THE INVENTION OF PRINTING IN CHINA AND ITS SPREAD WESTWARD

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SECOND EDITION

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To
PAUL PELLJOT
Membre de l’Institut, Professor of the Languages, History, and Archaeology of Central Asia in the Collège de France, the master mind of Chinese historical research; whose example, whose writings, and whose revision of the manuscript have made possible such measure of accuracy as this work can claim.
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## 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 leveled the feudal system and created citizen armies. The compass discovered America and made the world instead of Europe the theater of history. In 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 Eastern Asia 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 civilization already in the thirteenth century had come to full bloom and had advanced very much further than that of contemporary Europe.

When Europe was ready for the new life, she found in the Arabic empire and at 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, that it was able to seize these discoveries, dimly seen in Eastern Asia 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.

Pre-eminent 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,\(^1\) who held for many years the chair of Chinese at Columbia University, and its popular presentation has been carried forward in general histories. 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.

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—Chinese, Japanese, and Western scholars of many centuries—correlated with certain of the results of excavations in Turkestan and in Egypt. The bibliography 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 1496, when the Italian historian Jovius, from an examination of certain printed books brought from Canton by Portuguese travelers and presented by the King of Portugal to the Pope, came to the conclusion that European printing was derived from China.\(^2\) In the eighteenth cen-

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1. Actually, according to Laufer, 1927:24. Hirth's article was based on earlier papers by Edkins, 1857:67-68; and Wylie, 1857 and 1924:xxv-xv.
2. For full quotation from Jovius, see Chapter 16, note 4.
Meanwhile an article by Sir Ernest Satow on the history of early printing in Korea and Japan was published in 1882 in the *Transactions* of the Asiatic Society of Japan, 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 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. 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 *Tu shu chi chêng*, published in 1726–28, and the *Ko chih ching yüan*, published in 1735. These too have been valuable, largely on account of their quotations from earlier works. Unfortunately, while new improvements in the art of writing, such

7. Asakura, Yeh Tê-hui, and Liu-an; see the Bibliography.
8. Not every quotation from Chinese encyclopedia or other source book can be carried back to its ultimate source, as would be preferable in the interest of scientific accuracy. In key passages, however, on which the framework of the history depends, every effort has been made to get back to the original statement and to compare variant editions. In other cases, where use has been made of secondary sources, and in the very few cases where the translations of other European scholars have been accepted, the secondary source as well as the original has been noted. It should be observed that the Chinese encyclopedias and other source books used consist almost wholly of verbatim quotations from earlier works rather than paraphrases or summaries, and that, while the possibility of copyists’ errors is not thus altogether excluded, this method greatly diminishes the likelihood of such error. Lauter, 1927:71, does not agree as to the reliability of Chinese encyclopedias. But there are instances when the encyclopedias, quoting from earlier editions, are closer to the originals than the modern editions of well-known books. See Goodrich and Ch’ü Tuang-tsu, 1949:149; and Balaza, 1953:206–8.

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 picture 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.

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 borderlands 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.

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 cooperation 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. Goethel 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. Professor Pelliot has set a new standard of accuracy and acumen in Chinese research to which all investigators are indebted. His researches in literature and in archaeology have 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 be expressed: Dr. Vasseley Alexiev, professor of Chinese Philology, University of Leningrad (Petrograd); Mr. Laurence Binyon, curator of Oriental Art, British Museum; Professor Edward G. Browne, Department of Arabic, Pembroke College, University of Cambridge; M. Henri Cordier, Membre de l’Institut, professor of Chinese History in the Ecole des Langues Vivantes, Paris; Père Henri Doré, author of Superstitions en Chine; Dr. Erich Hänisch, professor of
INTRODUCTION

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, Ch’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 Tung, 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, Pi Shên first made the rough draft; Shih Shu examined and discussed its contents; Tzu-yü, the manager of foreign intercourse, then made additions and subtractions; and finally Tsu-ch’ái of Tung-ssü 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."

T. F. C.


INTRODUCTION TO SECOND EDITION

A few years ago Dagny Carter inquired if I would undertake a revision of this book. I hesitated, as I did not wish to tamper with the fresh, almost eager style of Thomas Francis Carter’s writing by introducing changes and additions resulting from the new knowledge gained since his untimely death in 1925. But these hard facts were compelling: the book was out of print, and it clamored for certain revisions if brought out again.

Working on the book has been almost as exhilarating for me as it seems originally to have been for Dr. Carter. It has meant checking on a thousand points, and has sent me scurrying about our library to consult works I have either rarely or never consulted before, communicating with authorities in near or far-off places, and visiting certain collections of rarities which previously I had not seen: a certain private collection in New York, the treasure room of Horyu-ji in Nara, the Tun-huang treasures at the Museum of Central Asian Antiquities (New Delhi), the Bibliothèque Nationale, and the British Museum, and the Gutenberg Museum at Mainz, for example. We have advantages in the United States at present which did not exist in Dr. Carter’s day. He was forced by the smallness of our Chinese library holdings to lean heavily on a few encyclopaedic works. We can now go back of them in almost every case to the originals from which their compilers quoted. Further, his own volume played its part in stimulating new researches by Chinese, Japanese, European, and American scholars. Add to these advantages recent discoveries by archeologists. For example, in 1931 Folke Bergman found in Central Asia fragments of paper in association with wooden manuscripts, the dates of which he was unable to ascertain at the site. Seventeen years later Mr. Lao Kan determined them to be equivalent to the years between a.d. 93 and 98. The paper is not surely of the same half decade, but it is certainly older than anything known a generation ago. In regard to early printing,
savants in various lands have turned up four references, unknown to Carter, in the Chinese and Japanese literature of A.D. 835 to 907; and these show that secular and Taoist circles as well as Buddhist were active in utilizing the new technique. Early printed pieces (one dated 956, the other 975) have also come to light near the east coast of China, indicating that the lower Yangtze valley as well as Szechuan and the capital area in Honan were centers of the new art.

Carter's book this was, and Carter's it should remain. He laid it out on grand lines and as such it was a contribution to literature and to knowledge. My sole desire has been to correct a few mistakes and bring it up to date. I owe many acknowledgments for assistance rendered. They are given, I trust adequately, in the bibliography and in the notes.

L. C. G.

Columbia University, New York
March, 1955

THOMAS FRANCIS CARTER
1882–1925

In the spring of 1921 North China was threatened with another famine, and the call had gone out for volunteers to help in organizing emergency work and relief. As several times before, Tom Carter had responded, and it would probably not have been recorded here but for a small event that happened at this time.

On his way to Shantung he found time to read on the train W. J. Clennell's book *The Historical Development of Religion in China*, and in his reading he came across the statement that inspired the opening paragraph in his Introduction to the present volume. He asked himself, Has the Chinese origin of these four epoch-making inventions been proved? How much is actually known about the beginnings of paper, printing, gunpowder, and the compass?

After the famine was over, he returned to the schools that had been his main work for the past eight years. But the spark from the passage in Clennell's book remained in his mind until the question took possession of all his waking hours. The scholar he was intended to be had been born. In the summer of 1922, after spending another spring in bringing famine relief by superintending the making of three hundred miles of dirt roads with famine labor and dispensing half a million dollars in relief to thousands of destitute homes, he left his chosen work to begin his search for facts about the inventions mentioned in Clennell's book.

Thomas Carter came to China for the first time in 1906. He was then two years out of Princeton and was making a world tour with his Princeton contemporary Norman Thomas and two other friends. That this was not to be a usual sightseeing tour soon became apparent. The world problems and many new interests that met him at every turn, as well as the ever-present thought of choosing a life
work, made it increasingly difficult for him to follow the scheduled itinerary. In Nanking he left his travel companions to go into the interior to visit the homes of two cousins who had come to China as missionaries. As there were no train connections between Nanking and Huaiyuan in those days, he joined a party of carpenters who were making the one hundred and fifty mile trek on foot or on donkey-back. Friends in Nanking provided him with food and bedding and taught him a few Chinese words, which he had to make the most of with his fellow travelers who knew not a word of any Western language.

