleagues at Columbia University, Professor Lucius C. Porter of the Chinese Department, Professor A. V. Williams Jackson of the Indo-Iranian Department, Professor Richard J. H. Gottheil of the Semitic Department and Professor William L. Westermann of the Department of Ancient History, in reading the manuscript and making valuable suggestions, all place the writer under a debt of gratitude such as can never be repaid.

But deepest of all is my obligation to Professor Paul Pelliot of the *Collège de France*. Not only has Professor Pelliot set a new standard of accuracy and acumen in Chinese research to which all investigators are indebted. Not only have his researches in literature and in archaeology furnished a mass of facts on which many of the conclusions of this book are based. The debt of the writer to Professor Pelliot goes further. For Professor Pelliot has patiently gone over the first draft of the manuscript chapter by chapter, has gradually introduced the writer to more clear-cut and accurate methods of Chinese research, has made on almost every page suggestions and corrections which the writer has sought to follow up and incorporate, and has given freely of his store of historical understanding.

In such a work as this, it is impossible to acknowledge one's debt to all who have freely rendered assistance, but to the following, who, in addition to those already mentioned, have given largely of their time and their expert knowledge, a word of gratitude must

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Grateful acknowledgement should also be made of the sources

from which illustrations have been received. These are in the main from original photographs taken in the museums where the objects are preserved. The writer is specially indebted to Mr. Waley and to Dr. von Le Coq for their courtesy and assistance in obtaining photographs from the British Museum and the *Museum für Völkerkunde*. Where illustrations are reproduced from other books, acknowledgment is made in abbreviated form beneath the illustration concerned, and the full title, with date and place of publication, will be found at the close of the bibliography.

The romanization of Chinese words is that of Giles, which, in spite of serious drawbacks, seems to be the one most generally used among scholars. Exceptions are made of the names of provinces and large cities like Peking, where the post office romanization has been followed. The names of those dynasties that are easily confused in Giles' romanization are here spelled in the more easily recognized form, Ts'in, Tsin and Kin.

The hope with which this book goes forth cannot be better expressed than in the words of the Chinese writer Tai T'ung, who wrote and had printed during the thirteenth century a book on the history of Chinese writing:

> Were I to await perfection, my book would never be finished, so I have made shift to collect the fruits of my labors as I find them. It was said by the Master, "In preparing the governmental notifications, P'i Shen first made the rough draft; Shih Shu examined and discussed its contents; Tzŭ-yü, the manager of foreign intercourse, then made additions and subtractions; and finally Tzŭ-ch'an of Tung-li gave them the proper elegance and finish." Such a rough draft is the present work. For the examination and discussion of whatever truth it contains, it awaits the judgment of a master-mind, . . . one whose wise and lofty spirit will lead him, without looking down upon the author, to . . . correct and suppress where the text is in error, to add where it is defective, and to supply new facts where it is altogether silent. [7]

PAPER AND PRINTING

Their Evolution in China and Their Spread Westward

Date B.C.	Chinese History	Paper	Block Printing	Typography	Western History	Date B.C.
200	HAN DYNASTY B.C. 206–A.D. 220 Corresponding to the period of the Roman Empire in the West. Period of national expansion. Literature characterized by intensive study of the models of the past rather than by originality. Conquest of Eastern Turkestan and earliest recorded contacts with the West. Silk trade between China and the Roman Empire assumes importance. 100 Chinese expedition reaches Persian Gulf 97 A.D. Buddhism advancing across Central Asia and beginning to touch China.	Invention of the hair pen by Meng T'ien (ab. B.C. 220) followed by the use of silk rolls as a writing material in place of bamboo and wood.	The use of seals (first mentioned about B.C. 255) becomes general. Seals made of a great variety of materials. Impressions very beautiful and perfect. Impressions on clay—without ink.		Rome Conquers Greece Julius Caesar	200 100

Julius Caesar

B.C. A.D. 0

Use of a near-paper made of silk fiber.

Fall of Jerusalem

100

105
INVENTION OF PAPER
officially announced to the Emperor by the Eunuch Ts'ai Lun.

The paper was made of tree bark, hemp, old rags, and fish nets.

