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A STUDY OF CHINESE ALCHEMY

OBED SIMON JOHNSON

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A STUDY OF CHINESE ALCHEMY

BY

OBED SIMON JOHNSON, Ph.D.

THE COMMERCIAL PRESS, LIMITED

SHANGHAI, CHINA

1928

TO MY MOTHER
AND MY FATHER
THIS BOOK
IS AFFECTIONATELY
INSCRIBED

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FOREWORD

It was the great German chemist, Baron Liebig, who reminded the learned world that alchemy was never at any time anything else than chemistry. The relation of alchemy to chemistry was like that of astrology to astronomy. Both alchemy and astrology made false assumptions and fostered superstition, yet both were steps in the progress of science. Among their students, to be sure, there were always some fakirs who played upon the ignorance and credulity of the people to advance their own interests, but there were others who were earnest seekers after truth, the pioneers of science. In the days of Roger Bacon, alchemy was the "black art" and that courageous monk suffered ten years' imprisonment for his devotion to learning. It was two centuries before the time of Roger Bacon that the science of alchemy was introduced into Europe by the Moors, but it had flourished in Mohammedan universities for centuries before that date. Most European writers upon the subject of its origin ascribe its beginnings to the researches of the Greeks in Egypt in the third century of the Christian era. Mr. Johnson in this work gives us very convincing evidence of its existence five or six hundred years earlier in China. Other students of Chinese history have intimated the possibility of such an origin, but Mr. Johnson has done us good service in gathering together the numerous facts presented in this volume and showing us how

the search for the elixir of immortality and the philosophers' stone for the transmutation of metals grew out of an acceptance of Taoist philosophy.

It is one of the failings of Western historians that too often they assume that they have found the origin of an institution or a theory, if they have discovered its existence among the ancient Greeks. We are outgrowing that disposition, for we know now that Greek philosophy owes much to India. We must be prepared to admit also that the West has a debt to another ancient civilization still farther east.

The discovery of the properties of the magnetic needle, the manufacture of gunpowder, the invention of printing, are already placed to the credit of China: we must also recognize that the beginnings of chemistry are to be found there.

Even the folly of mankind has at times been a source of wisdom, and from the vain attempts to transmute the baser metals into gold there perhaps came the invention of the finer kinds of pottery, possibly that of porcelain. The attempts, too, to compound an elixir that would prolong life brought a knowledge of the medicinal qualities of many substances. It is no doubt of interest to modern students of chemistry to learn that the substance upon which Chinese alchemists depended more than any other in their experiments for the transmutation of metals was mercury, the same substance that within a few months past has been used by German and Japanese chemists in experiments, claimed to have been successful, for the production of gold.

Gibbon tells us that the emperor Diocletian ordered a search made in Egypt for all ancient books that

dealt with the manufacture of gold and silver and had them burned. That was in the third century of this era, but Chinese alchemists had been attempting the manufacture of gold since the second century before Christ. Greek and Arab seamen had been trading at Hanoi in Tonkin since the middle of the second century of this era. Hanoi and Tonkin were conquered by the Chinese in the third century before Christ, since which time the connection of that region with China was very close. Thus the knowledge of the Chinese practice of alchemy could very easily have been communicated to the Greeks of Egypt.

Moreover, the emperor Wu Ti of the Han dynasty in the second century before Christ extended his conquests far into central Asia and thus the Chinese were enabled to open up trade with Parthia. This was several centuries before Otanes the Mede sought to compound an elixir of immortality by methods that resembled those of the Chinese in the second and third centuries before Christ. It seems most probable, therefore, that the West derived its acquaintance with alchemy from China, as Mr. Johnson is disposed to believe. The amount of gold said to have been made from mercury in recent experiments is very small and it seems most unlikely that any cheap process of obtaining gold will ever be discovered, but the search of the alchemists has resulted in the marvelous accomplishments of modern chemistry, which are of far more importance than the production of gold or the discovery of an elixir to prolong life.

E. T. Williams.

PREFACE

The writer's interest in the cultural life of the Chinese dates its origin from a recent residence of fourteen years in China. During that period opportunity was given for a rather intimate association with the Chinese people, as well as for a study of the language, history, and customs of this ancient race. As the associations became more varied, and as the study progressed, the writer became increasingly interested in the supernatural beliefs of the Chinese and in the practices to which those beliefs gave rise. For, while the Chinese are popularly regarded as preëminently stolid and matter of fact, investigation proves that they are a highly imaginative people, among whom ideas of mysticism and idealism have always abounded.

With this general problem in mind, the writer entered the University of California, two years ago, for a period of study. He was desirous of pursuing some line of study whereby further light might be thrown on the general question of Chinese belief in the supernatural. It was due to the suggestion of Professor E. T. Williams that the subject of Chinese alchemy was chosen as a theme for special investigation. This theme appealed to the writer as tending to make the problem at hand more concrete and circumscribed, while at the same time it was an integral part of the general question. In consultation with Professor Williams, a plan for study was mapped out, and in accordance with its provisions, research

has been carried on for the past two years — the results of which are presented in this monograph. The work has not been devoid of peculiar problems, but the joy of this opportunity for further study and the satisfaction of seeking new light on an obscure but fascinating subject, have far outweighed the difficulties encountered. This study has therefore proved to be a most pleasant and rewarding task.

To Professor Williams, the writer desires to acknowledge deep gratitude for his very generous donation of time, for his initial help in the choice of subject, and for much friendly interest and constructive criticism during the course of this study. To Professor Kuno, also, earnest thanks are extended for his never-failing interest and help, while serving as chairman of the Committee-in-charge, during the absence of Professor Williams. Grateful acknowledgments are likewise due to Professors Paetow and Van Nostrand for the inspiration received in their classrooms, as well as for their kind encouragement of a study of this nature; and to Professors Cajori, Porter, and Shaeffer, for their friendly interest in this investigation.

It remains for the writer to record his grateful obligations to Professor Lewis Hodous, of the Hartford Theological Seminary, for valuable suggestions concerning source material for this study; to Mr. O. W. McMillan, of the Union Middle School, of Canton, China, for cheerful expenditure of much time and effort in the selection and purchase of a number of Chinese books of special value for this investigation; to Dr. John Fryer, of Berkeley, for the loan of several Chinese volumes not obtainable in the University Library; and to Mr. M. J. Hagerty, of the United

States Department of Agriculture, for valuable help on the question of Chinese texts.

Special thanks are due to Dr. Herbert Putnam, librarian of the Library of Congress, for his kindness in allowing a photostat copy to be made of a valuable work in the Library of Congress on Chinese alchemy—a work of which only one printed copy is known to be in America.

Through the kindness of Dr. G. T. Tolson, librarian of the Pacific School of Religion, opportunity has been given for the examination of valuable material in certain old issues of the *Journal of the North China Branch of the Royal Asiatic Society*. Grateful recognition of this kindness is hereby recorded.

It is a pleasure, also, to make grateful record of Mrs. Johnson's very valuable help in the tedious task of proof reading.

To the officers of the American Board of Commissioners for Foreign Missions the author is peculiarly indebted for sympathetic understanding, and for that generous donation of time which has made possible this study.

Finally, to the officers and attendants of the University of California Library, the writer desires to express profound appreciation and gratitude for unfailing courtesy and helpfulness in the use of the splendid facilities of the Library.

All these have contributed to the pleasure and profit of this work.

OBED S. JOHNSON.

UNIVERSITY OF CALIFORNIA,
BERKELEY, CALIFORNIA,
NOVEMBER, 1925.

A STUDY OF CHINESE ALCHEMY

INTRODUCTION

More than a century ago, at the time of a great national crisis, Goethe, the German patriot and poet, sought comfort from immediate sorrows by a diligent study of China. He says: "In particular, I have made industrious and thorough study of China, and all matters pertaining to it. I have, as it were, made analysis and classification of this important country, in order that in case of acute distress — even as now experienced — I might find refuge and solace there." [1] Since Goethe's day, other scholars, of his own land, and of other lands, have made earnest investigation of the culture of this ancient nation, and have voiced their appreciation of its genuine worth.

To the average man or woman of Western lands, however, China is even to-day little more than the name of a distant region, inhabited by a populous race, the mystery of whose life and thought defies comprehension. Western textbooks have contributed generously to this state of affairs, for until very recently they have made but scant and desultory reference to China. Particularly is this true with regard to the cultural developments of ancient China. Apart from the question of the geographical remoteness

[1] Goethe's *Werke*, ed. W. von Biedermann, XXVII, p. 480.

of China — which was formerly, but is not now, a vital factor — three reasons for this comparative dearth of knowledge may be mentioned.

1. The difficulty of the Chinese language. This difficulty is not an imaginary one, which disappears upon close scrutiny, or even with diligent and continued study. Among non-Chinese people, it deters the many from making any attempt at mastering the language, and to the few who make persistent venture, it remains as a constant reminder of the frailty of human endeavor.

2. The abstractness of Chinese thought. Not only in the realms of speculative subjects, but even in matters dealing with concrete facts, there is a certain tendency toward abstractness or ambiguity of thought and statement. Illustration of the above fact is afforded by the widely differing translations of identical passages from Chinese literature at the hands of thoroughly able and consecrated students of Sinology.

3. The unscientific manner of recording facts of historical and cultural importance by the average writer of Chinese history. Many writers of rare literary ability have been guilty of this serious fault. The difficulty does not lie in the absence of facts, for, in many cases, the amount of material is very great. The difficulty does lie in the lack of proper evaluation. Facts of universal significance are seemingly placed on a par with those of very insignificant worth. Perhaps it is for this reason that Chavannes has said that "Chinese history is a '*mélange.*'"[2] It is but

[2] Cf. E. Chavannes: *Les Mémoires historiques de Se Ma Ts'ien* (司馬遷史記), Vol. I, p. ccxxii.

fair to add, however, that with regard to the class of historians anciently appointed by imperial decree, facts of historical importance have, in general, been recorded with commendable fidelity to truth, and with a fair degree of respect for proportionate values.

Nevertheless, in spite of these manifest difficulties, a notable advance has been made, during the past century, in the study of "things Chinese." In such studies, French scholars have been particularly prominent.[3] But German,[4] English,[5] American,[6] and Japanese[7] scholars — as well as those of other lands — have also made valuable contributions.

As a result of the researches of these and other scholars, the various phases of Chinese civilization are increasingly attracting attention in the scholastic circles of the West. The constantly growing number of popular books on China, and the present-day facilities for travel are, likewise, potent factors in "making China real" to the average citizen of the Western world.

In view of this growing interest in China it is hoped that this study of Chinese alchemy may serve, in some measure, to stimulate the interest already aroused in Chinese culture, in general, and to add a modest contribution to the subject at hand, in particular.

It need hardly be mentioned that a study of this nature is fraught with a number of portentous difficulties. Chief among them are such problems as:

[3] Cf. E. Chavannes, H. Cordier, G. Pauthier, P. Pelliot, J. Remusat, L. Wieger.
[4] Cf. E. J. Eitel, W. Grube, F. Hirth, F. Richthofen, V. von Strauss.
[5] Cf. H. A. Giles, J. Legge, W. F. Mayers, E. H. Parker, W. E. Soothill.
[6] Cf. P. Carus, J. C. Ferguson, W. A. P. Martin, S. Wells Williams.
[7] Cf. J. Matsumura, D. T. Suzuki.

1. The question of Chinese sources — questions of date, authenticity, interpolations, etc.

2. The Chinese language — its general indefiniteness, and particularly its inadequacy as regards modern technical terms.

3. The great mass of unclassified material in the Chinese sources.

This study does not in any sense, therefore, presume to be a complete and final exposition of the subject of Chinese alchemy, nor can it hope to be entirely free from errors of fact or judgment.

This study purports to be an historical investigation concerning the origin and development of Chinese alchemy.

The aim of this investigation is threefold:

1. To show that Chinese alchemy was an indigenous growth, originating in Taoism.

2. To trace the historical development of alchemy in China.

3. To state reasons for a probable connection between the alchemy of China and that of medieval Europe.

The Chinese origin of alchemy, and the probable connection of the system with that of medieval Europe have been suggested; but to the writer's knowledge, the subject has never been subjected to thorough analysis and study, by Western scholars. In a brief article entitled *Alchemy in China, the Source of*

Chemistry,[8] Dr. Martin makes a general argument for the Chinese origin of alchemy, and for a probable connection between the alchemy of China and that of medieval Europe. But while Dr. Martin's article is written in a popular style and makes many interesting statements, it is not a detailed analysis and exposition of the theme, wherein proof is adduced for the various statements made. The real value of Dr. Martin's article lies in its suggestion of the theme of Chinese alchemy for a serious and detailed study.

Dr. Giles, on the other hand, disposes of the entire question of the origin of Chinese alchemy with the single unsupported statement that "associated closely with the elixir of immortality is the practice of alchemy, which, beyond all doubt, was an importation from Greece by way of Bactria."[9]

In view of this conflicting testimony — manifestly due to the lack of specialized study and correlation of facts, the writer aims to show, from the evidence of Chinese works of unquestioned authenticity, that Chinese alchemy was, in fact, indigenous — a product of Taoism. For this purpose it is deemed essential to state the early historical development of Taoism — the soil in which alchemy found root and grew — with some detail. In doing this, the writer is glad to make practical acknowledgment of the excellent translations of such scholars as Legge and Giles, by quoting freely from their respective versions of Lao Tzŭ (老子) and Chuang Tzŭ (莊子), in adducing proof for the various statements made.