This gave him his start. Although he did not plan to stay in Huaiyuan more than a few weeks, as soon as he arrived he secured a teacher and began his study of the Chinese language. He made exceptional progress the three months he was there, and after returning to America for his graduate studies, he kept up a correspondence in Chinese characters with his teacher in Huaiyuan. When he returned to China in 1910 with his bride to take a permanent position, he was able immediately to use the language he had begun studying in 1906.

It was the following ten years spent in a small Chinese town developing and superintending a circuit of city and country schools in close association with the Chinese that gave to him his rare understanding and appreciation not only of the Chinese themselves but also of that background which has made them what they are, the world’s most patient, tolerant, and truly cultivated people. He used to say, “I came to teach but I stayed to learn.” The eagerness of the young for new experiences remained one of his salient characteristics. He had no sooner arrived in China in 1910 than he took up as his most absorbing avocation a study of Chinese history, both from books and from conversations with the scholars he met who love nothing better than a discourse on their ancient lore. In the Chinese language he continued to prove himself a scholar of unusual merit. To this study, with its great difficulties, he brought a joyousness of spirit that made play of what might otherwise have been a tiresome, nerve-racking task.

When Tom Carter and I left China in the summer of 1922 on a leisurely trip to Europe, the exact measure of his research had not yet been determined. This came to pass in Munich in consultation with Dr. Friedrich Hirth who, before his retirement, had been head of the Chinese Department at Columbia University. The invention of paper, an indisputable gift from China to the West, was fairly well known, even in sources other than the Chinese. The origins of gunpowder and the compass, while often attributed to the Chinese, were still so nebulous and vague even in Chinese sources that a scientific representation, if provable at all, would almost certainly mean many years’ work by many scholars. The invention of printing in China and its spread westward, while still to a large extent buried in Chinese sources and in archaeological material brought back from expeditions of Turkestan seemed, however, ready for the man who had the languages needed for the research and the patience and ability to put the scattered pieces of evidence together in a coherent account.

At Dr. Hirth’s suggestion we postponed our return to America to spend the winter and spring in Berlin. Here my husband had a most rewarding time digging into Chinese sources and the treasure-house of archaeological material that had been brought back from Turkestan expeditions during the first decade of the century. Boxes never opened until this time were brought out for his inspection, and German scholars and scientists gave him freely of their time and knowledge.

New clues at this time took him elsewhere on the continent. When research brought out the fact that paper containing print had been discovered in Egypt wrapped around ancient mummies, he went to a Berlin Arabist for more information. “Too bad you did not come a little earlier,” said Dr. Moritz, “for the man who knows more about this collection of papers than anyone in Europe left this office one hour ago to return to his home in Prague.” In less than a week we were in Prague, but by that time Professor Grohmann had left for Vienna. This time, however, the elusive scholar was followed immediately. As the collection of papers from Egypt was now in a Vienna museum it was a good piece of luck to have the collection and the expert together in one place. Dr. Grohmann was most
helpful. The collection was taken out of the cases. Translations
were made from the Arabic, and a chemist was called in to give
expert opinion about the paper and ink.

Happiness was ever one of Tom Carter’s most endearing char-
acteristics, but never did it abound as during the months we had
headquarters in Berlin and during our subsequent stay in France and
England. In Paris he made personal contact for the first time with
Paul Pelliot, the great Sinologist to whom he dedicated his book.
During the winter’s research Mr. Carter had found evidence in
Chinese sources that movable type as well as block printing had been
invented by the Chinese, but up to this time he had seen no concrete
evidence for the written statement. During the conversation the
French scholar reached into a drawer in his desk, bringing out a
small box. “If you are interested in the invention of movable type
by the Chinese,” he said, “you will be interested in these specimens
of type. I found them on the floor of one of the caves at Tun-huang,
and I have ascertained that they are considerably earlier than the
Gutenberg invention.” The missing pieces to the story of the Chinese
invention of printing and its spread westward were now falling into
his hand almost daily.

While in Europe Tom Carter accepted a call to join the faculty
of the Department of Chinese at Columbia University, and in 1924
he was made its executive head. In teaching he found his fullest ex-
pression. His own eagerness to learn, his attention to details, and
his infectious enthusiasm were communicated to his students, a fact
to which this writer can bear testimony. His classes became research
laboratories where teacher and students alike contributed to the
common aim. During his long illness in the spring of 1929 his stu-
dents of Chinese civilization decided to conduct their own classes as
seminars under such direction as he could give from his sickbed.
The experiment was a great success and there was no falling off in
attendance. Several of his students who had started the semester
without a definite aim decided then to make the interpretation of
the East to the West their life work.

In addition to the scholarly incentive, the natural satisfaction that
came to him in finding all his faculties used to their utmost capacity
in the research and in the writing of this book, there was present in
Tom Carter’s work at this time another less obvious dynamic: an
urgent desire to break down by intelligent knowledge the barriers
that prevented understanding and appreciation between the East and
the West. He had come to feel that there was as great a need for an
interpretation of the East to the West as for the West to have inter-
preters of its civilization in the East. It was this ideal that prompted
him to accept the call from Columbia University. And it was this
ideal, as much as scholarly ambitions and satisfactions, that made
available in the West, for the first time, the history of the Chinese
invention of printing, which became his parting gift to the life he
loved so well. He was stricken with a fatal malady while the book
was still in the press and passed away a few days after he had seen
the completed volume in print.

That the book filled a great need was made apparent in its en-
thusiastic reception. It was placed on the League of Nations list of
fifty books considered by the League’s cultural committee to have
contributed most to essential world knowledge in 1925.

When the first printing was exhausted in 1930, the publishers
considered the possibility of bringing out a revised edition, but so
little new material had actually appeared at that time that the project
was abandoned. The new printing contained one correction on page
12, a few new titles provided by the late Dr. Berthold Laufer for the
bibliography, and a short biographical sketch of the author.

When the book again went out of print in 1950, the Columbia
University Press helpfully consented, at my request, to postpone
another reprint until there had been time to investigate whether a
revised edition could be made at this time. Talking over the problem
with Dr. Carrington Goodrich, my husband’s successor in the Chinese
Department at Columbia University, I found to my great satisfac-
tion that he was willing to undertake the task. I wish to express here my
deep appreciation for the spirit in which Dr. Goodrich entered on
this by no means easy task. The additional material would, I am
sure, have delighted Tom Carter. Probably it would have made him
feel as he did when he defended his doctor’s thesis. “Was it hard?”
I asked him when it was all over, "Why no," he replied, "it was a most interesting experience. Think of getting all those fine minds working on my subject."

Except where later research has brought out facts that made revision necessary, the original text is left intact. Throughout the revision Dr. Goodrich has shown fine sensibilities in preserving Tom Carter's literary style, which indeed had no small share in the original success of the book. For this I am deeply grateful.

I also wish to express my great appreciation for the unfailing courtesy and helpfulness I have received during these years from Columbia University Press, and for the understanding cooperation they have now shown in allowing the book to be transferred to a commercial publishing house to seek a wider distribution for this book so essential to Far Eastern as well as to world history.