About 150
EARLIEST EXTANT PAPER
Found by Stein in a spur of the Great Wall. A pure rag paper.

Improvements in paper-making by Tso Tzu-i.

175. Standard text of the Classics cut in stone. Some time after this date the practice began of making inked rubbings from these inscriptions.

Marcus Aurelius

200

B.C. A.D. 0
100
200

SIX DYNASTIES
220–589

Corresponding to the Dark Ages in Europe.

Era of internal anarchy and of successive barbarian incursions from the North.

This era is divided into three main periods: (1) The period of the Three Kingdoms (220–265), when three Chinese dynasties fought for the mastery; (2) The Tsin Dynasty (265–420), when the country was more or less loosely united and put up a rather weak fight against the Northern Barbarians; and (3) The Period of Division between North and South (420–589), when North China was held by Turk and Tartar dynasties. The destruction of Classical civilization by the Northern invaders was not as complete as in Europe. Hence China recovered more quickly.

300

The advance of Buddhism in China in this period corresponds roughly with the advance of Christianity in Europe.

400

About 250–300. Paper at Niya in Turkestan. Found by Stein expedition.

264. Earliest clearly dated paper. Found by Hedin at Loulan.

Chinese records indicate rapid expansion of paper manufacture, displacing bamboo, wood and silk as writing material.

399. Earliest paper from Turfan.

406. Beginning of the Tunhuang papers. More than ten thousand rolls, dating from 406 to 997, all written on paper, found in one manuscript chamber on the Turkestan border.

Use of paper becomes general throughout Eastern Turkestan, completely displacing wood and bamboo as a writing material. The paper is usually made of a mixture of rags and raw fibers. Steady improvement in [illegible]

About 400. Earliest use of ink from lamp black, similar to modern Chinese ink, now used both for writing and for printing.

Fifth Century (?). Earliest use of inked seals—inked with red cinnobar and stamped on paper.

Constantine

Fall of

300

400

bamboo as a writing material. The paper is usually made of a mixture of rags and raw fibers. Steady improvement in process of sizing and loading with starch paste, starch flour, and other materials.

and stamped on paper.

Fall of Rome

500

500

Sixth Century (?). Large Taoist seals, made of wood, used for making charms.

SUI DYNASTY
589–618
Reunites Empire

600

600

T'ANG DYNASTY
618–907

Corresponding with the restoration of the empire under Charlemagne in Europe, but culturally far more advanced than Charlemagne's Empire. The ancient glory of the Empire is restored, and, refreshed by new blood, a new religion and new contacts with the outside world, China becomes the world's most highly developed empire, reaching her highest point of achievement in military prowess, in painting, and in lyric poetry.

The beginning of the period

This column represents the earliest USE AND IMPORT of paper in the countries named.

650
Samarkand

707

This column represents the earliest MANUFACTURE of paper in the countries named.

Between 627 and 649. Earliest extant rubbing from inscription.

Seventh Century (?). Experimentation in Buddhist monasteries with various forms of reduplication,—seals, rubbings, Buddha stamps, stencils, and textile prints, leading the way, probably early in the eighth century, to true block printing.

Mo-hammed

700

700

is marked by magnificent religious toleration—a welcome to all world faiths. The later reigns, torn by religious persecution, do not maintain the same standards of national vigor.

Mecca

757
Samarkand

793
Bagdad

800

Ab. 800
Egypt

770
EARLIEST EXTANT BLOCK PRINTS.
One million charms in Sanskrit language and Chinese character, printed in Japan. Several still extant.

Charlemagne

800

868
EARLIEST PRINTED BOOK
Diamond Sutra, printed by Wang Chieh, found by Stein at Tun-huang. Roll 16 feet long.
883. First mention of printing in literature. Szechuen the center of a printing activity which included non-religious works.