[8] Cf. W. A. P. Martin: *The Lore of Cathay*, pp. 44–71.
[9] H. A. Giles: *China and the Chinese*, p. 166.

In his treatment of the twofold historical development of alchemy in China, the writer must rely very largely on his own translations from Chinese authors of established authenticity, who have dealt with various phases of alchemy. Both his conclusions as well as the manner of their arrangement are primarily the result of a study of the original Chinese sources, for this important phase of the subject has been practically untouched by Western scholarship. Numerous quotations from the author's own translations may therefore be expected in support of the statements made.

In support of the argument that there was a probable connection between the alchemy of China and that of medieval Europe, the writer will show from the testimony of both Chinese and Roman authors that some trade relations existed between China and the Roman Empire even before the Christian era, and that during the centuries immediately following, both land and sea routes were utilized in caring for this constantly growing trade. Coincident with this exchange of material products there would naturally be an exchange of ideas. The writer will furthermore show from authentic sources that alchemy was known in China as early as the third century before Christ, and that it made its first appearance in Alexandria at some period from the third to the fifth century of the Christian era. That Chinese alchemical ideas must have reached Alexandria over the trade routes, therefore, seems practically certain.

That the Alexandrian ideas of alchemy — whatever their origin — were carried to western Europe by the Arabs at the time of the Mohammedan invasion of

Spain is a matter of historical record.[10] Moreover, the writer will call attention to certain significant analogies between the alchemy of China and that of medieval Europe, whereby the argument for a probable connection between the two systems is still further strengthened.

[10] Cf. article on *Alchemy*, in *Encyclopædia Britannica*, eleventh edition, Vol. I, p. 519.

CHAPTER I

TAOISM (道教)

The Life of Lao Tzŭ (老子), the Founder

The name of Lao Tzŭ has been variously associated with the ideas of man, god, and myth.[1] Viewed from the standpoint of his permanent contribution to the world's culture, it matters little which one of these theories might eventually be proved true. However, there appears to be sufficient historical data of a reliable nature to prove with a fair degree of certainty that Lao Tzŭ was neither a god, nor a myth, but a person. This, at any rate, is the all but unanimous conclusion at which all the leading Sinologues of the present day have arrived.

Before we proceed to outline briefly the main facts of Lao Tzŭ's life, reference to the many legends which have clustered about, and obscured, his name, will not be out of order. With these legends we need have no serious concern. They were but the tributes of later generations to a man of mysterious greatness. Thus we find in the Taoist writings of the fourth century of this era marvelous accounts of his birth and career. According to these accounts, Lao Tzŭ was born after a gestation of eighty years. At birth his beard and hair were snowy white, and his features were those of an

[1] For the contention that Lao Tzŭ was a myth, see T. W. Kingsmill: *Notes on Tao Tê King* (道德經), in *Journal of the North China Branch of the Royal Asiatic Society* (1896), Vol. XXXI, pp. 206–209.

aged man. He once restored a dead man to life. When as an old man he journeyed to the "Western regions," the guardian of the mountain pass attained immortality through reading the book with which Lao Tzŭ presented him.[2] That these fantastic stories were in large part due to the influence of Buddhism, which entered China about the year A.D. 65, seems certain.[3]

Our main source of authentic information concerning the life of Lao Tzŭ is the account of the great historian, Ssŭ-ma Ch'ien (司馬遷), who has been called the "Herodotus of China." It is true that there are numerous references to incidents in the career of Lao Tzŭ in the works of both Lieh Tzŭ (列子)—*ca.* 400 B.C., and Chuang Tzŭ (莊子)—*ca.* 350 B.C., but these men were not historians and we cannot regard their works as historical testimony. They were interested not so much in Lao Tzŭ's life as in his teaching. Ssŭ-ma Ch'ien, however, was a writer of history whose veracity and critical acumen stand above reproach. He lived during the second century before Christ. His famous historical work, the *Shih Chi* (史記)—*Historical Records*—was the first attempt ever made to present a complete view of Chinese history—from earliest times until the date of writing.[4]

Ssŭ-ma Ch'ien begins his section on *Biographies* with a brief biography of Lao Tzŭ in which the salient facts of his career are recorded.[5] According to this account, Lao Tzŭ was born during the third year of

[1] For these and other legendary accounts of the life of Lao Tzŭ, see *Shên Hsien Ch'uan* (神仙傳) *(Biographical Records of the Immortals)*, Chap. I.

[3] Cf. W. Grube: *Religion und Kultus der Chinesen*, pp. 98–100.

[4] An excellent translation of a portion of this work has been made by Edouard Chavannes, entitled *Les Mémoires historiques de Se Ma Ts'ien.*

[5] Ssŭ-ma Ch'ien: *Shih Chi* (史記) *(Historical Records)*, Chap. LXIII.

the reign of Ting Wang (定王) of the Chou (周) dynasty — i. e., 604 B.C. He was a native of a region in the ancient state of Ch'u (楚), which now corresponds to the modern province of Hupeh. His surname was Li (李), meaning "plum tree," and his given name was Erh (耳), meaning "ear." By the generations immediately following him he was called Li Tan (李聃) — Tan meaning "long-eared" — indicating that he received this pseudonym on account of a physical peculiarity. However, at the period when Ssŭ-ma Ch'ien wrote his history, Li Tan was universally known as Lao Tzŭ. Lao Tzŭ was not a name, but a title of honor. Lao (老) means "old" or "venerable," and "philosopher" is one of the several definitions of Tzŭ (子). By this appellation, Lao Tzŭ — "The Old Philosopher" — Li Tan is popularly known to history. Without entering into a discussion of the various theories advanced as to the origin of this title, it is altogether probable that it was bestowed upon him in recognition of intrinsic worth, rather than because of fantastic legends concerning his birth.[6] Nothing is specifically recorded about his early life. The narrative simply states that he lived at Loyang (洛陽) — the eastern capital of the Chou dynasty — and that he was the keeper of the Royal Archives. Significant testimony as to Lao Tzŭ's honored position in the intellectual world of his day, lies in the fact that Confucius (孔夫子) as a young man made a lengthy and perilous journey to visit the aged philosopher, with a view to learning his views on ceremonies and music. Ssŭ-ma Ch'ien

[6] Cf. James Legge: *The Texts of Taoism*, Vol. I, p. 35.

has given us the following graphic description of this historic occasion — and of its effect upon Confucius.

"Confucius journeyed to the land of Chou to make inquiry of Lao Tzŭ, concerning ceremonies, Lao Tzŭ made reply: 'The men about whom you talk are dead, and their bones are moldered to dust: only their words are left. Moreover when the superior man gets his opportunity, he mounts aloft; but when the time is against him, he is carried along by the force of circumstances. I have heard that a good merchant, though he have treasures safely stored, appears as if he were poor; and that the superior man, though his virtue be complete, is yet, to outward seeming, stupid. Put away your proud air and many desires, your insinuating habit and wild will. They are of no advantage to you. This is all I have to tell you.'"[7]

That this brief but rather caustic utterance made a noteworthy impression upon Confucius is evident from his report of the occurrence to his disciples. "I know how birds can fly, fishes swim, and animals run. But the runner may be snared, the swimmer hooked, and the flyer shot by the arrow. But there is the dragon — I cannot tell how he mounts on the wind through the clouds, and rises to heaven. To-day I have seen Lao Tzŭ, and can only compare him to the dragon."[8]

At the time of Confucius' visit, Lao Tzŭ was already an old man. It appears that he continued his residence and his work at the capital city for a

[7] Ssŭ-ma Ch'ien: *Shih Chi* (史記), Chap. LXIII, p. 1.
[8] *Id.*, p. 2.

considerable time before he finally resigned his position, to seek in a life of solitude a solution to the great problem of life. The incident is recorded as follows: "Lao Tzŭ cultivated the Tao (道) and the Tê (德). He desired to live in seclusion, not attaching any value to fame. He resided in the realm of Chou for a long period of time, but when he perceived that the dynasty was falling into decay, he resigned his position and journeyed to the Han Ku 'Pass' (函谷) located at the western confines of the royal realm.[9] Yin Hsi (尹喜), the guardian of the Pass, thereupon made request, saying: 'You have resolved that you will live in seclusion. I beseech you to compose a book for my instruction.' Lao Tzŭ yielded to his request and wrote a book — composed of two parts — in which he explained the meaning of the Tao and the Tê. This book contained more than five thousand characters. Then Lao Tzŭ went his way, and it is not known where his life ended." [10]

The summary given above is all that we have of real historical value about the life of Lao Tzŭ. As Legge has pointed out,[11] with the exception of the account of the writing of the book at the request of the guardian of the barrier — which is admittedly of legendary appearance — the record is free from suspicious elements. Nothing is said about Lao Tzŭ's previous existences, nor about his traveling to Western regions and acquiring there the doctrines which are embodied in the work attributed to him. Because this account

[9] This mountain pass was near the great bend of the Yellow River, east of the modern city of Sian (Hsi An Fu) (西安府). It was a part of the western boundary of federated China. Cf. E. H. Parker: *Studies in Chinese Religion*, p. 65.

[10] *Id.*, p. 2.

[11] James Legge: *The Texts of Taoism*, Vol. I, p. 36.

is characterized, in the main, by Ssŭ-ma Ch'ien's customary simplicity and accuracy of statement, it is generally regarded by students of Taoism, both Chinese and foreign, as the most valuable and trustworthy source concerning both the primary fact and the essential features of Lao Tzŭ's historical existence.

The Times of Lao Tzŭ

In order to arrive at an unbiased understanding of Lao Tzŭ's teaching, it seems desirable to sketch briefly certain features of the times in which he lived. External circumstances played their rôle, both in the genesis of his teaching and in the shaping of its general content. We shall confine our survey to two main features which seem to have left their deep impress on the emotional and mental life of the Old Philosopher. These features are the prevailing metaphysical thought, and the political situation of Lao Tzŭ's time.

At a very early stage in China's history, certain metaphysical ideas made their appearance. At that period they were either isolated ideas, or but loosely connected one with another. The following themes were prominent: Life, Spirit, Reason, Heaven, the Yin (陰) and Yang (陽) elements.[12] As time progressed, men began to speculate concerning the world in which they lived. What was it? What was its origin and nature? How did it operate? Such were the problems which occupied men's minds, as they tried to construct a cosmogony. Traces of these attempts at solution are reflected in three books of

[12] Cf. *Ch'in Ting Ku Chin T'u Shu Chi Ch'êng* (欽定古今圖書集成) *(The Chinese Imperial Encyclopædia)*, Section on *Natural Phenomena*.

the Confucian Canon : the *Yi Ching* (易經) *(The Book of Changes)* ; the *Shu Ching* (書經) *(The Book of History)* ; and the *Shih Ching* (詩經) *(The Book of Poetry)*.

The dominating cosmological ideas of Lao Tzŭ's period may be summarized as follows. In the beginning, nothing existed. In the process of time matter came into existence as a formless ether. It was known as the "*T'ai Chi*" (太極)—primal matter.[13] Gradually this Primal Matter began to gyrate, and during the process divided into two parts. The part which was gross and heavy precipitated and formed the earth, while the part which was fine and light remained in suspension and formed the heavens. The former was known as the Yin, and the latter as the Yang. Together they formed the Liang I (兩儀)—the two regulating powers. Thought of in combination they were regarded as the soul of the universe. Yin was regarded as the female element, typifying in general the more undesirable phenomena of nature, such as cold, darkness, weakness, and death. Yang was regarded as the male element, which was, in turn, representative of the qualities in direct opposition to those of the Yin. From the interaction of these two cosmic forces, the universe was created, and, in its various phases, directed and controlled. As time went on, this principle of dualism came to be a most potent factor in Chinese thought, for it gradually permeated both the material and the moral world. At a later date, it was adopted as one of the cardinal

[13] In its creative aspect, the " T'ai Chi " is identical with the " Tao " (道) of Taoist teaching. Cf. S. Couling : *Encyclopædia Sinica* (article on *Philosophy)*, pp. 433, 434.

beliefs of Confucianism, and as such it has exerted a momentous influence on the Chinese mind for more than twenty centuries.[14]

Since man was a part of the Universe it was a logical conclusion that he shared in the properties and manifestations of Yin and Yang. He was considered to be a product of the two forces, combining in himself the respective qualities of each. He was popularly thought of as a microcosm, as is evidenced by the oft-recurring phrase: "Man is a miniature Heaven and Earth" (人身一小天地). In a passage of the *Li Chi* (禮記), attributed to Confucius, the general belief of an earlier day seems to be reflected: "Man is the product of the attributes of Heaven and Earth, by the interaction of the dual forces of nature, the union of the animal (*kwei*, 鬼) and the intelligent (*shen*, 神) souls, and the finest subtile matter of the five elements." [15]

The dominance of Yin and Yang in all creation has been ably summarized as follows: "The universal Yang and Yin are divided into an indefinite number of souls or spirits, respectively called '*shen*' (神) and '*kwei*' (鬼). . . . The soul of Man, like that of any living being, consists of a *shen* and a *kwei* or *p'o* (魄); his birth is an infusion of these souls, his death is their departure, the *shen* returning to the Yang or Heaven, the *kwei* to the Yin or Earth. His body is, like Heaven and Earth, composed of the

[14] Valuable data concerning Chinese cosmological thought may be found in Ch. de Harlez: *L'École philosophique moderne de la Chine*, pp. 15–21, 36–56, 82–92, 151–171.