Dagny Carter

New York
March, 1955

Part I

THE BACKGROUND OF PRINTING IN CHINA
Chapter 1

THE INVENTION OF PAPER

Back of the invention of printing lies the use of paper, which is the most certain and the most complete of China’s inventions. While other nations may dispute with China the honor of those discoveries where China found only the germ, to be developed and made useful to mankind in the West, the manufacture of paper was sent forth from the Chinese dominions as a fully developed art. Paper of rags, paper of hemp, paper of various plant fibers, paper of cellulose, paper sized and loaded to improve its quality for writing, paper of various colors, writing paper, wrapping paper, even paper napkins and toilet paper *—all were in general use in China during the early centuries of our era. The paper, the secret of whose manufacture was taught by Chinese prisoners to their Arab captors at Samarkand in the eighth century, and which in turn was passed on by Moorish subjects to their Spanish conquerors in the twelfth and thirteenth centuries, is in all essential particulars the paper that we use today. And even in our own times China has continued to furnish new developments in paper manufacture, both the so-called “India paper” and papier-mâché having been introduced from China into the West during the nineteenth century.  

Though the invention of paper is carefully dated in the dynastic records as belonging to the year A.D. 105, the date is evidently chosen rather arbitrarily, and this invention, like most inventions, was a gradual process. Up to the end of the Chou dynasty (256 B.C.), through China’s classical period, writing was done with a bamboo pen, with ink of soot, or lampblack, upon slips of bamboo or wood. Wood was used largely for short messages, bamboo for longer writ-

* The notes to each chapter will be found at the end of the chapter. The bibliography and the list of characters follow the final chapter.
The invention of the writing brush of hair,² attributed to the general Mêng T’ien in the third century B.C., worked a transformation in writing materials. This transformation is indicated by two changes in the language. The word for chapter used after this time means “roll”; the word for writing materials becomes “bamboo and silk” instead of “bamboo and wood.” There is evidence that the silk used for writing during the early part of the Han dynasty consisted of actual silk fabric.³ Letters on silk, dating possibly from Han times, have been found together with paper in a watchtower of a spur of the Great Wall.

But as the dynastic records of the time state, “silk was too expensive and bamboo too heavy.” The philosopher Mo Ti, when he traveled from state to state, carried with him many books in the cart tail.⁴ The emperor Ch’in Shih Huang set himself the task of going over daily a hundred and twenty pounds of state documents. Clearly a new writing material was needed.

The first step was probably a sort of paper or near-paper made of raw silk.⁵ This is indicated by the character for paper, which has the silk radical showing material, and by the definition of that character in the Shuo wên, a dictionary that was finished about the year A.D. 100.⁶

The year A.D. 105 is usually set as the date of the invention of paper, for in that year the invention was officially reported to the emperor by the eunuch Ts’ai Lun. Whether Ts’ai Lun was the real inventor or only the person in official position who became the patron of the invention (as Feng Tao did later with printing) is uncertain. In any case his name is indelibly connected with the invention in the mind of the Chinese people. He has even been deified as the god of papermakers, and in the T’ang dynasty the mortar which Ts’ai Lun was supposed to have used for macerating his old rags and fish nets was brought with great ceremony from Hunan to the capital and placed in the imperial museum. The following is the account of the invention, as written by Fan Yeh in the fifth century in the official history of the Han dynasty, among the biographies of famous eunuchs:

During the period Chien-ch’u (A.D. 76-84), Ts’ai Lun was a eunuch.⁷ The emperor Ho, on coming to the throne (A.D. 89), knowing that Ts’ai Lun was a man full of talent and zeal, appointed him a chung ch’ang shih.⁸ In this position he did not hesitate to bestow either praise or blame upon His Majesty.

In the ninth year of the period Yung-yan (A.D. 97) Ts’ai Lun became sheng jang ling.⁹ Under his instruction workmen made, always with the best of materials, swords and arrows of various sorts, which were models to later generations.

In ancient times writing was generally on bamboo or on pieces of silk, which were then called chih.* But silk being expensive and bamboo heavy, these two materials were not convenient. Then Ts’ai Lun thought of using tree bark, hemp, rags, and fish nets. In the first year of the Yüan-hsiung period (A.D. 105) he made a report to the emperor on the process of papermaking, and received high praise for his ability. From this time paper has been in use everywhere and is called the “paper of Marquis Ts’ai.”¹⁰

The biographical note goes on to tell how Ts’ai Lun became involved in intrigues between the empress and the grandmother of the emperor, as a consequence of which, in order to avoid appearing before judges to answer for statements that he had made, “he went home, took a bath, combed his hair, put on his best robes, and drank poison.”¹¹

Two statements in this quotation have received ample confirmation from discoveries along the Great Wall and in Turkestan. In March, 1931, while exploring a Han ruin on the Edsin-gol, not far from Kharakhoto,¹² the Swedish archaeologist Folke Bergman discovered what is probably the oldest paper in the world. It was found along with a Chinese iron knife stuck in a leather sheath, a
badly shriveled water sack of leather, a crossbow arrow with bronze head and reed shaft, many manuscripts on wood, silk rags (including a piece of polychrome silk), and an almost complete raincoat made of twisted grass strings. Lao, who later made a report on this precious piece of paper, informs us that of the seventy-eight manuscripts on wood the great majority were dated between the fifth and seventh years of Yung-yuan (a reign period covering the years A.D. 89–105). On the latest was written: “5th day of the 1st moon of the 10th year of Yung-yuan,” or February 24, A.D. 98. Mr. Lao agrees that, just because the last of the dated wooden slips bears a dated inscription, one cannot conclude that everything in the hoard was cached away in that year. Nevertheless, he surmises that about this time, possibly a few years later (whether before or after Ts’ai Lun’s historic announcement will never be known), the paper was manufactured and dispatched to this lonely spot in modern Ninghsia province. Other pieces of paper of early times discovered in Turkestan date from about a century and a half after the announcement by Ts’ai Lun.

The statement concerning the materials used has also been thoroughly confirmed. Examination of paper from Turkestan, dating from the third to the eighth centuries of our era, shows that the materials used are the bark of the mulberry tree; hemp, both raw fibers and those which have been fabricated (fish nets, etc.); and various plant fibers, especially China grass (Boehmeria nivea), not in their raw form but taken from rags.

The discovery of rag paper in Turkestan, while confirming the statement in the Chinese records, came as a surprise to many Western scholars. From the time of Marco Polo until some seventy years ago, all oriental paper had been known as “cotton paper,” and it had been supposed that rag paper was a German or Italian invention of the fifteenth century. Wiesner and Karabacek in 1885–87 showed, as a result of microscopic analysis, that the large quantity of Egyptian paper which had at that time recently been brought to Vienna, and which dated from about A.D. 800 to 1388, was almost all rag paper. A subsequent examination of the earliest European papers showed that they, too, were made in the main from rags.

The theory was then advanced and generally believed that the Arabs of Samarkand were the inventors of rag paper, having been driven to it by their inability to find in Central Asia the materials that had been used by the Chinese. In 1904, this theory suffered a rude shock. Dr. Stein had submitted to Dr. Wiesner of Vienna some of the paper he had found during his first expedition to Turkestan, and Dr. Wiesner, while finding in it no pure rag paper, did find paper in which rags were used as a surrogate, the main material being the bark of the paper mulberry. The theory was changed to suit the facts. The Arabs of Samarkand were no longer the first to have used rags in the production of paper, but the first to have produced paper solely of rags. Finally, in 1911, after Dr. Stein’s second expedition, paper of the first years of the fourth century was laid before Dr. Wiesner and was found to be a pure rag paper! Rag paper, supposed until 1885 to have been invented in Europe in the fifteenth century, supposed until 1911 to have been invented by the Arabs of Samarkand in the eighth century, was carried back to the Chinese of the early fourth century, and the Chinese record, stating that rag paper was invented in China at the beginning of the second century, was substantially confirmed.