900

Ab. 900
Egypt

900

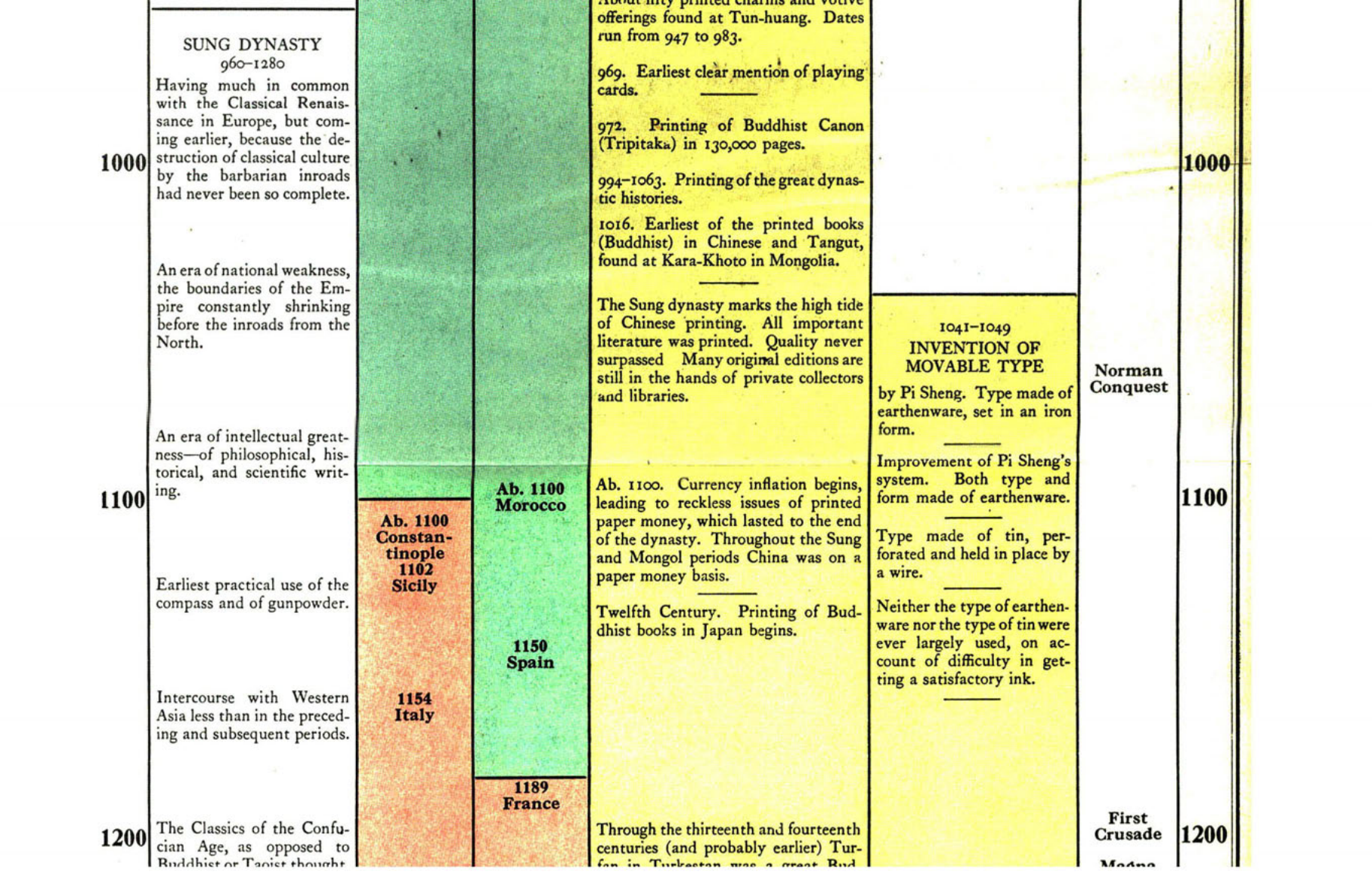
FIVE DYNASTIES
907–960
Short period of disruption.

Early Tenth Century. First printing of paper money in Szechuen.

932–953
PRINTING OF THE CLASSICS
by Feng Tao ushers in the era of large scale official printing.
About fifty printed charms and votive offerings found at Tun-huang. Dates run from 947 to 983.