[15] *The Sacred Books of the East*, Vol. XXVII (the *Li Chi*, 禮記, translated by James Legge), pp. 380, 381. The five elements, or "primordial essences," of Chinese philosophy are water, fire, wood, metal, and earth.

five elements. Accordingly, Man is an intrinsic part of the Universe, a microcosm, born spontaneously from and in the macrocosm. . . . This classical system of Universistic psychology . . . defines the Yang as a supreme universal *shen*, living, creating, which divides itself into an infinite number of *shen* and deposits them in the various beings of the world; and the Yin as an universal *kwei*, likewise divisible into myriads of particles, each of which in an individual may form his other soul. . . . The *shen* and the *kwei* are innumerable. The Universe is crowded with them in all its parts: they animate every being, — everything, even the things that are wont to be called dead objects." [16]

Such was, in the main, Lao Tzŭ's metaphysical inheritance from a former age. We shall find that detailed metaphysical speculation was largely ignored by Lao Tzŭ, but that it was to assume great prominence at a later, degenerate stage of Taoist development.

We turn now to an entirely different feature of Lao Tzŭ's time — that of the political situation. At first thought, this might seem to be irrelevant to our study, but we must bear in mind that a true philosopher, though he dwells largely in an ideal world of thought, is not insensible to the material world about him. Perhaps it is because of this very idealism, that depravity of character and failure of man-made institutions stand out the more boldly in relief, and thus make a lasting impress on the philosopher's thought. Such would seem to be the case with Lao Tzŭ.

[16] De Groot: *Religion in China*, pp. 14, 15.

Lao Tzŭ lived during the central period of the reign of the Chou (周) dynasty.[17] The beginnings of the dynasty were auspicious. It is reported that Wu Wang (武王) — a martial prince — found the people greatly oppressed — "hanging with their heads downward." He fought and won a great battle in their behalf, and his subjects found in him a humane and able ruler. For several generations good government prevailed, and then the forces of disintegration began their work. The empire of Chou has been described as the "wall of feudal states around the House of the King."[18] But as the number and power of these vassal states increased, the central authority weakened. Aggression by the Huns — known as the "Hsiung-nu" (匈奴) — on the northern frontier and by the aboriginal tribes south of the Yangtze-kiang, was of frequent occurrence. The people of the frontier states became skilled in warfare, and their leaders assumed an independent attitude. They disregarded the central monarch, and fought one another for supremacy. "The weaker feudal states were an easy prey for the more powerful nobles who only acknowledged allegiance to the king so long as it suited them. The China of this period may be described as an empire partitioned among the nobles."[19] Such were the salient features of institutional politics during the centuries immediately preceding the age of Lao Tzŭ.

But there was another aspect, which was probably of even greater significance in its impress on the Old Philosopher's mind. It related to the effects

[17] The dates of the Chou dynasty are 1122–249 B.C.
[18] Li Ung Bing: *Outlines of Chinese History*, p. 23.
[19] *Id.*, p. 29.

of personal ambition and struggle, on individual character. While Chinese history furnishes some notable examples of rulers whose ability and good character have not been jeopardized by political power, the reverse seems to have been the general rule. The Chou dynasty was not exceptional in this respect. With most of its monarchs, self-seeking and preferment were accompanied by complete moral downfall. Reflecting the character of the rulers, the period from the eighth century to the end of the dynasty has been described as one of "anarchy, assassination, misrule, and trouble."[20] The official annals of the period are replete with stories illustrative of the greed, cruelty, and lust of its rulers.[21]

To Lao Tzŭ, in charge of the Royal Archives of the capital city, a unique opportunity was given to become conversant with the tragic events of both national and individual import. He was grieved and discouraged as he saw the futility of human endeavor, and the failure of human institutions.[22] It is not strange, therefore, that with approaching old age, he gave himself the more earnestly to contemplation, seeking to discover the principle that underlay all existence, and the method whereby that principle might be applied to the solution of human problems. The result of this search, as expressed in the teaching of Lao Tzŭ, shall be our next consideration.

[20] H. H. Gowen : *An Outline History of China*, p. 55.
[21] Cf. J. Macgowan : *The Imperial History of China*, pp. 57–76.
[22] Cf. H. C. Du Bose : *Dragon, Image and Demon*, pp. 345–348.

The Teaching of Lao Tzŭ

Lao Tzŭ may justly be called the founder of Taoism (道教) in that he was the first of the ancient Chinese scholars to give concrete form and utterance to its principles. We have already seen that various mystical beliefs analogous to those embodied in Lao Tzŭ's treatise, existed from ancient times. In the sixth chapter of Lao Tzŭ's *Tao Tê Ching* (道德經), reference is made to earlier sages "whose words the author was copying out."[23] In the works of Chuang Tzŭ (莊子), the famous emperor Huang Ti (黃帝) is represented as having lived in seclusion for three months in order to prepare himself for receiving Tao.[24] Confucius speaks of himself as a "transmitter and not a maker." Lao Tzŭ, too, as a contemporary of Confucius, inherited a rich legacy of the metaphysical thought of former generations, but — bold, original thinker that he was — he made his own selection and interpretation of such ideas as seemed to him of permanent value. The tangible result of this selective interpretation is generally conceded to be Lao Tzŭ's teaching, as recorded in his book, the *Tao Tê Ching*.[25] On the authorship of this book rest his name and fame as the founder of Taoism.

[23] Cf. James Legge: *The Texts of Taoism*, Vol. I, p. 2.

[24] Cf. H. A. Giles: *Chuang Tzŭ, Mystic, Moralist, and Social Reformer*, p. 126.

[25] Lao Tzŭ's authorship of the *Tao Tê Ching* has been earnestly challenged by H. A. Giles.

Cf. H. A. Giles: *Confucianism and Its Rivals*, pp. 146–151, and H. A. Giles, *The Remains of Lao Tzŭ*, in the *China Review* (1886), Vol. XIV, pp. 231–280.

The question as to whether Lao Tzŭ or a pseudo-Lao Tzŭ was the author of the book is of minor importance. The fact of real consequence is that some one, at an early date in Chinese history, deemed the general ideas now embodied in the *Tao Tê Ching* of such value as to incorporate them in permanent form.

The title of the book might reasonably be expected to give us some clue to its nature and contents. Unfortunately, Sinological scholars have persisted in radical disagreement not only as to the interpretation of the contents of the book, but as to the meaning of its title as well.

Considering the terms of the title separately and in inverse order, there is general agreement that by the word "Ching" (經) is meant a book of recognized authority, thus corresponding to our English word "canon."[26] It may also be translated as "classic."

The word "Tê" (德) has been variously translated as "energy," "power," "behavior," "moral excellence," "virtue," and "principles exemplified in action." The word implies action.

The word "Tao" (道) has given rise to a still greater diversity of opinion. The Chinese character for "Tao" (道) is a combination of two ideographs meaning "head" (首) and "to proceed" (辶), respectively, and its primary meaning is that of a "way" or a "road." Before the time of Lao Tzŭ it was used symbolically to describe the operations of nature, being interpreted as the "Course or Way of Nature."[27] In time the word acquired an ethical content, denoting the "proper way," the "true doctrine" and "truth." It has frequently been compared to the Greek word "*logos*" (λόγος) in its New Testament connotation.

[26] The book was first known simply as *Lao Tzŭ* (老子), but later as the *Tao Tê Selections*. The native writers of highest repute are in agreement in relating that Lao Tzŭ's book did not receive the title of "Ching" before the reign of the emperor Ching Ti (景帝) of the Han (漢) dynasty (156–151 B.C.). Leon De Rosny: *Le Taoisme*, p. 47.

[27] W. E. Soothill: *The Three Religions of China*, p. 47.

In its setting in the title of Lao Tzŭ's treatise, "Tao" has been translated into such terms as "The Way," "Nature," "Providence," "God," "Logos," "Right," "The Principle of Right," "The Universal Supreme Reason," and "The Absolute." One of the most renowned students of Chinese culture prefers to leave it untranslated. "The Tao, therefore, is a phenomenon, not a positive being but a mode of being. In the meantime the best way of dealing with it in translating is to transfer it to the version instead of trying to introduce an English equivalent for it." [28]

The title, *Tao Tê Ching*, in its entirety has in several instances been translated as "The Canon of Reason and Virtue." That this translation is not in accord with the primary meaning of the terms is the contention of Wieger, who holds that "A Dissertation Concerning Right Principle and Its Action" is the more accurate rendering.[29] This would seem to be in accord with the general tenor of the teaching of the book. The idea has been clearly stated as follows: "The *Tao Tê Ching* treats of two subjects, Tao and Tê. Tao is the fundamental principle of the philosophy which it teaches, and Tê the practical exemplification of the principle in conduct." [30]

The small size of the *Tao Tê Ching* may be considered in inverse ratio to its great influence on human thought and action. We have seen that according to the account of Ssŭ-ma Ch'ien (司馬遷), the book consisted of "more than five thousand characters," and that it was divided into two parts. At a

[28] James Legge: *The Texts of Taoism*, p. 15.
[29] L. Wieger: *Les Pères du Système Taoiste*, Vol. II, p. 3.
[30] E. T. Williams: *China Yesterday and Today*, p. 317.

comparatively early date, however, the entire work was subdivided into eighty-one brief chapters, and in this form the book has been transmitted to posterity.

The terseness of the style in which the book is written has given rise to endless diversity of opinion among Chinese scholars, as to the real import of its teaching. This fact has not deterred scholars from other lands, however, from making earnest study of the book, with the result that translations now exist in all the leading European languages, differing radically — as might be expected — in interpretation.[31] Legge's translation [32] is generally admitted as being the best in the English language, and references to the *Tao Tê Ching* in this study will be based upon his translation — unless otherwise noted.

In the *Tao Tê Ching* three elemental teachings are discernible — the metaphysical, the ethical, and the political. These three are frequently interwoven, presenting a strange mixture of the mystical, the ideal, and the practical, well-nigh impossible to resolve into its component parts. With the political aspect of Lao Tzŭ's teaching, we are not concerned in this study, and we therefore pass it by with frank and simple recognition of its existence. The metaphysical and ethical elements, however, are of basic importance as being the soil in which the seed thoughts of Chinese alchemy found root and flourished. We shall do well therefore to make a careful examination of the above phases of Lao Tzŭ's teaching and of their

[31] For a comprehensive sketch of the work of foreign scholarship in the translation of the *Tao Tê Ching* (道德經), see E. H. Parker: *Studies in Chinese Religion*, pp. 76–95.

[32] James Legge: *The Texts of Taoism*, Vol. I, pp. 47–124.

interpretation by Chuang Tzŭ (莊子) — in order that we may the more readily understand both the genesis and the general nature of that later development of Taoism — Chinese alchemy.

In seeking to indicate the chief elements of metaphysical and ethical thought in the *Tao Tê Ching*, we shall center our attention about the idea of Tao (道), for in that one mysterious word is to be found the keynote of Lao Tzŭ's teaching. What is Tao ? What are its attributes ? What is its relation to creation ? How does it work in the individual life, and in society ? How might it be attained ? Such were the intricate problems to which Lao Tzŭ addressed himself with utmost seriousness. That the solutions which he proposed were abstract, general, and often hopelessly vague, must seem natural and inevitable when we consider the abstract nature of his theme.[33]

Metaphysical Aspects of Tao

1. Tao is from the beginning. It is a mysterious power which functions everywhere without hindrance. Its resources are limitless.

"There was something undefined and complete, coming into existence before Heaven and Earth. How still it was and formless, standing alone and undergoing no change, reaching everywhere and in no danger of being exhausted ! It may be regarded as the Mother of all things. I do not know its name,

[33] "The truth is that neither consistency of thought nor exact terminology can be looked for in Chinese philosophy as a whole, and least of all perhaps, in such an abstract system as that of early Taoism." — Lionel Giles: *Musings of a Chinese Mystic*, p. 17.

and I give it the designation of the Tao (the Way or Course)." [34]

2. Tao is the Creator of all things. It is absolute and can therefore neither be adequately named nor comprehended.

"The Tao (Way) that can be trodden is not the enduring and unchanging Tao. The name that can be named is not the enduring and unchanging name. Conceived of as having no name, it is the Originator of heaven and earth; conceived of as having a name, it is the Mother of all things." [35]

3. Tao is omnipresent. It is alike the source and end of all creation. It unselfishly nourishes all things.[36]

"All-pervading is the Great Tao! It may be found on the left hand and on the right. All things depend on it for their production, which it gives to them, not one refusing obedience to it. When its work is accomplished it does not claim the name of having done it. It clothes all things as with a garment, and makes no assumption of being their lord. . . . All things return to their root and disappear, and do not know that it is it which presides over their doing so." [37]

4. Tao is infinite and may not be apprehended by the finite mind. The natural senses cannot fathom its real significance.

"We look at it, and we do not see it, and we call it 'the Equable.' We listen to it, and we do not hear it, and we name it 'the Inaudible.' We try to grasp

[34] James Legge: *The Tao Tê King* (道德經) (in *The Texts of Taoism*), Chap. 25.
[35] *Id.*, Chap. 1.
[36] This representation of Tao seems very closely akin to pantheism.
[37] James Legge: *Op. cit.*, Chap. 34.

it, and we name it 'the Subtle.' With these three qualities, it cannot be made the subject of description; and hence we blend them together and obtain the One." [38]

5. Tao accomplishes its work through Inaction. Though ever inactive, yet all things are accomplished by and through it.[39]

"The Tao in its regular course does nothing (for the sake of doing it), and so there is nothing which it does not do. If princes and kings were able to maintain it, all things would of themselves be transformed by them." [40]

Ethical Aspects of Tao

1. Tao is the most precious of all gifts to mankind. It may be used to benefit all classes of people — both the good and the bad.