The use of paper, so far superior to bamboo and silk as a writing material, made rapid headway. It was still, however, regarded as a cheap substitute. Extensive improvements in its manufacture were made by Tso Po, a younger contemporary of Ts’ai Lun. The records of the next centuries contain abundant references to the use of paper and to certain special fancy and beautiful papers that appeared from time to time. In Turkestan, at each point where excavations have been undertaken, the time when wooden stationery gave way to paper can be fairly accurately dated. By the time of the invention of block printing all of Chinese Turkestan, so far as excavations show, was using paper. The use of paper in China proper had apparently become general much earlier.

The papers found in Turkestan show a certain amount of progress, especially in the art of loading and sizing to make writing more easy. The earliest papers are simply a net of rag fibers with no sizing. The first attempt to improve the paper so that it would
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1. For descriptions of paper napkins and toilet paper in China, written by Arab travelers in the ninth century, see for paper napkins, Reinard, 1845: 24, 38; and for toilet paper, Renaudot, 1718:17. See also Sauvaget, 1948:11, 49.
2. Laufer, 1927:73–74, holds that Chinese wallpapers were first introduced into Europe by Dutch traders at the end of the seventeenth century, and refers one to Simser, 1905. Reichwein, 1925:45–46, indicates that the Germans and French were probably the first, in the seventeenth century, to produce wall-papers from patterns brought from China by the missionaries.
3. On the date of the invention of paper, see comment by Goodrich, 1911: 145. Three years before a.d. 105, paper is mentioned in the biography of Empress T'ENG (a.d. 81–121).
4. Cf. Wang Chi-chêng, 1930:132. There is a tradition that grew up in the Tiang dynasty that during the Chou dynasty writing was done as a rule by cutting in the bamboo or wood with a knife. Chavannes, 1909, discusses in full this theory and the reasons why it cannot be held.
5. The development of the brush has been much discussed in recent years. Cf. the remarks of YETTA, 1929:1, 14–17; of Pelliot, 1930:374–78; and of Erkes, 1941:127–30. It seems clear from these discussions that the brush may already

have had a long history before the time of MENG T'ien. Archaeological proof is given by the evidence of brush writing on Yangshao pottery (a.d. 2000 B.C.), on jade, and on oracle bones of the late Shang period (a.d. 1300–1028 B.C.). See Field, 1941:290–91. White, 1933:698, also 1934:130 and Plate XLII, reported the discovery of a bone brush handle over six inches long and a tile, "which could well have been the painter's palette," in Tomb 7 of a group of tombs of the Han state (250–230 B.C.) found at Chin-t'ung, Honan province, a few years ago. The excellence of their manufacture argues a long period of development.

6. Silk was used as a writing material in Mesopotamia in the early Mohamnedan period before the Arabs there started to use papyrus rolls. For this purpose white silk was dipped in gum and polished with a shell. See GROHMANN, 1924:59. GROHMANN suggests the likelihood that this use of silk was derived from India, which seems quite possible; but as the silk both of India and of Mesopotamia was imported from China, it would seem likely that the art of preparing silk for a writing material both in India and in Mesopotamia went back originally to a Chinese origin. It is possible that before Chinese silk reached India and western Asia "there was wild silk in the Near East, similar to the teasel silk of India, as several fragments of this nature were excavated at Palmyra, one at Dura, and another in Egypt." DAVIE, 1950:108.

While in China the use of silk as a material for writing quickly gave way to paper, silk remained the usual material for painting for several centuries and has never been entirely displaced.

7. Cf. Duyvendak, 1914:314. In the Ch'ung-te ch'i it is recorded: "Hui Tsu was a man of many ideas. His works would fill five cartloads." Cf. translation of H. A. Giles, 1926:450.
8. Early authority has it that some chih was otherwise made. Blue, 1948:2, cites a passage from Su-ma Ch'i'en (writing about 100 B.C.), Shih chih 105:1, which it translates: "[The region] west of the mountains abounds in timber, bamboo, [products made from] paper mulberry, ... " In her note on the word ku thus translated she cites the gloss of Su-ma Chang of the eighth century who explained that "ku is the name of a tree from the bark of which chih can be made"; also the earlier comment of Lu Chi (561–601): "the people south of the Chiang (i.e., the Yangtze river) spin its bark to make pa cloth, and pound it to make chih "paper."" Swanna, 1950:420, skits the problem by translating the last phrase "the ku tree."

This early chih may have denoted a silk scroll. HUMMEL, 1914:74, refers to two uses of the word in this sense in a.d. 25 and in the years 76–84, and cites an article on the subject, written by MA HENG in 1926.

9. Lao Kan, 1948, draws attention to the interpretation of the definition in the Shao wen chih or by Tuan Yu-jai (1735–1815): "It is silk refuse beaten and soaked in water; a predecessor of paper undoubtedly, but not paper."
10. Hsiao huang men; i.e., he worked in the yellow-gate palace as a eunuch.
11. An official permitted to go into parts of the palace forbidden to others.
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12. An official charged with direction of the manufacture of furniture, household articles, etc.

13. Chi̇h is now the ordinary word for paper. The definition of the word in the Shuo wen, finished about the time of Ts'ui Lun's invention, would indicate that to that writer it meant a form of paper or near-paper made of silk. The passage under consideration would seem to indicate that the word had also been applied to the pieces of silk fabric used for writing. This word has the silk radical as indication of material. Later the same word with the cloth radical substituted for that of silk is frequently used, but it is the form with the silk radical that has survived and is in common use today.

14. Hou Han shu, chuan 108, biography of Ts'ui Lun.

15. For continuation of the biography of Ts'ui Lun, see translation in Blanchet, 1900:13-14, or Hunter, 1947:30-32.

16. Lao Kan calls the place Ta-hsü, south of the Bayan Bogdo Mountains.


19. For a fuller description of this paper see Chapter 13.

20. Hummel, 1941:74, draws attention to a scholar named Ts'ai Yüan, who died thirty-seven years after paper was first announced to the throne; writing to a friend as follows, "I send you the works of the philosopher Hsu in ten scrolls—unable to afford a copy on silk, I am obliged to send you one on paper."

21. Tso Po (T. Ts'o-yü) was a native of Tung-lai (modern Yeh-hsien, Shantung province) and flourished at the end of the Han period, according to the Shantung T'ung Chih, 1911 edition, 196/6a. He was known as a fine calligrapher. This biographical notice does not say that he made improvements, but that he acquired the skills of his master Ts'ui Lun. Consequently, Hsiao T'o-liang (d. 451), writing to Wang Shen-ch'ien (246-85), ejaculated: "The paper of Ts'o-yü, together with his ink and brushes, is especially fine; none can reach their degree of excellence." (The commentary of the Shantung provincial history is lifted without acknowledgement from the writings of Chang Hua-i-kuan, a scholar and calligrapher of the first half of the eighth century, preserved in the Shuo Fu 92/2b.) Chang Hua-i-kuan (92/6a) quotes Wei Ts'ai (179-255) as remarking that to be a successful writer one should have the brush of Chang Chih (latter half of the second century a.d.), the paper of Tso Po, and the ink made by himself (i.e., Wei). See also Chao Ch'i (d. a.d. 201), San fu ch'ch'ien 2/14b, fragments of which have been collated by Chang Chi (b. 1781).

22. Writing on wood continued longest at Miran, a Tibetan fort, which appears to have been particularly backward. Writing on wood continued at Miran—parallel with the use of paper—down to the eighth or ninth century. Stein, 1921:304, 462. In most places in Turkestan it ended several centuries earlier.