Ab. 950
Spain

SUNG DYNASTY


SUNG DYNASTY
960–1280
Having much in common with the Classical Renaissance in Europe, but coming earlier, because the destruction of classical culture by the barbarian inroads had never been so complete.
1000
An era of national weakness, the boundaries of the Empire constantly shrinking before the inroads from the North.
An era of intellectual greatness—of philosophical, historical, and scientific writing.
1100
Earliest practical use of the compass and of gunpowder.
Intercourse with Western Asia less than in the preceding and subsequent periods.
1200
The Classics of the Confucian Age, as opposed to Buddhist or Taoist thought
About fifty printed charms and votive offerings found at Tun-huang. Dates run from 947 to 983.
969. Earliest clear mention of playing cards.
972. Printing of Buddhist Canon (Tripitaka) in 130,000 pages.
994–1063. Printing of the great dynastic histories.
1016. Earliest of the printed books (Buddhist) in Chinese and Tangut, found at Kara-Khoto in Mongolia.
The Sung dynasty marks the high tide of Chinese printing. All important literature was printed. Quality never surpassed Many original editions are still in the hands of private collectors and libraries.
Ab. 1100 Constantinople
1102 Sicily
1154 Italy
Ab. 1100 Morocco
1150 Spain
1189 France
Ab. 1100. Currency inflation begins, leading to reckless issues of printed paper money, which lasted to the end of the dynasty. Throughout the Sung and Mongol periods China was on a paper money basis.
Twelfth Century. Printing of Buddhist books in Japan begins.
Through the thirteenth and fourteenth centuries (and probably earlier) Turfan in Turkestan was a great Bud
1041–1049
INVENTION OF MOVABLE TYPE
by Pi Sheng. Type made of earthenware, set in an iron form.
Improvement of Pi Sheng's system. Both type and form made of earthenware.
Type made of tin, perforated and held in place by a wire.
Neither the type of earthenware nor the type of tin were ever largely used, on account of difficulty in getting a satisfactory ink.
Norman Conquest
First Crusade
1000
1100
1200

	are made the basis of cultural advance.	1228 **Germany**		dhist printing center. Quantities of sutras and charms in six languages found by the Prussian expedition.		**Magna Charta**	
1300	YÜAN (MONGOL) DYNASTY 1280–1368 Corresponding to the Period of the Crusades. Era of Asiatic Empire. China and Europe meet for a moment face to face, China passes the torch to Europe, and China's progress for a time ceases.	**1309 England** **1322 Holland**	**1276 Italy**	Through the same period (and perhaps earlier) block printing was carried on in Egypt. Fifty or more of these prints extant. 1289 and 1305. Letters with large Chinese seal impressions sent from Persia to King of France. Still extant in Paris. 1294. Issue of printed paper money at Tabriz, Persia, in Chinese and Arabic. 1297. Chinese paper money described by Marco Polo (also within a century by seven other European writers). Ab. 1307. Chinese block printing accurately described in Arabic and Persian by Rashid-eddin.	WOODEN TYPE The use of wooden type extends to borders of Turkestan and is taken up by the Uigur Turks. Font of type in Uigur language, found by M. Pelliot at Tun-huang, dating from about 1300. 1314. Full and accurate description of wooden type and of a new type-setting device by Wang Cheng in the Book of Agriculture.	**Dante**	1300
	MING DYNASTY				METAL TYPE 1390. Order given for the	**Wyclif**	

MING DYNASTY
1368–1644

Parallelism with Europe ends. Era of strong nationalism, of isolation, and of comparative stagnation. The first century of the dynasty is marked by a strong national and cultural revival in Korea and by a renewed Chinese influence in Japan.

1400

1391
Germany

End of fourteenth century. Beginnings of block printing in Europe. Image prints and playing cards.

1423
EARLIEST DATED EUROPEAN BLOCK PRINT

1440–1450. Earliest European block books.

European block printing gradually gives way to typography.

1494
England

1500

METAL TYPE

1390. Order given for the establishment of a type foundry by the King of Korea.

1403. First issue of type from the Korean royal foundry. 1409. Earliest extant book printed with movable type in Korea. 1420. Second Korean font. 1434. Third Korean font.

About 1450
GUTENBERG'S INVENTION

Typography advances with great rapidity throughout Western Europe.

Wyclif
Chaucer

Last Crusade

Fall of Constantinople

Columbus

1400

1500

Chinese Cultural Domain | Moslem World | Christendom