"Tao has of all things the most honored place. No treasures give good men so rich a grace; bad men it guards, and doth their ill efface. . . . Why was it that the ancients prized this Tao so much? Was it not because it could be got by seeking for it, and the guilty could escape from the stain of their guilt by it? This is the reason why all under heaven consider it the most valuable thing." [41]

2. Tao is regarded in various ways by learned men. A man's attitude towards Tao determines his character.

"Scholars of the highest class, when they hear about the Tao, carry it into practice. Scholars of

[38] James Legge: *The Tao Tê King*(道德經)(in *The Texts of Taoism*), Chap. 34.
[39] Lao Tzŭ's teaching abounds in paradoxical statement. This chapter is one of the most notable examples.
[40] James Legge: *Op. cit.*, Chap. 37.
[41] *Id.*, Chap. 62.

the middle class, when they have heard about it, seem now to keep it and now to lose it. Scholars of the lowest class, when they have heard about it, laugh greatly at it. If it were not thus laughed at, it would not be fit to be the Tao." [42]

3. Tao accomplishes its purposes without strife. Its work is patient and slow, but thorough.

"It is the way of Heaven not to strive, and yet it skillfully overcomes; not to speak, and yet it is skillful in obtaining a reply; does not call, and yet men come to it of themselves. Its demonstrations are quiet, and yet its plans are skillful and effective. The meshes of the net of Heaven are large, far apart, but letting nothing escape." [43] Also, "with all the sharpness of the Way of Heaven, it injures not; with all the doing of the way of the sage he does not strive." [44]

4. Tao is like water — it seeks the lowest place. Humility is the secret of service.

"The highest excellence is like that of water. The excellence of water appears in its benefiting all things, and in its occupying, without striving to the contrary, the low place which all men dislike. Hence its way is near to that of the Tao." [45]

5. Tao is benevolent. He who possesses Tao will be enabled to benefit his fellow men in peculiar ways.

"To him who holds in his hands the Great Image of the invisible Tao, the whole world repairs. Men resort to him, and receive no hurt, but find rest, peace, and the feeling of ease." [46]

[42] James Legge: *The Tao Tê King* (道德經) (in *The Texts of Taoism*), Chap. 41.
[43] *Id.*, Chap. 73.
[44] *Id.*, Chap. 81.
[45] *Id.*, Chap. 8.
[46] *Id.*, Chap. 35.

6. Tao is the norm which makes human virtues seem but relatively good. When the highest good is not attained, men resort to the practice of artificial virtues.[47]

" When the Great Tao (Way or Method) ceased to be observed, benevolence and righteousness came into vogue. Then appeared wisdom and shrewdness, and there ensued great hypocrisy." [48]

The Life of Chuang Tzŭ (莊子), the Interpreter

As Lao Tzŭ may be regarded as the founder of Taoism, so we may justly think of Chuang Tzŭ as its interpreter. The reason for assigning Chuang Tzŭ to this position of honor should become apparent in any serious comparative study of Lao Tzŭ's *Tao Tê Ching* and the works of Chuang Tzŭ. A combination of circumstances served to make Chuang Tzŭ the spokesman of the " Old Philosopher " and the new doctrine.

According to Ssŭ-ma Ch'ien (司馬遷),[49] his biographer, Chuang Tzŭ was a native of the " territory of Meng " (蒙).[50] From the statement that he lived during the reign of certain specified rulers, we know that his period belongs to parts of the third and fourth centuries before Christ. It is evident, therefore, that Chuang Tzŭ was not far removed, either in space or

47 " The dominant note of pure Taoism is the gradual descent of man from primitive perfection to virtue (knowledge of good and evil); whence backsliding, mankind invented unnecessary distinctions, such as humanity, equity, integrity . . . and thence a tendency to craft, cunning, and insincerity." — E. H. Parker: *Studies in Chinese Religion*, p. 79.

48 *Id.*, Chap. 18.

49 Ssŭ-ma Ch'ien : *Shih Chi* (史記) *(Historical Records)*, Chap. LXIII.

50 Legge points out that this locality was in the same part of China as the birthplace of Lao Tzŭ. Cf. James Legge : *The Texts of Taoism*, Vol. I, p. 36.

time from the influence of Lao Tzŭ's teaching. That he became well versed in this teaching is evident from Ssŭ-ma Ch'ien's statement to the effect that while his erudition was quite varied, his chief doctrines were based upon the sayings of Lao Tzŭ. Further evidence that he was by nature in hearty sympathy with the quiet, unobtrusive life which Lao Tzŭ advocated may be adduced from the fact of his refusal to accept lucrative political office. "You offer me great wealth and proud position indeed; but have you never seen a sacrificial ox? When after being fattened up for several years, it is decked with embroidered trappings, and led to the altar, would it not willingly then change places with some uncared-for pigling? Begone! Defile me not! I would rather disport myself to my own enjoyment in the mire than be slave to the ruler of a state. I will never take office. Thus I shall remain free to follow my own inclinations." [51] This was his answer to an embassy from the Prince of Ch'u (楚), bearing costly gifts and an invitation to become prime minister. Furthermore, he beheld with chagrin the rapid advance and intrenchment of the rigid system of Confucian ethics, in popular estimation, while, in consequence, the more lofty and elemental principles of Lao Tzŭ suffered misunderstanding and neglect.

It was this combination of a deeply sympathetic acquaintance with the principles advocated by Lao Tzŭ, and a whole-hearted aversion to the artificial system of Confucian ethics, that lent color and conviction to his interpretation of Lao Tzŭ's thought.

[51] Translation by H. A. Giles: *Chuang Tzŭ, Mystic, Moralist, and Social Reformer*, pp. vi, vii.

His daring imagination and rich gift of language added wings to the teachings of the *Tao Tê Ching*, and thenceforth, in spite of opposition from Confucian quarters, they became increasingly popular among both scholars and princes. "His book, like the *Tao Tê Ching*, formed the subject of lectures and examinations, and several emperors are said to have studied and written upon it. In 713 A.D., it was specially decreed that those members of the public service should be singled out for promotion who were able to understand the *Tao Tê Ching*."[52] How this popularity was fraught with grave danger to the sane and orderly development of Taoist thought will be considered in another connection.

The teachings of Chuang Tzŭ have come down to posterity in the form of a book of thirty-three chapters, known as the *Nan Hua Chên Ching* (南華眞經) — *The True Canon of Nan Hua.* That this book is only a part of the original work seems historically certain.[53] Chuang Tzŭ's work has been translated into English by Giles[54] and Legge,[55] respectively; but, in general, Giles's translation is the more highly esteemed among students of Sinology.

Chuang Tzŭ's Teaching

Chuang Tzŭ was interested in the same philosophical problems that had occupied the mind of Lao Tzŭ. But with greater daring, Chuang Tzŭ carried his reasoning farther afield, and by analogy and

[52] Lionel Giles: *Musings of a Chinese Mystic*, p. 30.
[53] Cf. H. A. Giles: *Chuang Tzŭ, Mystic, Moralist, and Social Reformer*, pp. xi, xii.
[54] *Ibid.*
[55] James Legge: *The Writings of Kwang Sze* (in *The Texts of Taoism*), Vols. I (pp. 127–396) and II.

apt illustration, he was enabled to clothe with vivid and clear expression ideas which had been but vaguely suggested by his predecessor.

Chuang Tzŭ's teaching — as that of Lao Tzŭ — is centered about the all-pervading, ever-enduring, all-powerful Tao. What is Tao? Chuang Tzŭ answers: "This is the Tao: there is in it sentiency and constancy, but it does nothing and has no bodily form. It may be handed down by the teacher, but may not be received by the scholar. It may be apprehended by the mind, it cannot be perceived by the senses. It has its root and ground in itself. Before there were heaven and earth, from of old it was securely existing. From it come the mysterious existence of God. It produced heaven, it produced earth." [56] Also: "Tao has its laws and its evidences. It is devoid both of action and of form. It may be transmitted but cannot be received. It may be obtained, but cannot be seen. Before heaven and earth were, Tao was. It has existed without change from all time. Spiritual beings drew their spirituality therefrom, while the universe became what we see it now. To Tao, the zenith is not high, nor the nadir low; no point in time is long ago, nor by lapse of ages has it grown old. Hsi Wei (狶韋) obtained Tao, and so set the universe in order. Fu Hsi (伏羲) obtained it, and was able to establish eternal principles. The Great Bear obtained it, and has never erred from its course. The sun and moon obtained it, and have never ceased to revolve." [57]

[56] D. T. Suzuki: *A Brief History of Ancient Chinese Philosophy*, p. 38.
[57] H. A. Giles: *Chuang Tzŭ, Mystic, Moralist, and Social Reformer*, pp. 76, 77.

Lao Tzŭ's famous principle of Inaction gained a valiant champion in Chuang Tzŭ. Lao Tzŭ had laid down the general principle that Inaction was the secret of accomplishment.[58] The following quotations may serve to illustrate how Chuang Tzŭ developed and elaborated that principle:

"By Inaction, one can become the center of thought, the focus of responsibility, the arbiter of wisdom. Full allowance must be made for others while remaining unmoved oneself. There must be a divine compliance with divine principles, without any manifestation thereof. All of which may be summed up in the one word — passivity." [59]

"What then is Tao? There is the Tao of God and the Tao of man. Inaction and compliance make the Tao of God; action and entanglement the Tao of man. The Tao of God is fundamental; the Tao of man is accidental. The distance which separates them is great." [60]

"Repose, tranquillity, stillness, inaction, — these were the levels of the universe, the ultimate perfection of Tao. Therefore wise rulers and sages, rest therein. . . . Further, from repose comes inaction, and from inaction comes potentiality of action. And inaction is happiness; and where there is happiness, no cares can abide, and life is long." [61]

Chuang Tzŭ was fond of expressing truth in paradoxical form. In his chapter on *The Identity of*

[58] Cf. "Therefore the sage manages affairs without doing anything, and conveys his instructions without the use of speech."— James Legge: *The Texts of Taoism*, p. 48.

[59] H. A. Giles: *Chuang Tzŭ, Mystic, Moralist, and Social Reformer*, p. 97.

[60] *Id.*, p. 134.

[61] *Id.*, p. 158.

Contraries this tendency is generously indulged.[62] His emphasis is on the unity — the "Oneness" — of all existence.

"Therefore it is that, viewed from the standpoint of Tao, a beam and a pillar are identical. So are ugliness and beauty, greatness, wickedness, perverseness, and strangeness. Separation is the same as construction; construction is the same as destruction. Nothing is subject either to construction or to destruction, for these conditions are brought together into One. Only the truly intelligent understand this principle of the identity of all things. They do not view things as apprehended by themselves, subjectively; but transfer themselves into the position of the things viewed. And viewing them thus, they are able to apprehend them, nay, to master them — and he who can master them is near unto Tao. So it is that to place one's self in subjective relation with externals without consciousness of their objectivity — this is Tao." [63]

"How does the sage seal himself by the sun and moon, and hold the universe in his grasp? He blends everything into one harmonious whole, rejecting the confusion of this and that. Rank and precedence, which the vulgar prize, the sage stolidly ignores. The revolutions of ten thousand years leave his unity unscathed. The universe itself may pass away, but he will flourish still." [64]

[62] An interesting article has been written by Aubrey Moore, of Oxford, on the philosophy of the first seven chapters of Chuang Tzŭ. In this article, the author calls special attention to the similarity of the teachings expressed in Chuang Tzŭ's chapter on *The Identity of Contraries* and those of Heraclitus. The article is published in H. A. Giles, *Chuang Tzŭ, Mystic, Moralist, and Social Reformer*, pp. xviii–xxviii.

[63] *Id.*, pp. 20, 21.

[64] *Id.*, p. 29.

The above somewhat detailed survey of the metaphysical and ethical teachings of Lao Tzŭ and Chuang Tzŭ has been given for the essential purpose of showing the nature of the teaching wherein Chinese alchemy found its root. Three characteristics may be noted — that the teaching dealt with fundamental principles, that it was highly idealistic in character, and that its manner of presentation was abstract. That these characteristics, singly or in combination, gave rich opportunity for the infusion of extraneous ideas must be obvious. We shall proceed, then, to the consideration of that change of concept in early Taoist teaching which gave rise to the system of Chinese alchemy.

CHAPTER II

THE CHANGING CONCEPT OF EARLY TAOIST TEACHING

Taoism is to-day properly regarded as one of the "three religions of China," viz., Buddhism, Confucianism, and Taoism. Rigid dogma, elaborate ritual, magic practices, a numerous priesthood, and beautiful temples bear testimony to the distinctly religious character of modern Taoism. In view of this, the question naturally arises: Was early Taoism, as expressed in the writings of Lao Tzŭ and Chuang Tzŭ, religious in character? It appears that there is ample reason for answering this question in the negative. In the data at hand, we find no act of Lao Tzŭ's life, and no word of his teaching, which would indicate that he aimed at founding a religious sect — much less, a national religion. He was concerned with the discovery of a fundamental principle, and its action in the universe. To this principle he sought to give expression, but he made no supernatural claims for his philosophy, nor did he attempt to form any organization for its propagation.[1] Chuang Tzŭ, more fluent of speech, and more daring in imagination, greatly elaborated his master's thought, but the inherent spirit remained unchanged.

[1] "The birth and development of Taoism constitute one of the most phenomenal cases in the religious history of mankind. Having its beginning in a philosophy devoid of religion, it ended in a religion devoid of philosophy, devoid of principles, and knowing no more of its founder than his name."— Ch. de Harlez: *Les Religions de la Chine*, pp. 170, 171.