Chapter 2

THE USE OF SEALS

The fact that the Chinese word yin today denotes both print and seal is suggestive. A study of the history of the word sheds considerable light on the origin of Chinese printing. During the Han dynasty yin meant to authenticate by the impression of a seal on clay. When clay impressions gave way some time about the fifth or sixth century of our era to inked impressions in red, the same word was used. When Taoist priests used as charms the impressions of wooden seals several inches square inscribed with the name of Laozi or some other worthy, these larger seals were yin. When later the manifolding of Buddhist pictures and texts began, this block printing was yin. With the advent of every new invention, from that of movable type in the eleventh century to that of the Linotype in the twentieth, the same word has done duty, and the word yin which today still means seal, also signifies every form of printing, taken in the broadest sense.

Back of the seal and the seal impression—in the time of the Chou dynasty (before 255 B.C.)—lies a practice that reminds one of the tearing of the laundry check in the Chinese laundries of America. When a contract was made, it was written in duplicate on the two ends of a stick of bamboo. The bamboo was broken and one end retained by each party. The fisting of the broken ends was the authentication of the contract. In like manner, when the emperor bestowed a patent of nobility, the token of that patent was one half of a broken piece of jade—the other half being kept in the imperial possession.

With the advent of the great emperor Chi'in Shih Huang (246-209 B.C.), the unifier of China and the builder of the Great Wall, and with the more complex organization which then began, the
broken pieces of bamboo and jade gradually gave place to seals and seal impressions. The great seal of the conqueror, brought from the southern state of Ch'ü by the minister Li Sî, and engraved with eight characters, was for centuries the seal of empire, and its fortunes figure both in history and in romance.

The transition from the broken jade to the seal—from the primitive matching of broken edges to the more advanced and complicated matching of impression and die—was a natural one. But it may have been hastened by events that were taking place in another part of Asia. Just a hundred years before Ch'in Shih Huang's conquests, Alexander the Great had conquered a part of India and had brought Greek culture to certain countries of Central Asia which were not so far removed from the expanding borders of China. In the land that lies between Alexander's empire and that of China—the region now called Chinese Turkestan—Sir Aurel Stein found a collection of deeds, the seals upon which show the strange mingling of influences, Eastern and Western, that was going on during the Han dynasty, the dynasty that followed Ch'in Shih Huang. The documents, written on wood, are all closed, bound with cords, and sealed, the devices of the seal impressions being in some cases Chinese characters, in others elephants and Indian emblems, in still others heads of Zeus, Eros, and Medusa. It is of course far from certain that this Hellenistic influence had penetrated beyond Turkestan and into China—still less certain that it had penetrated as early as the reign of Ch'in Shih Huang. On the other hand it is not an impossibility.

With the Han dynasty (202 B.C.-A.D. 220) the use of seals grew steadily more common, both for private and for imperial use. Seal cutting came to be a fine art, and for perfection of workmanship the seals of this time have never been surpassed. They were made of jade, gold, silver, copper, ivory, and rhinoceros horn.

The seal impressions of the Han dynasty that have been found are in one respect quite different from those of later times. The seals of this period down to the fifth century were cut in a mold. When they were applied on a flat surface they had to be inked, generally with vermilion. The characters came out white on a red
THE USE OF SEALS

But around the year A.D. 500 someone conceived the idea of cutting seals in relief which, when inked with vermilion, came out red on a white ground. This was a capital shift, vital in the prehistory of printing, wherein characters had to be cut in reverse and in relief. The shift was no doubt gradual, and may well have developed with the increasing use of paper. At one point in Turkestan, where documents of the transition period were found, those written on wood had seal impressions in clay, while those written on paper were done in ink.

As for the transition from the stamped seal to the true block print, there seem to have been two lines of development. The Buddhist line of approach—the line which finally bore fruit and yielded not only charms but woodcuts and books in abundance, will be traced in Chapter 4. The Taoist line of approach is much more vague and uncertain; yet it seems rather likely that the Taoists in their desire for charms developed the seal impression into something very closely resembling a block print even earlier than the Buddhists.

A Taoist writer, Ko Hung, in the early years of the fourth century made the curious statement:

The ancients, whenever they entered the mountains, wore a yi-ch'ang seal of the Yellow God, four inches in breadth and bearing a hundred and twenty characters, with which they made impressions in clay, in consequence of which, whenever they halted, neither tigers nor wolves ventured to approach. If while traveling they saw a fresh footprint and impressed the seal there in the same direction in which the beast moved, they made the tiger proceed, and, if they did so in the reverse direction, they made it return. . . . A Taoist doctor in Wu named Tai Ping made some hundreds of yi-ch'ang impressions in clay, and strewed that clay broadcast into the abyss; on which after a while a large tortoise more than ten feet in diameter rose to the surface. When it was slain the sick all recovered.

These large charm seals, large enough to contain a hundred twenty characters, were used not to print with ink, but to make impressions on clay—but they were made in the fourth century when all seal impressions were on clay. Some time in the next two hundred years or so, the fashion in non-Taoist seal impressions changed from clay to red ink. The question is, whether the Taoists
with their large seals kept abreast of the times. There is evidence, that these large seals were made of wood,23 and there is abundant evidence that the Taoists loved red ink—that they loved it especially for their charms, on account of the extra authority that the red seemed to give.24 Exact evidence that their stamped seals, as well as their written charms, were made with red ink is yet to be found.

The earliest block printing of which we now have clear proof consists of Buddhist charms and dates from the eighth century. (See Chapter 7.) When the evidence is all in, it is likely to show that before this date the Taoists had dipped their wooden seals in red ink of cinnamon and had made charms of such sort that they will take rank as the world's first block printing.

It is not impossible that these Taoist seal-charms were the ancestors also of playing cards, but before that can be stated with confidence much fuller research must be done. (See Chapter 19.)

In any case, whether Buddhist or Taoist, the charm was the transition from the seal to the block print.14 For with the advent of the stamped charm, reduplication, and large-scale reduplication, came to be the dominant purpose.15

NOTES

1. Defined in the Ts'ao yuan as "everything that has fine marks to be impressed on something else."

2. The laundress's check goes back also in its origin to the ch'ou, or mei, an ancient form of counter. But the fitting together of torn edges goes back to the practice here described.

3. The system of passports in use in Han times seems to be a continuation of this custom, and to give a possible hint also of another form of proto-printing. They are thus described in the Ts'ao yuan: "Fsii-ch'ieh were on bamboo, one foot two inches in length. Iron was used to imprint characters on them. On them was noted the age, surname, given name, and facial description of the owner... If on examination the two halves fitted, the owner was allowed to proceed. The Chou states, 'To go through the gates [i.e., over the border] it is necessary to have a fsii-ch'ieh.'" Cf. Boe, 1851-1, 335-36, or Shih-ian ching, Chou-li 42. The first part of a valuable article by Des Rotours, 1952:1-43, surveys the subject of fsii-ch'ieh down to the seventh century.

4. The date at which the use of seals began has been warmly debated by Chinese antiquarians. The weight of evidence would seem to indicate that the use of private seals began somewhat before the end of the Chou dynasty and that the first state seal was that of Chin Shih Huang. Kan Yang of the Ming (quoted by Chu Hsi-hsiang in Yin tien 16/1) carried the use of seals back to pre-Chou times. But this is an extreme view, not supported by others.

The oldest authority on the subject is Wei Hung, who lived in the first century A.D. (Giles, Bio-g. Dict., No. 2777). His statements are, "Before the Ch'in dynasty, seals one inch square were made of gold and silver. When Chin Shih Huang received the jade for Ho of Ch'u he made a seal of jade... It was called the seal of inheritance of the empire." (Quoted in Ts'ao yuan. On the seal of transmission of empire, see Dandlin, 191:119-60, and Chavannes, 1897:1, 118-19, n. 5.) "Before the Ch'in dynasty everyone who wished used metal and jade for seals." (Quoted in Ko ch'ih ch'ing yian 41/1.)