What, then, was the reason for this gradual but elemental change in the concept of early Taoist teaching? What explanation can be given for the gradually decreasing emphasis on the ethical elements, and a corresponding increase of emphasis on those purely speculative and mystical elements which finally resulted in a religion of magic, wonder-working, and superstition?[2]

The annals of Chinese history contain no treatise dealing expressly with this transformation. Nevertheless, a survey of certain essential facts should enable us to gauge the process with a fair degree of accuracy.

In such a survey two facts of primary importance are, the abstract nature of the subject matter of early Taoism, and the vagueness of its presentation. We have seen that these facts were true of the writings of both Lao Tzŭ and Chuang Tzŭ. This twofold circumstance naturally gave rise to radical differences of interpretation among the numerous commentators.[3] But it likewise gave the opportunity for the introduction of certain new and fantastic ideas, seemingly having a basis in certain mystical and obscure passages in the writers' works. While many commentators no doubt gave expression to such ideas in good faith, it seems equally certain that others were not slow to seize upon a golden opportunity for popularizing their own eccentric views. In either case the result would be the same — a complex structure

[2] "Modern religious Taoism is a degenerative product of philosophical Taoism."— W. Grube: *Die Religion der Alten Chinesen*, p. 64.

[3] For a detailed account of the work of Chinese scholarship in this field, see E. Faber: *The Historical Characteristics of Taoism*, in the *China Review* (1885), Vol. XIII, pp. 231–247.

of mystery and magic, built upon a foundation of metaphysical, idealistic thought.

Another fact of significance is that Confucius reigned supreme in the realm of ethics.[4] His system, being concrete and comparatively simple, carried its appeal to the popular mind, whereas the ethical teaching of Lao Tzŭ, couched in vague terms, often paradoxical in form, and dealing largely with abstract principles, was too lofty for the ordinary mind, and in consequence suffered both misunderstanding and neglect. In the field of metaphysical thought, however, Confucius was in no sense a competitor, and Lao Tzŭ reigned without a peer. In this realm, the very abstractness of his thought provided both field and incentive for adventurous minds of widely differing types to engage in weird speculations which were eventually destined to rob Taoism of its original idealism and to degrade it to a mere system of religious wonder-working and magic. A potent factor in this process of degradation was the misunderstanding of Lao Tzŭ's principles by minds of smaller caliber. They interpreted his sayings literally, and sought to make application of idealistic thought to purely mundane matters.

The central theme in the speculations of the followers of Lao Tzŭ and Chuang Tzŭ was naturally the mysterious Tao (道). The influence of the Tao idea may be seen from the fact that from the beginning of the Han (漢) dynasty (206 B.C.), the disciples of

[4] Cf. "While you do not know life, how can you know about death?" — James Legge: *Confucian Analects*, Bk. XI, Chap. 11. Also: "The subjects on which the Master did not talk were — extraordinary things, feats of strength, disorder, and spiritual beings." — *Id.*, Bk. VII, Chap. 20.

Lao Tzŭ were universally known, not by the name of the master, but of the principle which he taught — they were "Tao Shih" (道士)—philosophers of Tao.[5] At the mercy of many minds, however, the master's conception of Tao was soon dissipated, and a supernatural content was ascribed to the term. This was not the result of mere chance but can be traced to a certain phase of Lao Tzŭ's teaching which was peculiarly susceptible to extravagant interpretation.

Lao Tzŭ had enthroned Tao as the central figure and feature of the universe. He had described Tao as the eternal and infinite Principle which produces and maintains all creation, and to which all creation eventually returns.[6] More specifically, Lao Tzŭ maintained that the man whose manner of life and behavior is in conformity with Tao, will attain the attributes of Tao.[7] The spirits of the departed will not harm such a man.[8] The material world can do him no evil. "But I have heard that he who is skillful in managing the life intrusted to him for a time, travels on the land without having to shun rhinoceros or tiger, and enters a host without having to avoid buffcoat or sharp weapon. The rhinoceros finds no place in him into which to thrust its horn, nor the tiger a place in which to fix its claws, nor the weapon a place to admit its point. And for what reason?

[5] Cf. *Tz'u Yüan* (辭源), *Chinese Encyclopædia*, Vol. II, Sec. 4, p. 204. "Tao Shih was the name given to 'the master of Tao' — to such a person as had acquired the Tao in all its perfection, and in consequence wielded power over material things, for they were subject to Tao."—Herbert Mueller: *Das Taoistische Pantheon der Chinesen*, in *Zeitschrift für Ethnologie (1911)*, Vol. XLII, p. 402.

[6] Cf. James Legge: *The Tao Tê King* (道德經) (in *The Texts of Taoism)*, Chaps. 1, 25, and 34.

[7] *Id.*, Chaps. 23 and 28.

[8] *Id.*, Chap. 60.

Because there is in him no place of death." [9] Finally, such a man will live long and is not subject to physical decay. "Possessed of Tao, he endures long; and to the end of his bodily life, is exempt from all danger of decay." [10]

It is natural that features of such far-reaching consequence were destined to attract wide attention, and to become immensely popular. The devotees of Tao were not slow to form their own deductions from this teaching. A new avenue had been opened for wild flights of fancy. Likewise a branch road had been reached which, if followed, would lead the traveler far afield from the regions of primitive Taoist thought.

In the writings of Chuang Tzŭ, however, we may discern a genuine effort to preserve the true meaning and spirit of Lao Tzŭ's teaching, even though, at times, the effort suffers from the workings of a too vivid imagination. In his task of interpretation, Chuang Tzŭ did not neglect this new and fruitful field for speculation. The implication that Tao was the source and secret of immortality received his hearty indorsement, and he elaborated the theme in his customary charming manner of speech. The general tenor of his thought may be seen from the following quotations:

"The six cardinal points, reaching into infinity, are ever included in the Tao. An autumn spikelet, in all its minuteness, must carry Tao within itself. There is nothing on earth which does not rise and fall, but it never perishes altogether." [11]

[9] James Legge: *The Tao Tê King* (道德經) (in *The Texts of Taoism*), Chap. 50.
[10] *Id.*, Chap. 16.
[11] H. A. Giles: *Chuang Tzŭ, Mystic, Moralist, and Social Reformer*, p. 280.

"Unfathomable as the sea, wondrously ending only to begin again, informing all creation without being exhausted, the Tao of the perfect man is spontaneous in its operation." [12]

"Life follows upon death. Death is the beginning of life. . . . If, then, life and death are but consecutive states, what need have I to complain? Therefore, all things are one." [13]

"Man passes through this sublunary life as a white horse passes a crack. Here one moment, gone the next. . . . One modification brings life; then another, and it is death. Living creatures cry out: human beings sorrow. The bow sheath is slipped off; the clothes bag is dropped; and in the confusion the soul wings its flight, and the body follows on the great journey home." [14]

"The essence of perfect Tao is profoundly mysterious; its extent is lost in obscurity. See nothing; hear nothing; let your soul be wrapped in quiet; and your body will begin to take proper form. Let there be absolute repose and absolute purity; do not weary your body nor disturb your vitality — and you will live forever. For if the eye sees nothing, and the ear hears nothing, and the mind thinks nothing, the soul will preserve the body, and the body will live forever." [15]

From the above survey of this particular phase of Taoist teaching, it may readily be seen with what ease and plausibility a content altogether foreign and misleading might be ascribed to Lao Tzŭ's idealistic

[12] James Legge: *The Tao Tê King* (道德經) (in *The Texts of Taoism*), p. 283.
[13] *Id.*, p. 278.
[14] *Id.*, p. 285.
[15] *Id.*, p. 127.

system of thought. The conception of Tao as the agent of immortality, capable of human apprehension and use, was an idea no less inviting than it was revolutionary. The devotees of Tao were neither deaf to the appeal, nor blind to the far-reaching possibilities of this new field of thought. How eagerly they entered, and how far they pursued their diverse journeyings is, in part, a matter of historical record.

On the basis of such statements as above enumerated, the followers of Lao Tzŭ and Chuang Tzŭ constructed their complex system for the attainment of immortality. At this point, however, we must exercise care not to confound the modern Occidental ideas of immortality of the soul with the Taoist idea of immortality. From the Taoist conception of the Oneness of all creation it followed that there could be no clear-cut distinction between spirit and matter.[16] Between soul and body the distinction was one of quality — not of material or kind.[17] The soul—the finer essence of the human organism — did not therefore enter into the Taoist problem of immortality. By virtue of its fine essence it was, "by nature" immortal. Death was simply the separation of the finer — soul — essence from the coarser — physical — essence of the organism. But this separation was undesirable in that it entailed the loss

[16] " ' Man,' says Se Ma Tan, ' is composed of a soul and a body; the soul is that which makes man alive, and the body is the substratum of the soul. Death is the separation of the one from the other.' "— Henri Cordier : *Lao Tseu* in *Annales du Musée Guimet (1911)*, Vol. XXXVI, pp. 31–68.

[17] An interesting study is suggested in the comparison of this conception with Paulsen's theory that psychic or soul-life is universal, extending even to inorganic matter ; that " bodies are phenomena "; and that, in reality, matter is but force in motion. Cf. F. Paulsen : *Introduction to Philosophy* (1906 ed.), pp. 87–111.

of the physical senses — and thus placed distinct limitation upon life. How, then, to safeguard and preserve, not the soul, but the body from death, became the Taoist problem of immortality.

What was the solution at which the followers of Lao Tzŭ and Chuang Tzŭ arrived? Briefly stated, it was this: The body must be brought into complete subjection to, and into complete harmony with, the principles of Tao. Through this process the body would eventually acquire the attributes of Tao, and since Tao is immortal, immortality of the body would be the natural and logical result. Death would not ensue, for after the completed process of acquiring Tao, the physical essence of the human organism would become refined, and might no longer be distinguished from the spiritual essence. Through the agency of Tao, therefore, man might become, truly and completely, an immortal being.

This stage of development in Taoist thought marks a crucial transition period. For in the measure that this new conception of Tao became general, Taoism ceased to be an idealistic philosophy and became a utilitarian religion.[18] How might Tao be attained — became the question of supreme importance. It seems certain that in this question lay the seed thought of Chinese alchemy. A consideration both of the genesis of the question and of the general nature

[18] "During the course of the second century before Christ Taoism disintegrated, and thenceforth assumed a dual development. In the one line of development, the principles of pure idealism were maintained, whereas in the other, Tao as the principle of the highest good and the perfect intelligence, was degraded to the level of wonder-working and magic. Through the instrumentality of Tao, the believer might attain the realization of all mundane desires, not excluding longevity and riches."— E. O. von Lippmann: *Entstehung und Ausbrietung der Alchemie*, p. 454.

of the many answers proposed throughout centuries of speculation, would seem to give ample justification for such a conclusion. From the many and diverse attempts to explain how Tao might be attained, there grew up a complex system of alchemy, which in the course of time developed along two main lines. Considered in the light of the respective aims of each system, they may be classified as the alchemy of prolonging life, and the alchemy of transmuting metals.

CHAPTER III

THE ALCHEMY OF PROLONGING LIFE

The general term used for alchemy in Chinese literature is "*lien tan*" (鍊丹). Its literal meaning is, the pill, or drug, of transmutation. It will readily be seen that this term is merely suggestive — that in it, a single idea is made to represent an entire system of thought. The technical terms with which we have to deal in this study will not admit, therefore, of too narrow or literal interpretation. Thus the term "*nei tan*" (內丹) — literally meaning the esoteric drug — in the process of time outgrew its original meaning and became the designation of that complex and comprehensive process which can best be characterized — with reference to its aim — as the alchemy of prolonging life. In like manner, the term "*wai tan*" (外丹) — the exoteric drug — grew to imply the system known as the "alchemy of transmuting metals."

Prolongation of the physical life — with immortality as the ultimate goal — was the aim of the first phase of alchemy. We have seen that the followers of Lao Tzŭ and Chuang Tzŭ had found in Tao both the source and agency of immortality. Completely to possess one's self of Tao was the sole condition for becoming an immortal. It was but a step to the next implication. Tao was not only an eternal principle — it was the ruling and directive force of the universe.

All creation was subject to Tao. Complete possession of Tao therefore came to imply mastery over the material world. He who possessed Tao had means whereby the laws governing the physical universe might be neutralized and overcome. Thus Lieh Tzŭ was said to have conquered the law of gravity.[1] "Internal and external were blended into Unity. After that, there was no distinction between eye and ear, ear and nose, nose and mouth: all were the same. My mind was frozen, my body in dissolution, my flesh and bones all melted together. I was wholly unconscious of what my body was resting on, or what was under my feet. I was borne this way and that on the wind, like dry chaff, or leaves falling from a tree. In fact, I knew not whether the wind was riding on me or I on the wind."[2] In later Taoism, this idea of mastery over the material world attained great prominence and developed along most fanciful lines.

With the promise of such limitless possibilities for the man possessed of Tao the problem of how to attain it assumed acute importance. The solutions proposed were numerous and of widely differing content, but in the main they may be grouped about two general sets of ideas:

1. A comprehensive regimen of mental and physical discipline.

[1] Lieh Tzŭ (列子) — sometimes known as Lieh Yu K'ou (列禦冠) — was a Taoist philosopher who lived in the fourth century before Christ. Though he is a frequent figure in the writings of Chuang Tzŭ, there is very little authentic knowledge concerning his life. The book ascribed to him probably contains a nucleus of his teaching, but from its abundance of miraculous features, it seems probable that it contains many interpolations from a later age of Taoism.

[2] Lionel Giles: *Taoist Teachings*, p. 42.