Wu-ch'u Yen (1272-1311) and Ma T'uan-lin (834-1324) deny that seals were used in the Chou dynasty. Their statements can be reconciled with those of Wei Hung, if the former are regarded as referring to official seals, and if Wei Huang's statements are interpreted as meaning that the use of private seals began just slightly before the beginning of the Ch'in dynasty. The statements of Wu-ch'u Yen and Ma T'uan-lin are as follows:

"In the time of the Three Dynasties (202-255 A.D.) there were no seals. Scholars should carefully note this. Although the Chou li speaks of an object called hsi-ch'ieh, and mentions an official as having charge of examining and authenticating this object, and although in the commentary it is stated that the hsi-ch'ieh was a seal, actually it was rather a sceptor held in the hand. On the right side were cut characters, as in the seal of Chin Shih Huang, but it was not possible to make an impression with it. If anyone had tried to make an impression, it would have been found that the impression was reversed. The ancients used this object for authentication. They were not interested in having the characters reversed. They were so simple in their ways. What the 'six seals' of Su Chin in the Ch'un-koo period were is uncertain. Hsii-pan-chu says that Confucius called Tsai-huang and gave him the seal of a great general. But this is not to be taken literally." (Wu-ch'u Yen, Hsiu-ch'i pien, Ts'ung shu chi ch'eng edition No. 1339, A/13ab.)

"Before the [end of the] Three Dynasties, there were no seals. When the emperor gave orders, he took a piece of jade or of bamboo and broke it, giving half to the minister or general to whom the order was given. This served as a special proof of the genuineness of the order. Also when a man was granted a title of nobility, such a half piece of jade was given him as proof, it being required that his half fit exactly with the half in the emperor's possession. When times became more complex, it became necessary to guard against falsification and seals were the result." (Ma T'uan-lin, Wen hien shu ke, 1936 edition, p. 1053.)

The Shuo wen defines a seal as "an article for authentication held by an official." Tuan Yu-sha (1735-1835), in his commentary on the Shuo wen, gives the following hint as to the origin of seals and as to how their use became more
extended during the Han dynasty, "The ancients wrote on bamboo slips and wooden boards. Whenever they wished to send any information to a distance, the slips or boards were wrapped in a piece of silk and impressed with seal clay (hò mi). When silk became the ordinary writing material, the use of seals became widespread." *Shou wen chi chü chu 9.*

From an examination of the conflicting evidence, it would seem that the use of private seals probably began slightly before the beginning of the Ch'in dynasty (255 B.C.), and that the first imperial seal was the famous jade seal of Ch'in Shih Huang.

5. These documents were found at Niya. The writing is in the Kharoshthi script. The site where they were found was abandoned toward the close of the third century B.C. See Stein, 1921:1, 224–31.

6. A possible hint of the use of something analogous to seal impressions in India not long after Alexander's conquest is contained in Hieh-tsong's narrative of an impression of a tooth in "purple clay" (red wax?) by Kunala, the faithful son of Asoka. See *Hsi yü chi 3/10; also* Beal, 1906:149.

7. Many seal impressions of the Han dynasty have been found in North China, and a collection of them has been published by Wu Shih-shê (1796–1866) and Ch'ên Chieh-ch'i (Chên-shih 1845), under the title *Pêng ni k'ou lu chê in ten chüan.* A more recent but slighter work in which the seals and seal impressions have been reproduced by photographic process is *Pêng ni s'iu chên in one chüan.*

8. *Yin tien 6/1–4.* Fuchs, 1950:67, writes, "It is certain that copper seals for impressions in clay were used from about 200 B.C. on."

9. Seal impressions formed by what we may call the Chinese method were made in the Mediterranean region under the Roman empire. There is in Berlin a red ink stamp on papyrus that dates from A.D. 85 and is quite similar to the seal impressions that began at a later date in China. It was found in Egypt. (Berlin, Altes Museum, Papyrus Anestellburg, No. P. 869.) The use of red ink stamps in Egypt never altogether died out, as is witnessed by a stamp on linen in the Erzerhsoog Rainer collection in Vienna, dating from between 250 and 257. However the use of such seals in Europe and the Near East was very rare and played no such part as in China in the ushering in of block printing.

10. This is the deduction of Pelliot, 1933:16. "The seals of the Six Dynasties (A.D. 220–581) were changed according to the style of the times. Gradually they began to use seals with red characters [on white ground] and white characters [on red ground]. The change in the style of character began at this time. . . . The seals of the T'ang dynasty followed those of the Six Dynasties and the characters were made in red." *Yin tien 6/1–2.* This is the final conclusion of Chu Hsüan-hsien, author of *Yin tien,* based upon a multitude of earlier authorities that are quoted there. *Yin tien* is a carefully written critical history of seals. Among the authorities quoted is Kan Yang (of the Ming period; author of *Yin chang chü shuo in 1 chüan*) who writes, "No red impressions from Han times have been found. When we come to the Six Dynasties and the times of T'ang and Sung, these red impressions were valued," and again, "Among ancient seal impressions there were some that were partly red and partly white. These are all from after the Han dynasty." It is evident that the author of *Yin tien* believes, on the basis of his various authorities, that the change came during the latter part of the period of the Six Dynasties rather than the earlier part, and we have therefore set as a tentative date the fifth and sixth centuries. Fuchs, 1950:67, writes, "It is probable that impressions with red color were in use during the fifth and sixth centuries; for the seventh century their existence is assured."

11. These documents are in the Tibetan language and were found at Miran, which seems to have been a back cheek, far behind other parts of Turkestan in beginning to use paper. Both the documents on wood and those on paper seem to date from the eighth or ninth century, long after wooden stationery and clay seal impressions had disappeared from other communities. See Stein, 1921:3, 348, 462.


13. There are a number of passages indicating that the Taoist charm seals were made of wood. Among them are the following, one referring to the Han dynasty, one to the third or fourth century, and the other to early T'ang:

"In the month of midsummer, they placed at the gates and doors seals of peach wood, six inches in length and three in breadth, inscribed in colors with the words, 'Let the law be obeyed.' " *Hou Han shu 15/9.* Translation from De Groot, VI, 1049.

"The recipe for subduing tigers and panthers of Lord Huang says: 'A Taoist ought to engrave the heart of a [piece of wood of the] jujube tree and fashion a charm four inches to the side.' " The Lord Huang referred to here is apparently the god Huang, or Yellow emperor, worshipped by the Taoists, and referred to in a similar connection by Ko Hung. This passage comes from the *Yin tien 9/218.* Cf. Pelliot, 1933:16–17.

"The Taoist priests cut seals out of the heart of jujube wood. They are four inches square." Hsi Chien (659–729), quoted in *Ko chih ching yuan 40/2a.* (Unfortunately this passage does not appear in the Columbia University copy of the *Ko chih chieh chi,* a good edition of 1897. L.C.G.)

14. Ko Hung insisted on wooden charms being worn as amulets by people traveling in mountainous country, stating that "they should preferably be written with red cinnamon on planks of peach wood." De Groot, VI, 1047–48, in quoting this adds, "At least from Ko Hung's time, man has painted or written charms with the carmin color of cinnamon or ten, this substance having always been used by emperors or their proxies to mark their decisions as authentic." The fact that the Taoist charm always used whatever form would best indicate authority makes it virtually certain that, when red ink seal impressions came into use, the Taoist charm seals followed suit. The very idea of connecting the
seal with the charm was to indicate authority. "A charm without a seal is like an army without a commander," is a favorite Taoist saying (De Groot, VI, 1948). Moule, 1926:141, writes that "there is perhaps some confusion between the genuine seal on which a charm depends for its efficacy, and the block from which the design of the charm may have been printed." The quotation from De Groot in his opinion "refers simply to the seal, not to the block."