2. A regulated and selective diet, in which the consuming of certain articles containing "vital forces" received special stress.

Each of these methods had its stalwart champions, but in general the methods were not considered as being independent or mutually exclusive — rather did they supplement each other. The best results were to be expected from a judicious combination of both processes. Of the two the former seems to have been the more highly regarded.[3]

The main features of the first — disciplinary — method of attaining immortality by means of Tao, may be grouped under three headings: proper breathing, physical gymnastics, and mental training. Brief reflection concerning the supreme importance of each of these practices as factors in the maintenance of physical and mental health will show that in at least one respect the Taoist alchemist was eminently practical — and quite modern. Present-day hygienic science still regards each of these features as an indispensable condition to health.

The art of proper breathing was known to the Chinese by the general term "*lien ch'i*" (鍊氣). Literally translated, the term signifies "transmuting the breath," indicating that the breath was being transmuted into soul substance. For as the soul — the spiritual part of the human organism — was a part

[3] "That the efforts at prolonging life so often proved unsuccessful, was attributed to the fact that people ordinarily concerned themselves the more with the twigs, i. e., life-prolonging medicines, and the less with the trunk of the tree, i. e., the doctrine of Tao."— A. Pfizmaier in *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften*, Vienna (1870), Vol. LXV, p. 311. Various volumes of the publication quoted above contain a number of interesting articles on Chinese culture in general, and Taoism in particular. The articles consist almost entirely of quotations from Chinese works relative to the various themes discussed.

of the great universal soul pervading the atmosphere, so soul substance might be acquired by inhalation.

The basis for this practice was found in the teaching of Lao Tzŭ. In the sixth chapter of the *Tao Tê Ching*, he says: "Feeding the soul so that it does not die is acquisition of the mysterious celestial breath, and the female terrestrial breath. And the openings, the mouth and nose, through which these mysterious and female breaths enter, are the root and base of the celestial and terrestrial influences which exist in man. They ought to be inhaled smoothly and slowly, as if they were to be preserved in the body . . . in using those breaths, no exertion is to be made." [4] Furthermore, in the tenth chapter we find the following: "Nourish and discipline the soul (*p'o*, 魄). Maintain unity (i. e., unity of the soul and spirit.) Thus you can escape dissolution. Give especial attention to the breath (*ch'i*, 氣) until it grows soft (impalpable), and you can become as a little child." [5]

Chuang Tzŭ, true to his custom, elaborated the idea, and painted a realistic word picture of the process: "Blowing and gasping, sighing and breathing, expelling the old breath and taking in new: passing time like the dormant bear, and stretching and twisting the neck like a bird — all this merely shows the desire for longevity. This is what doctors who inhale, and the men who nourish their bodies, in order to live as long as P'eng Tsu (彭祖), [6] are fond of doing." [7]

[4] Translation by De Groot, in De Groot: *Religion in China*, p. 156.

[5] Translation by E. T. Williams, in Williams: *China Yesterday and Today*, p. 322.

[6] P'eng Tsu was the Chinese Methuselah. He lived during the second millennium before Christ and is said to have attained an age of eight hundred years.

[7] Translation by De Groot: *Op. cit.*, p. 157.

Various other Taoist writers have extolled the virtues of the art of proper breathing. Liu An (劉安) (d. 122 B.C.) declared that "he who consumes the atmosphere becomes spiritual and attains extreme old age."[8] He also spoke of the regions of the extreme West "where there are rock cities and gold dwellings, and where human beings and wild animals 'drink the atmosphere' and do not die."[9]

The large variety of terms used by the Chinese writers — in describing various phases of this process, indicates alike the wide prevalence of the practice, and the diverse methods of performance. Herewith a translation of the more important terms — to inhale, to discipline the breath, to refine the breath, to use the breath frugally, to hoard up the breath, to swallow the breath, to feed the soul, to foster longevity, to nourish life, and to nurture human nature. Two features of the process seem to have been regarded as of particular importance:

1. Deep breathing.

"The pure men of old slept without dreams, and waked without anxiety. They ate without discrimination, breathing deep breaths. For pure men draw breath from their uttermost depths, literally, 'from their heels,' the vulgar only from their throats."[10]

2. Holding the breath.

"In beginning to learn the proper use of the breath, one should inhale a breath through the nose, stop up the nose and mentally count one's heart beats.

[8] *Huai Nan Tzŭ* (淮南子), Chap. III.
[9] *Ibid.*
[10] H. A. Giles: *Chuang Tzŭ, Mystic, Moralist, and Social Reformer*, p. 69.

When one has counted one hundred and twenty heart beats, the breath should be exhaled through the mouth. In this method of breathing, every one should make it his aim that his own ears might not hear the sound of either inhalation or exhalation. The rule is to inhale generously and exhale sparingly. One should suspend the feather of a wild goose in front of the nose and mouth. That the feather might not stir while the breath is being expelled, should be one's aim. With gradual practice, one should increase correspondingly the count of heart beats during which the breath is held. After a very long period of time, one should be able to count a thousand heart beats. When an old man has arrived at that stage, then he will be transformed into a young man — each day adding to the transformation." [11]

A system of physical exercises as a means of attaining Tao, seems at first thought strange and contradictory, in view of the emphasis which Lao Tzŭ placed on the principle of nonaction. Several considerations, however, must be kept in mind.

In common with certain other developments of Taoist teaching, this system doubtless originated at a date subsequent to the dominance of Lao Tzŭ's personal influence, and to the distinctly literal interpretation of his teaching. But even with Lao Tzŭ, action — per se — was not necessarily an evil. "Before a thing has given indications of its presence, it is easy to take measures against it. . . . Action should be taken before a thing has made its

[11] Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. VIII. The author of this work was Ko Hung (葛洪), who published his work under the pseudonym Pao Pu Tzŭ (抱朴子). He lived during the fourth century of this era. His work deals with elixirs of life, transmutation of metals, immortals, ascetic rules, etc. The work, as a whole, has not been translated into English.

appearance." [12] Only when it was contrary to the principles of Tao — when it resulted in disturbing the harmony and oneness of creation — did action become evil. A more practical argument was, no doubt, the common observation that physical exercise, properly regulated, was greatly conducive to health and longevity. Furthermore, the quiet restful periods of lassitude and sleep which followed indulgence in physical exercise would ideally exemplify those qualities of inaction and indifference which were characteristic of Tao.

Thus the Taoist writer Lü Pu-wei (呂不韋) (d. 237 B.C.) advocated physical exercise as a health measure, because of its aid in acquiring the "vital breath." [13] "Vital breath is not collected or condensed in the body unless it enters it. . . . Collected in the holy man, it forms his far-reaching intelligence. . . . But it is motion that prevents streaming water from putrefying, door pivots from being attacked by insects. Thus it is with the body and its breath. If the body is motionless, the vital spirits do not stream through it, and if they do not do so, the breath is depressed. This depression may settle in the head, and cause a headache and boils; it may settle in the ears and cause bad hearing and deafness; in the eyes, and cause dimness and blindness; or in the nose, and produce catarrhal obstruction. Settling in the belly, it may cause tension and constipation; settling in the feet it may be the cause of lameness and

[12] James Legge: *The Tao Tê King* (道德經), Chap. LXIV.

[13] This form of exercise was usually taken in a sitting posture, as indicated in the descriptive term "*tso kung*" (坐功) which means, literally, "working while sitting."

weakness. . . . If the vital breath is renewed every day, and the bad breath entirely leaves the body, then man may reach the age of Heaven itself. Such a man is a saint." [14]

This idea is further developed by the famous physician Hua T'o (華佗).[15] "The human body needs work, but it must not work to its utmost capacity. When it is in motion, the food is digested, and the blood circulates through the arteries in all directions, so that no disease can rise. Hence it is that the immortals of ancient days, while performing the inhalation process, and passing their time as dormant bears, looking round about like owls, twitched and stretched their loins and limbs, and moved their navel gates and their joints in order to hinder the advance of age. I have an art, called the sport of five animals, namely, a tiger, a stag, a bear, a monkey, and a bird — by which illness can be cured, and which is good for the movements of the feet, when they accompany the process of inhalation. Whenever you feel unwell, stand up and imitate the movements of one of these animals: when you feel more comfortable and in a perspiration, put rice powder over your body, and you will feel quite nimble and well, and have appetite." [16]

As with the art of breathing, so the idea of acquiring Tao — and resultant immortality — through a

[14] Translation by De Groot, in De Groot: *Religion in China*, pp. 159, 160.

[15] Hua T'o was the Æsculapius of China. He lived during the latter half of the second and the first quarter of the third century of this era. His fame was based on his wonderful skill in surgery. He was well versed in the Taoist doctrines. So thoroughly — it is said — did he understand the art of "nurturing human nature," that when nearly a hundred years old, he had the "complexion of a man in the prime of life."

[16] Translation by De Groot: *Op. cit.*, pp. 164, 165.

course of mental training, was attributed to Lao Tzŭ through the *Tao Tê Ching*. This training, however, must be disassociated from all ideas of knowledge or learning. Lao Tzŭ had placed great stress upon a state of mental abstraction. "The state of vacancy should be brought to the utmost degree, and that of stillness guarded with unwearying vigor." [17] The seeker of immortality should adopt an attitude of complete indifference toward the phenomena of the physical world—he would then be immune to physical desires and needs. "Among the arts of the alchemist is that of preparing an elixir which may be used as a substitute for food. . . . Yet the ability to enjoy abundance or endure hunger comes not from the elixir, but from the fixed purpose of him who uses it. When a man has arrived at such a state of progress that to have and not to have are the same; when life and death are one; when feeling is in harmony with nature, and the inner and the outer worlds are united — then he can escape the thralldom of matter, and leave sun, moon, and stars behind his back. To him it will then be of no consequence whether he eat a hundred times a day, or only once in a hundred days." [18]

Chuang Tzŭ advocated a state of mental passivity or repose. "In tranquillity, in stillness, in the unconditioned, in inaction, we find the levels of the universe, the very constitution of Tao. . . . The sage is a negative quantity and is consequently in a state of passivity. Being passive, he is in a state

[17] James Legge: *The Tao Tê King* (道德經), Chap. XVI.
[18] Quoted by W. A. P. Martin, in *The Lore of Cathay*, p. 62, from Tan Tzŭ (譚子), a Chinese alchemist of uncertain date.

of repose. And where passivity and repose are, there sorrow and anxiety do not enter, and foul influences do not collect. And thus his virtue is complete and his spirituality unimpaired."[19]

In the method of attaining immortality by means of a regulated and selective diet, we find a combination of the practical and the superstitious. Making due allowance for notable exceptions, we may say that these features find respective illustration in the two main divisions into which the system naturally separates:

1. The proper use of food.
2. The use as medicine of certain substances containing vitalizing qualities.

The comparative meagerness of attention given to the former feature and the wealth of speculation concerning the latter, is indicative of the dominance of credulity and superstition in this phase of Taoistic thought. Nevertheless, there were certain general ideas concerning the use of food which received frequent emphasis as factors in the quest for immortality, and which commend themselves — in part — to the modern, more practical quest for longevity.

In the first place, a frugal diet was recommended. "One should not desire to eat too much," was the pertinent advice of Pao Pu Tzŭ.[20] Too frequent and generous indulgence in food tended to augment the coarser — physical — essence of the human organism, at the expense of the finer — soul — essence. For this reason, not only was abstemiousness in food

[19] H. A. Giles: *Chuang Tzŭ, Mystic, Moralist, and Social Reformer*, pp. 191, 192.

[20] Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. VIII.

recommended in general, but the practice of fasting was considered of particular potency as a means of refining the human essence. In the biographies of the immortals, instances are recorded of a number who, through abstinence and fasting, succeeded in liberating themselves entirely from the needs of alimentation.[21] This process, however, was generally accompanied by strenuous observance of the breathing exercises and the physical gymnastics which we have briefly described above.

Certain foods were considered injurious. In Taoist literature the phrase "*p'i ku*" (辟穀) occurs with great frequency. Literally translated it means "to abstain from grains."[22] Abstaining from grains seems to have been fraught with direct results. "To abstain from the use of food made from the five grains, was a method of seeking immortality. Taoist books affirm that the immortals employed the method with the following results. Through abstaining from the grains, they became liberated from physical properties, and through this liberation they became unblemished and were thus enabled to attain Tao."[23] Both Lieh Tzŭ (列子) and Chuang Tzŭ (莊子), in speaking of the inhabitants of the "Isles of the Immortals," (蓬萊方丈瀛洲) make mention of the following characteristic feature:[24] "They do not eat the five grains, but inhale air and drink dew."[25] From this it would

[21] Cf. *Shên Hsien Ch'uan* (神仙傳) *(Biographical Records of the Immortals).*

[22] Reference is made to the historic "five grains" of China, viz., hemp, millet, corn, rice, and pulse.

[23] *Tz'u Yüan* (辭源) *(Chinese Encyclopœdia)*, Vol. II, Sec. 4, p. 167.

[24] The "Isles of the Immortals" were three islands of early Chinese tradition, said to be inhabited by immortal beings. Of the part these islands played in Chinese history we shall speak in another connection.

[25] *Lieh Tzŭ* (列子), Chap. II, Sec. 2, also *Chuang Tzŭ* (莊子), Chap. I, Sec. 4.

appear that a single dietary regimen pertained both to the seeker of immortality and to him who had already attained. As the state of immortality might be attained through adherence to certain rules and regulations, so, too, it might be lost through relaxation or neglect in their performance. This is given varied illustration in numerous recorded instances of immortals who, through yielding to the allurements of eating the five grains, gradually deteriorated into mortal beings, and eventually died.[26] Various other articles of food were considered unsuitable — very likely because of their lack of digestive qualities. "As regards raw vegetables, fat, and unsalted foodstuffs — their eating makes the human breath vigorous." [27]

In harmony with the idea that abstinence from certain foods was a necessary factor in the attaining and retaining of immortality, was the conception that "plain food" was both a proper and a pleasing ingredient in the diet of the immortals. "Now if Your Majesty were to erect an observatory as high as the ramparts of Hou Shih (緱氏), and were to place there some plain food . . . the immortals might perhaps be called forth." [28] Unfortunately, we are not given detailed information as to what was comprised

[26] Cf. Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. VII.

[27] *Id.*, Chap. VIII. That common-sense rules of hygiene were incorporated in the teaching of many Taoist devotees, is evident from the following quotation from *Po Wu Chi* (博物記) by Chang Hua (張華) (third century of this era): "Huang-fu Lung (皇甫隆) met a Taoist scholar by the name of Fung Chün Ta (封君達) riding on a gray buffalo. The scholar made known to him the following rules concerning 'nourishing the spirit.' 'If you desire to keep your body youthful forever, do not work beyond the limits of your strength. Do not eat fat or rich food; use salt and spices with moderation. Abstain from worry, curtail pleasure and wrath, dismiss hurry and bustle. See that your house is well drained, and that it is well prepared to withstand the cold of fall and winter.'"

[28] Ssŭ-ma Ch'ien: *Shih Chi* (記史) *(Historical Records)*, Chap. XXVII.

in the term "plain food," but the term itself is suggestive.

One species of food is specifically mentioned, however, as being directly contributory to old age and immortality. It is the fruit of the "Isles of the Immortals." "The vegetation is miraculous, the flowers are sweet-scented, and if the fruits of these islands are eaten, they will preserve the eater from old age and death." [29] Here again we are left in the dark as regards details, though it is possible that the fruit may be identified with the far-famed peaches of Hsi Wang Mu (西王母).[30] In that case, however, the fruit of these islands no doubt belongs in the category of the medicines, rather than of the food, of the immortals.

Finally, mention should be made of a certain mysterious wine which may, perhaps, be regarded as a liquid food. "There is also a jade rock on Ying Chou (瀛洲) island about ten thousand feet in height, from which issues a spring, resembling wine of a sweet taste. It is called 'Jade-Wine Spring.' If one drink several pints of this wine one will immediately become intoxicated. It confers immortality to human beings." [31]

[29] *Lieh Tzŭ* (列子), Chap. V, Sec. 2.

[30] Hsi Wang Mu was the famous queen of the immortals living at K'un Lun (崑崙), an island Paradise of the mysterious West. It was said that in her garden grew peaches of marvelous size and miraculous in their capacity for conferring immortality on the eater. An interesting account of Hsi Wang Mu is contained in *Shên Hsien Ch'uan* (神仙傳) *(Biographical Records of the Immortals)*, Vol. VII.

[31] *Hai Nei Shih Chou Chi* (海內十洲記) *(Island Records)*, Chap. II. A comprehensive treatise on *The Fountain of Youth*, by E. W. Hopkins, is found in the *Journal of the American Oriental Society* (1905), Vol. XXVI, pp. 1–67. It deals with the various legends of the Fountain of Youth in different lands. However, the above quotation shows that the author is manifestly at fault — at least so far as China is concerned — in asserting (p. 28) that "China and Japan had fruits and isles of youth (Lieh Tsŭ, *ca.* 400 B.C.), but no Fount of Youth." The "Isles of Youth" of Lieh Tsŭ (列子) are the "Isles of the Immortals," one of which contained the "Jade-Wine Spring."

The above-mentioned notices, scattered and fragmentary, nevertheless bear testimony to the fact that the proper use of food was regarded as an important factor in the process of attaining immortality.

The conception that certain substances were animated by a vital spirit was older than Taoism. How did this conception of certain substances containing vitalizing qualities originate ?

We have seen — in the discussion of Lao Tzŭ's metaphysical inheritance — that from a very early date, the universe was regarded as animated by a cosmic soul, composed of the Yin (陰) and Yang (陽) elements. It was a characteristic of this cosmic soul to divide itself infinitely and, by process of infusion, to impart individual animation to all beings and things. For some unexplained reason, the relative proportion of Yin and Yang elements was not stable in the various classes of objects — but differed radically. The undisputed proof of this hypothesis was the fact that certain substances, if eaten, had an invigorating and strengthening effect upon the eater, while others had an opposite effect. Substances of the former order were naturally looked upon as having a relatively large proportion of the masculine, life-giving Yang element in their soul composition, while those of the latter order were regarded as animated by soul material wherein the Yin element predominated. Thus arose the concept of vitalized substances.

A careful survey of Lao Tzŭ's teaching will show that he himself was unimpressed by the above phase of metaphysical thought. After his day, however, with the neglect of his purely ethical teaching, his followers were not slow to engraft these fantastic

metaphysical ideas upon the Taoist system of thought. The transplanting of ideas was comparatively simple. To the Taoist, the Yang element of the cosmic soul became the Tao (道). Certain substances were therefore more highly infused with Tao than others. Since the human soul was a part of the cosmic soul, it followed that if man might discover and consume such substances as were highly infused with Tao, the spiritual essence of his organism would be invigorated, and the physical essence refined. By continued and proper use of Tao-infused substances, man might continue the process of invigorating the soul and refining the body indefinitely — and thus live forever. By the same token, Tao-infused substances might be administered to the sick, with returning vigor and health as the natural result. We find thus that the arts of attaining immortality and of curing disease naturally coalesced in Taoist thought and practice.

In this connection it should be clearly understood that comparatively few substances were considered to be so highly infused with Tao as to insure immortality. But there was a vast variety of less powerfully infused substances which were highly valued because of their potency in the prolongation of life. We find, therefore, in Taoist writings, an almost endless category of vitalized, or Tao-infused substances, whose efficacy was directly proportionate to the percentage of Tao contained in each. Those containing the highest percentage were naturally the ones productive of immortality — with the complete freedom from physical laws which that term implies. The substances of lesser potency were nevertheless highly regarded as productive of longevity and partial freedom from

physical laws. Instances might be indefinitely multiplied of persons who, by virtue of substances of lesser vitalizing potency, lived from two hundred to forty thousand years, attained youthful complexion and virile power in old age, walked on water, entered fire without being burned, flew through the air, made themselves invisible at will, and performed innumerable other exploits of a similar nature.[32]

Both the mineral, vegetable, and animal kingdoms furnished specimens of vitalized substances. A list of all such substances would be formidable in length. They were sometimes used singly and at other times in combination. When used in combination, the preparations were variously designated as "*ling yo*" (靈藥) — drugs containing magical power, "*shên yo*" (神藥) — drugs containing the Yang element (Tao), and "*hsien yo*" (仙藥) — drugs used by the immortals. There is no apparent rule for the strict classification of the various preparations according to the terms given above. They seem to have been used synonomously. As to the general effect of these preparations, we are told that the "superior grade of medicine causes the human body to be at peace, protracts its life, enables it to ascend and become a celestial spirit, to saunter about above and below, causing all spirits to serve it."[33]

Limitations of space preclude an exhaustive survey of vitalized substances entering into the knowledge and practice of the Taoist alchemist. For the purposes of this study we shall select a few specimens generally acknowledged as of outstanding importance,

[32] *Ch'in Ting Ku Chin T'u Shu Chi Ch'êng* (欽定古今圖書集成) *(The Chinese Imperial Encyclopædia)* devotes forty-one volumes to this general topic. Cf. Sec. XVIII, vols. 229–270.

[33] Pao Pu Tzŭ : *Nei P'ien* (抱朴子內篇), Chap. II.

and shall indicate, also, various ways in which they were regarded as beneficial to the seeker of immortality.

In the mineral kingdom, cinnabar, gold, silver, and jade enjoyed the highest repute as vitalized substances. "The medicine of the immortals, of the highest rank is cinnabar, next is gold, next is silver, next are the various species of the '*chih*' (芝), and next are the five species of jade."[34] Cinnabar and gold were considered as medicines *par excellence*, and were frequently used in combination with excellent results in the attainment of immortality.[35] Preparations in which silver was the chief ingredient had only a limited degree of efficacy in producing immortality.[36] Jade might be taken in either liquid or powdered form, as a means to becoming immortal — but it frequently brought on fever.[37] Cinnabar was also a favorite ingredient in life-prolonging concoctions, by virtue of its producing mercury, the "living metal," when subjected to heat. The list of less potent remedies that nevertheless were accredited with possessing distinct virtues might be continued indefinitely, by quotation from numerous Taoist writers.

In the vegetable kingdom we shall make mention of three specimens of vitalized substances: the "*chih*" (芝) plant, the pine tree, and the peach. The "*chih*"

[34] Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. II.

[35] The "Eight Immortals" of Taoist fame were reported to have attained immortality through partaking of some such preparation.

[36] Cf. Pao Pu Tzŭ: *Op. cit.*

[37] Cf. Pao Pu Tzŭ: *Op. cit.* In this connection attention should be called to the ancient Chinese funeral custom of burying jade amulets with the corpse, for the purpose of preserving the body from decay. For detailed accounts of this custom, see De Groot: *The Religious System of China*, Vol. I, pp. 271–273; Vol. II, pp. 395–401, and B. Laufer: *Jade*, pp. 294–305.

plant took highest rank.[38] In Chinese literature this plant is variously referred to as the "felicitous plant," the "divine herb" and the "plant of immortality." It is frequently reported as growing "on high mountains and in deep valleys," and "in steep and dangerous places." Its great reputation was probably derived from the tradition that its habitat was the "Isles of the Immortals," that the immortals cultivated it, and through its use continued to enjoy immortality.[39]

Three products of the pine tree were ascribed to be of pronounced virtue: resin, leaves, and root. The resin, "if refined and eaten," would prolong life indefinitely. Eating the leaves according to a certain regimen, and for a long period of time, would insure immunity from heat, cold, hunger, thirst, and death. The roots, "if eaten for a long time . . . will cause man not to feel the sensations of hunger, and will lengthen his life." [40]

Tradition ascribes the source of ordinary peaches to the miraculous peaches in the garden of Hsi Wang Mu (西王母), the queen of the Western immortals. This circumstance is no doubt largely responsible for the reputation of the peach as an agent of immortality. The peach was considered "conducive to the prolongation of life." As evidence, instances are recorded of immortals who subsisted for several decades on

[38] The "*chih*" (芝) plant has been identified by Matsumura as *Sesamum idicum*. Cf. J. Matsumura, *Chinese Names of Plants*, p. 335. Brief accounts of the "*chih*" plant are given in E. Bretschneider: *Botanicon Sinicum*, Vol. II, pp. 40, 41, and Vol. III, pp. 418, 419.

[39] Cf. *Hai Nei Shih Chou Chi* (海內十洲記) *(Island Records)*, Chap. II.

[40] *Pen Ts'ao Kang Mu* (本草綱目) *(Chinese Materia Medica)*, Chap. XXXVII.

peaches alone, and of mortal beings who attained immortality through eating peach resin.[41]

Animals of all kinds have, from times immemorial, been used by the Chinese as food, but the question of Chinese belief with regard to the medicinal value of animal products is vast and complicated — and deserving of further study.[42] Certain animals, however, were clearly regarded as possessing life-prolonging qualities. We shall mention three: the crane, the common house fowl, and the tortoise. The crane is a favorite emblem of immortality among the Chinese. Its reputed longevity was considered to be the best evidence of its infinite vitality. The eggs of the crane were important ingredients in a number of prescriptions for the prolongation of life. A pint of a certain concoction, in which crane's eggs formed the chief ingredient, was reputed to lengthen the life of him who drank it, by a thousand years.[43]

The blood and the eggs of the house fowl had peculiar virtues. "Use blood from the crest of cocks three years old, and you shall then be supplied with an abundance of the Yang essence." [44] There is record of an ancient custom among the Chinese to the effect that on New Year's Day they swallowed a hen's egg, for the purpose of obtaining a year's supply of vitalizing substance.[45]

As with the crane, so with the tortoise — longevity was considered proof of inherent vital power. Tortoise

[41] Cf. *Shên Hsien Ch'uan* (神仙傳) *(Biographical Records of the Immortals)*, Chap. X.

[42] A detailed discussion of this subject may be found in De Groot: *The Religious System of China*, Vol. IV, Chap. 14.

[43] Cf. Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. IV.

[44] *Pen Ts'ao Kang Mu* (本草綱目) *(Chinese Materia Medica)*, Chap. XLVIII.