There is clear evidence that in the early days when characters written on a broken bamboo slip constituted the evidence of authentication, the Taoist charm was such a broken slip of bamboo. (See De Groot's account of the various meanings of the character 無, VI, 1024.) When seals came in with their clay impressions, the Taoist charm was a clay seal impression. When red ink of cinnamon became the vogue for authenticating imperial documents, Taoist charms—at least the written ones—had red ink. And finally when this red ink of cinnamon came to be used for the impressing of seals, there is every reason to suppose that the big wooden seals of the Taoists—those ovals of date wood four inches square described by Hsi Chien—were impressed on paper with red ink of cinnamon. When actual proof of this can be found, either from Chinese records or from under Turkestani sands, it will be possible to state with confidence that the world's first block printers were the Taoist charm makers of China. Liu Pien's statement (see Chapter 8) of the books that he saw for sale in Szechuan in 883 adds weight to this view.

Pelliot, 1933:17, draws attention to an interesting observation made in the dynastic history of the Sui (550-618), the Sui shu 35/29a, in a description of the rites of T'ai-Chin: "Moreover, with wood they [the Taoist priests] make charms, on which they cut the constellation, sun, and moon. While holding their breath, they grasp them in their hands and make impressions. Of the sick many are thus cured." Pelliot considers it entirely possible that by this time (around the year 600) the Taoists made seals in which images were cut in reverse and in relief, and that with these they made impressions on paper.

15. Laufer, 1927:71, calls this an unproved speculation, but Pelliot, 1933:18, counters that he does not consider Laufer's objection "très solide."

16. Another early form of authentication by means of inked impression was the fingerprint. This method of identification, which came into use in the West in the nineteenth century, was in use in China, probably from the T'ang dynasty and was clearly described by a Persian writer, Rashid-ed-din, during the Mongol period. For Rashid's description and bibliography on the subject, see Yule, 1913-16III, 123-24. In a fresh study Noboru Nida, 1939:127, reports a finger seal dating back to a.d. 597. L. Giles, 1937: Plate 1, illustrates one contract dated 782, showing finger marks.

Chapter 3

RUBBINGS FROM STONE INSCRIPTIONS

While the connection of seals with the beginnings of block printing has never been especially noted by Chinese writers, there has been a practice in China of taking inked rubbings or squeezes from stone inscriptions, which has always been recognized as having directly led the way to the making of books by inked impressions from wood.

Rubbings are still made in China by a very simple process, which is, no doubt, essentially the process employed from the beginning. A sheet of thin, tough paper that has previously been moistened to make it soft and adhesive is laid on the surface of the stone inscription. With a stiff brush the paper is then forced into every depression and crevice of the stone. As soon as the paper is dry, a stuffed pad of silk or cotton is dipped in sized ink and passed lightly and evenly over it. When the paper is finally peeled off, it is found to be imprinted with a perfect and durable impression of the inscription, which comes out in white on a black ground. The process is similar to block printing, but the characters of the inscription are cut into the stone instead of standing out in relief as they do in wood. Furthermore, as the ink is applied to the surface of the paper that is away from the stone, the text on the stone is not reversed. The direction of the text on the paper is the same as that on the stone from which it is taken.

As the seal-charm was the Taoist preparation for printing, developing in Buddhist hands into the printing of religious texts and pictures, so these rubbings from stone may be said to have constituted in the main the Confucian preparation.

The practice of cutting in stone the text of the Confucian Classics in order to insure permanency and accuracy goes back as far
as the year A.D. 175. The statement in the annals of the Han dynasty is as follows:

Because the time of writing the canonical works of the sages was long past and many errors had entered in and were being passed on by scholars of inferior worth, it was found that for later students there would be no correct text. Therefore in the fourth year of the period Hsi-p'ing (A.D. 175) T'ai Yung (A.D. 133–92) and others [names and titles] joined in a memorial to the emperor to have the text of the Six Classics thoroughly revised. The emperor granted the request. T'ai Yung then wrote the corrected text with his own hand on stones outside the gates of the state academy. Thereupon later scholars and students all took these inscriptions as standard. As soon as the stones had been set up, the people who came to see them and to make exact copies were so many that there were thousands of carts every day and the streets and avenues of the city were blocked by them.

The traditional interpretation of this passage is that the words here translated “make exact copies” actually refer to the making of rubbings, and that this form of printing or pre-printing goes as far back as the second century. Whether this is true or not, the process certainly began early, and there is little doubt that it was earlier than the taking of impressions from wood. The earliest date that can be set with certainty is the reign of T'ai Tsung of the T'ang dynasty, during whose reign (A.D. 627–49) a rubbing was made which was discovered by Pelliot at Tun-huang.

The practice of cutting the text of the Classics in stone persisted, each important dynasty considering it a duty thus to conserve the results of the best textual criticism of the day. The Stone Classics of the T'ang dynasty, of which very many rubbings were made, and which served ultimately as the model for the printing of the Classics, were set up between the years 836 and 841, and a portion of this ancient stone inscription has been discovered (see Chapter 9, note 13). The official history of the T'ang dynasty records the appointment of certain officers called “makers of rubbings,” whose duties seem to have been to issue authorized rubbings of the inscriptions in stone.

These Confucian texts were not the only ones that were being cut in stone and reproduced in ink squeezes. Taoist texts were also cut in stone. Wang Chung-min in his monograph entitled Lao-tzu
k’ao mentions one cutting of the Tao t’ieh ch’ing in 708, erected at I-chou, in Hopei province; another of 736 at Ch’eng-fu; and several others down to 881. Parallel with the early development of block printing, this sort of lithography was also going on in Buddhist monasteries—developing until whole books were being produced. Especially famous is the huge collection of texts of the Buddhist canon cut during the years a.d. 600 to 1100 on stone steles, 7,145 in number, which were later erected in grottoes and in a subterranean chamber. The manuscript chamber at Tun-huang that contained the earliest block printed book, the Diamond Sūtra of 868, contained a copy of the very same book in the form of lithograph rubbing. The two copies, the one printed from wood, the other from stone, both date from the ninth century. The stone prints found at Tun-huang make it evident that already in the ninth century the practice had begun of preparing stones with the special purpose of taking rubbings from them, and that at least as early as the first books from blocks of wood (and probably earlier) both single sheets and roll-books were thus being printed from specially prepared blocks of stone.

However, it was in orthodox Confucian circles, and as an aid to the correct transmission of the Classics, that the stone inscription and the inked squeeze had their chief importance. Even after block printing began, the rubbing from stone was still the one official and orthodox method for the reproduction of standard texts. It was the union of these two processes, the Buddhist and Taoist block print (itself perhaps based on the earlier Taoist seal-charm) and the Confucian rubbing, that produced the great official block printing activity of Fêng Tao’s time and instituted the era—during the tenth to the fourteenth centuries—when all of China’s great literature was printed. The important memorial of 932 by Fêng Tao and Li Yü, that lay back of this awakening, began:

During the Han dynasty Confucian scholars were honored and the Classics were cut in stone in three different scripts. In T’ang times also stone inscriptions containing the text of the Classics were made in the Imperial School. Our dynasty has too many other things to do and cannot undertake such a task as to have stone inscriptions cut and
THE BACKGROUND

erected. We have seen, however, men from Wu and Shu [Kiangsu and Szechuan] who sold books that were printed from blocks of wood. There were many different texts, but there were among them no orthodox Classics. If the Classics could be revised and thus cut in wood and published, it would be a very great boon to the study of literature. It is thus evident that when the Confucian Classics were cut in wood—the event that marked the beginning of large-scale block printing—those in charge of the work had no idea of printing. They thought they were continuing the ancient practice of cutting inscriptions, using wood instead of stone, after the analogy of certain Buddhist and Taoist prints that they had seen, for the sake of ease and economy. It was thus that the wooden block and its printed impression developed naturally from the stone inscription and its rubbing. The Buddhist and Taoist prints—which had developed from charms and seals—gave the idea of cutting the inscription in reverse and gave also a new technique for taking the rubbing. The stone inscription gave the official precedent. Having thus been one of the influences that gave birth to widespread block printing, the use of rubbings did not cease, but continued a parallel existence. Gradually during the tenth century, the century that showed the greatest activity in the development of all duplicating processes, the emphasis veered more and more from the inscription to the rubbing made from it. In the year 992 there is a record of the making of books which contained facsimiles of the autographs of the great men of the Tsin and the Wei dynasties, taken from a tomb that had recently been looted. Stone rubbings were thus the recognized method of preserving exact copies of beautiful calligraphy. When the wood blocks of these books became broken through constant use, they were mended with silver bars, the impression of which could often be detected in the rubbing. During the later years of the Sung period these lithograph books of 992 were treasured as great rarities. Throughout the Sung dynasty books from stone blocks continued to be published. From China the art spread to Japan, and in 1315 a large collection of books was there printed by this process. The taking of rubbings still continues in China as a means of making exact duplicates of ancient inscriptions, and there is no indication that the method has materially changed from the earliest times.

NOTES

1. The criticism of Moule, 1926:1141, seems valid, namely that the practice of making rubbings of stone inscriptions as a forerunner of printing may be exaggerated. As Peake, 1935:12, citing Lauffer and Yetts, points out, long before inscriptions on stone there were inscriptions on bronze. This was done, wrote Lauffer, "by means of the lost wax process, the characters being traced in the wax mould, and being either incised or raised in the bronze." On moulds made for this purpose in Shang times (end of the second millennium before our era) see Karlbeck, 1915:39-60. To inscriptions on bronze should also be added those on pottery; cf. Chou Chao-hsiang, 1929:29-38.

2. The word used is +wu-hiu+. The regular word for rubbing tsâ did not come into use until the T'ang dynasty. The view is sometimes held that the word mu as used in the Han dynasty was the equivalent of tsâ, but it is by no means certain.

3. Hou Han shu 59/86-90, biography of Ts'ai Yung. For a note on the discovery of a fragment of one of these stones in 1929, see Gardiner, 1938:59.

4. There are a number of objections to this traditional view according to which the making of rubbings began in the second century. It seems more probable that the practice began not so very long before the date of the earliest rubbings found—perhaps in the sixth century.

5. This rubbing bears the date equivalent to 654 as the time when a certain person saw it, and the text is a poetical work composed and written by the emperor Tai Tsung (627-649). Literary sources, however, indicate that ink squeezes were made a century later, and a half earlier, not only from stone slabs but also from wooden negatives of stone slabs, This is significant as it indicates that positives could be made directly from them—an important step in the prehistory of printing. See Pelliot, 1931:21-24.

6. According to the official history of the T'ang dynasty these officials were known as tâ-shu-cho, Des Rotours, 1947-48:1, 173, informs us that these three officials were established in 649 at the College for the Development of Literature. In 733 a similar worker was given a post in the palace library (p. 194). The palace appointed six about 717 (p. 198). In 739 the College for the Exaltation of Literature had two such employees (II, p. 584).


8. Moule, 1926:1141, criticizes the use of the term lithography here and elsewhere, but a more exact term is hard to come by. "Ink squeeze" or the
French word *estampage* also might be used to indicate the difference from the modern process of lithography.


10. Portions of another book of rubbings, cut and mounted in leaves, were found at Tun-huang. It consists of rubbings from the *Hua-tuo-shih pei*, of which the original was written by Ou-yang Hsiu (557-641). See Stein, 1921:11, 918, also IV, Plate 16a. Some of the leaves of this book are in the Stein collection in London and some in the Pelliot collection in Paris.

11. Literary evidence of books reproduced from stone blocks prepared especially for the purpose goes back only to the tenth century. The clearest record is that of 924, quoted in note 14 below. There is, however, an earlier reference by Chiu Peh-hsiu (fl. 1379-87), quoted by Chou Mi (1353-1368), in his book entitled *Yün yen huo yen lu* (*T'ang chu chi ch'eng* edition No. 1535) 2:45: "The prince Hou-chou of the kingdom of Chiang-nan (961-75), of the Li family, ordered Hsi Hsiu (916-91) to take autographs of former dynasties which he possessed and make a collection of ancient and modern rubbings of them. These were engraved on stone and called *Shêng-yüan t'ieh* [after the period Shang-tian, 927-32]. But this puts the time before the Shun-hua period (990-94), and so we see in them the ancestor of the *fù* t'ieh."

This, however, is most unlikely. Prince Hou-chou is Li Yü, born in 916. It is out of the question that he should have had a collection of autographs and ordered someone to make rubbings of them at the age of six or less.

On this and other possible references to tenth century collections of autographs engraved on stone, see Pelliot, 1953:93-104. The only evidence of books of rubbings in the ninth century is the actual discovery of these books at Tun-huang.


13. These volumes (there are ten of them) are known as *fu* t'ieh. Ou-yang Hsiu in *Chi ku in* 4/9ab thus describes the production of the *fu* t'ieh of 924: "In the troubled times at the end of the T'ang dynasty, the Chao-lin, or imperial tomb of T'ang T'ai-tung, was broken into by robbers, and the books and pictures that had been kept in it were torn from their rolls. Gold and jewels were taken and the books thrown away. Thus the autographs of great men of Tsin and Wei times came into the market. In the time of T'ai Tung (976-98) these were bought up and put into ten books in order that they might be reproduced and passed on to posterity. These volumes were presented to the high ministers of state, and are the *fu* t'ieh now in possession of various nobles and ministers."

According to Tu'ao Chao, in the work entitled *Ko ku yao lun* 3/1, these *fu* t'ieh were published both in block print and in lithograph: "T'ai Tung of the T'ang dynasty searched out the autographs of men of former times and in the period Shun-hua (990-94) ordered the secretary Wang Chu to print them in facsimile in ten chüan. These were cut in blocks of jujuhe wood, and placed in the private cabinet of the emperor. . . . In the third year of Shun-hua (992) an edict was issued to cut these facsimiles in stone, and by use of *Ch'en-hsin-t'ung* paper and the ink of Li T'ing-kuei [*fl. 937-75*] to make rubbings. They were made in such a way that if you pass your hand over them the ink will not soil your hand."

After reviewing the evidence—including the statements of Wang Ying-lin in his *Yü hui* (6/1270) and of Liu Shih-ch'ang in 1299—Pelliot, 1953:105-20, considers that Ou-yang Hsiu and Tu'ao Chao were mistaken and that it is almost certain that the original engraving was on stone alone, not on wood.

14. That the use of the lithograph for preserving calligraphy had begun at an earlier date than this is indicated by the Tun-huang booklet described in note 10 above.


16. The *Ko chih ching yuán* 39/6b-16b, devotes ten pages to a description of the lithographic texts produced in the Sung dynasty and to counterparts of these Sung lithographs. According to Julien, 1847:510, the *Chih pu tsu chu ti'ung shu*, compiled 1774 (2d ed., 1802), describes "all the ancient inscriptions and all the autographs of famous men that were printed by this method between the years 1143 and 1242." (This matter will be found in the above mentioned collection, section 10: it is taken from a two chüan work entitled *Shih Kê yu kia*, collected by Tseng Hung-fu, and originally printed in white on black in 1248.)