[45] Cf. De Groot: *Op. cit.*, Vol. IV, p. 361.

soup was deemed highly invigorating. It "restored corpulency," and increased the Yang essence in the human organism.[46] The carapace of the tortoise was an agent of longevity. A certain concoction in which the carapace of a thousand-year-old tortoise was the principal ingredient, would, when entirely consumed, "confer a thousand years of longevity." [47]

The recipes for the preparation of these concoctions were generally weird and complicated, and not infrequently contradictory. This is not surprising when one remembers that the system never outgrew its experimental stage, that it was not amenable to scientific rules, and that many minds of various caliber were given free reign in the boundless field of Chinese alchemy. The following recipes are typical and may serve to illustrate the peculiarities in general:

"Peach resin, steeped in the secretion of mulberry ashes, if eaten, will cure all kinds of diseases. If eaten for a long period of time, one's body will become bouyant and luminous. On a dark night it will appear like the moon. If much of it is eaten, one will be able to cease from eating the five grains." [48]

"Cinnamon should be mixed with onion extract and steamed until it liquefies. It may be eaten with bamboo sap. It may also be mixed with the brains of an 'honorable prophet' — some call it a tortoise — and eaten. If this is eaten for a period of seven years, one will be able to walk on water, life will be lengthened, and one will not die." [49]

[46] Cf. *Pen Ts'ao Kang Mu* (本草綱目) *(Chinese Materia Medica)*, Chap. XLV.
[47] Cf. Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. XI.
[48] *Id.*, Chap. VII.
[49] *Ibid.*

"Take three pounds of genuine cinnabar, and one pound of white honey. Mix them. Dry the mixture in the sun. Then roast it over a fire until it can be shaped into pills. Take ten pills the size of a hemp seed every morning. Inside of a year, white hair will turn black, decayed teeth will grow again, and the body will become sleek and glistening. If an old man takes this medicine for a long period of time, he will develop into a young man. The one who takes it constantly will enjoy eternal life, and will not die." [50]

The rules for the taking of medicines were generally far less fantastic than the rules for concocting them, and seem, in many cases, to be based on genuinely practical considerations. The following quotation may serve as an illustration in point: "Some one asked: 'In taking medicine, is it proper to take it before or after meals?' Pao Pu Tzŭ replied: 'According to the rules of Chung Huang Tzŭ (中黃子), medicine for curing disease should be taken before meals, but medicine for nourishing one's nature should be taken after meals. I have consulted with Chêng Chün (鄭君) as to what might be the explanation. Chêng Chün said that this was easy to comprehend. If one desires to use the medicine for combating disease, it is proper to take it before eating, when the stomach is empty, so that the energizing medicine may easily circulate about. For if the medicine is taken after eating, it follows that it will solely occupy itself with the food — and thus its strength will be spent. But if, with the desire to nourish one's nature, the medicine is taken before eating, if follows that before the force

[50] Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. VII.

of the medicine has been distributed, it will be continually suppressed by the food — and thus no benefit will accrue.' " [51]

In any survey of life-prolonging substances, it is essential to take into consideration that obscure but widely heralded concoction known as the " Elixir of Immortality." Considered in connection with the search for the philosophers' stone — to be used as the agent both of the transmutation of metals and the prolongation of life — no other pursuit has so thoroughly engrossed the attention of Taoist alchemists — ancient and modern — as that of the discovery of this elixir. In Taoist writings subsequent to the Christian era, the theme was a frequently recurring one. The elixir was variously known as the " *nei tan*" (內 丹) — the esoteric drug, " *hsien tan* " (仙 丹) — the drug of the immortals, and " *shên tan* " (神 丹) — the divine drug (containing Tao). This drug was accredited with the very highest efficacy in translating him who might partake of it, into the realm of the immortals. Unfortunately we are given but the vaguest information as to its composition. In one account it is spoken of as the " elixir of the eight precious things," but no indication is given as to the proper proportion of the various ingredients, or as to the manner of concoction. " The elixir of the eight precious things is so called because it contains cinnabar, orpiment, realgar, sulphur, saltpeter, ammonia, emptygreen (an ore of cobalt), and mother-of-clouds (a kind of mica)." [52]

[51] Pao Pu Tzŭ : *Nei P'ien* (抱朴子內篇), Chap. VII.

[52] Quoted by W. A. P. Martin, in *The Lore of Cathay*, p. 64, from a Chinese account called *Ko Chih Ching Yüan* (格致鏡原) *(Mirror of Scientific Discovery).*

The process of obtaining the elixir was difficult and obscure. "You may make search for the golden elixir, but it is not easy to obtain. The sun, moon and stars must seven times complete their circuits, and the four seasons must nine times return. You must wash it until it becomes white, and beat it until it becomes red — then you will have an elixir that will endow you with ten thousand eons of longevity." [53]

It appears that for the attainment of the secret of the elixir, as well as for its practical use, the observance of certain physical austerities, and of moral discipline, was necessary. "The 'yellow and white arts' (the arts of compounding gold and silver) have features in common with the art of compounding the '*shên tan*' (神丹) — the divine drug. In either case, he who plans to practice these arts should abstain from eating meat, and should cultivate pure thoughts for at least a year. He should also have the leisure to study and expound the books of magic. He will then be able to compound the desired preparations. The vulgar and debased cannot practice this art, neither can such as have not understanding." [54] Is it not probable that the reputed art of compounding the elixir was purposely garbed in mystical thought and obscure language, in order to insure its being kept inviolate from the "vulgar and debased," and from "such as have not understanding"?

It remains to consider, briefly, the far-famed "Isles of the Immortals," and the part they played in the quest for personal immortality. The great historian,

[53] Quoted by H. Hermann, in *Chinesische Geschichte*, p. 81, from works of Lü Yen (呂嵒) (eighth century of this era).

[54] Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. VIII.

Ssŭ-ma Ch'ien (司馬遷), has given us a description of the islands in the following terms. "It is reported that in the midst of the Eastern Sea, there are three supernatural islands.[55] Their names are P'eng Lai (蓬萊), Fang Chang (方丈), and Ying Chou (瀛洲). . . . They are not far removed from human beings, but unfortunately, at the very time when one is on the point of arriving at the islands, one's boat is blown back by the wind and one finds one's self at a distance. In ancient times — to tell the truth — there were people who succeeded in reaching the islands. It is there that the immortals may be found, and the drug which prevents death. There, all beings — even birds and quadrupeds — are white. The palaces are made of gold and silver. People have not succeeded in reaching the islands a second time. They see the islands from a distance, like a cloud, but when they approach, the islands are submerged in the water, and when they come quite near, the wind suddenly forces their boat into the open sea. In short, no one has been able to land." [56]

The great emperor, Shih Huang Ti (始皇帝) (249–210 B.C.), who established a new dynasty, built the Great Wall, and burned the Confucian classics, was fascinated with the reports of these islands, and became particularly interested in the "drug which prevents death." Under the influence of two celebrated magicians, Lu Shêng (盧生) and Hsü Shê (徐市), he was

[55] From time to time the theory has been advanced that these mysterious islands were in reality the islands of Japan. It is said that certain records from ancient Japanese history support this theory. For discussions of this topic, cf. E. Chavannes: *Les Mémoires historiques de Se Ma Ts'ien*, Vol. II, pp. 152, 153, and *T'oung Pao* (通報) (1895), Vol. VI, pp. 9, 10.

[56] Ssŭ-ma Ch'ien: *Shih Chi* (史記) *(Historical Records)*, Chap. VI.

persuaded to dispatch an elaborate naval expedition in search of the islands. "Hsü Shê and his companions tendered the following request: 'We make supplication that we be permitted — after we have purified ourselves — to depart with a company of youths and maidens, to seek these islands.' . . . The emperor was well pleased. He gave to Hsü Shê seeds of the five grains and dispatched him upon his voyage with three thousand young men and women, and laborers for all kinds of work. Hsü Shê sailed away, and discovered a locality noted for its peace and fertility. There he tarried, was make king, and did not return." [57]

The failure of the expedition to return in due time with the coveted drug did not extinguish the emperor's hope, nor dampen his ardor. He is represented as periodically haunting China's eastern seashore and restlessly seeking, to the end of his days, some means whereby he might come into touch with the immortals, and into possession of their wonderful elixir. "When the emperor had reunited the empire, he set his face toward the seashore. At that time, magicians in numbers too numerous to be estimated gave expression to their views concerning the immortal islands. The emperor feared that were he himself to make trial of the sea, he might not succeed. . . . The following year, he returned to make his pilgrimages along the seashore. Three years later he betook himself to Chieh Shih (碣石) and made a series of inquiries among the magicians who navigate the sea. . . . Five years later he journeyed southward

[57] Ssŭ-ma Ch'ien: *Shih Chi* (史記) *(Historical Records)*, Chap. VI.

and made ascent of the lofty Huai Chi (會稽) Mountain. It was his custom to promenade up and down the seashore, in the hope that he might in some manner obtain the wonder-working drug of the three sacred islands in the midst of the sea — but he never obtained it. He returned to Sha Ch'iu (沙丘) — and there he died." [58]

Thus ends, in tragic disappointment and failure, the first organized attempt in Chinese history to secure possession of the elixir of life.

[58] Ssŭ-ma Ch'ien : *Shih Chi* (史記) *(Historical Records)*, Chap. VI.

CHAPTER IV

THE ALCHEMY OF TRANSMUTING METALS

As the first phase of Chinese alchemy relates to the acquisition of a life indefinitely prolonged, so its second phase is concerned with the means whereby life may be made comfortable. This will become the more apparent when we consider its specific aim. While its aim in general was the transmutation of base metals into those of high value, its aim in particular was the manufacture of gold. For gold was then, as now, the synonym for riches, and its possession was a sufficient guarantee for a life of comfort and ease.

What were the motives which prompted the pioneers of Chinese alchemy to attempt the solution of the problem of transmutation? The devotees who busied themselves with this problem may be divided into three main groups, generally illustrative of the various motives at work.

In the first place, there were the seekers of knowledge. They were the sincere followers of Lao Tzŭ (老子), and, as such, they had a genuine and unselfish interest in his teaching. To them the question of the transmutation of metals presented the challenge of the unknown. The motive which prompted their researches was of an intellectual character — they made efforts to solve a great, mysterious problem. In a more modern age they would have been classed

as "men of scientific minds."[1] The alchemists of this order were largely recluses or anchorites, pursuing their researches in the solitude of the mountains.[2] Unfortunately they were always in the minority and as the teaching of Lao Tzŭ gradually lost its idealistic content, their numbers correspondingly decreased.

In the second place there were the seekers of favor — the alchemists who frequented the imperial courts. The motive in their case was personal glory and honor, for in case of the success of their efforts, their names would become imperishable by reason of their connection with the imperial throne. There is evidence that alchemists and magicians of this sort were both numerous and persuasive.[3]

Finally there were the seekers of riches. The motive which actuated this class was the popular longing for wealth. For, whether life was considered as endless, or as only of normal duration, the possession of material means marked the difference between affluence and want. The desire for gold, then, being a universal phenomenon, it is reasonable to believe

[1] In seeking to evaluate the work of this class of alchemists, it is well to remember the words of Liebig with reference to a later age: "Among the alchemists there was always to be found a nucleus of genuine philosophers, who often deceived themselves in their theoretical views. . . . All our views have been developed from errors, and that which to-day we regard as truth in chemistry may, perhaps before to-morrow, be recognized as a fallacy. . . . Alchemy was never at any time anything different from chemistry." — J. von Liebig: *Familiar Letters on Chemistry*, pp. 53, 54.

[2] Cf. Wilhelm Grube: *Religion und Kultus der Chinesen*, p. 90.

[3] The courts of Shih Huang Ti (始皇帝) (249–210 B.C.) and Wu Ti (武帝) (140–86 B.C.) were thronged with representatives of this character. Among those at the court of Wu Ti was a certain alchemist, Li Shao-chün (李少君), of whom it is reported that "he constantly affirmed that he was seventy years of age, that he was able to rule over spiritual matters, and that he could escape old age. . . . He traveled about in order that reports of his prowess might reach the ears of nobility. . . . He excelled in showing himself shrewd, and in saying things, at the same time astounding and accurate." Cf. Ssŭ-ma Ch'ien: *Shih Chi* (史記) *(Historical Records)*, Chap. XXVII.

that, apart from the matter of personal avarice, popular demand was a most potent incentive in the search for gold through the process of transmutation.

From such considerations it is evident that the distinctive purpose of the transmutation of metals was the acquisition of riches. There is evidence, however, of a second purpose, which was more limited in its scope, and of uncertain influence. It was the securing of ingredients for medicines of a life-prolonging nature. Gold, silver, jade, and other precious metals no doubt existed in their natural state, in sufficient quantities to meet the needs of compounding life-prolonging medicines. Moreover, there is abundant evidence that they were thus used.[4] But they were not always at the command of the poverty-stricken Taoist. "'Why not use native gold and silver of the earth to make these preparations?' . . . Cheng Chun (鄭君) replied: 'Native gold and silver are both excellent. But the professors of Tao (道) are all, without exception, poor. There is a proverb to the effect that no saintly man is corpulent, and no professor of Tao is rich. Perhaps the master and disciples are ten in number, perhaps five. Yet how shall gold and silver be obtained for them? They cannot travel afar to find these commodities for themselves. Therefore it is expedient that they make them!'"[5] Moreover, there was a tradition — of uncertain validity — that artificially made gold was of particular efficacy. "As to the true man, he makes gold because he wishes by the medicinal use of it to become an immortal."[6]

[4] Cf. *Pen Ts'ao Kang Mu* (本草綱目) *(Chinese Materia Medica)*, Chaps. V–XI.

[5] Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. XVI.

[6] *Ibid.*

It is natural that a doctrine of such far-reaching possibilities should grow rapidly, and become very popular among those of a speculative frame of mind. But as there were many proponents, so among the rank and file there were doubters and detractors. It was against the propaganda of the latter class that Pao Pu Tzŭ (抱朴子) felt impelled to make the following eloquent defense of the doctrine. "Vulgar people keenly deride my earnest desire to combat wrong principles, saying that I make myself ludicrous by obstinately seeking to comprehend the things of this earth that may not be comprehended. . . . My fate has been that of encountering many hardships. I have been helpless through lack of resources. . . . If I were now to make public proclamation, saying that I know how to make gold and silver, while my own body is suffering from hunger and cold, how would the case be different from that of a man who, though thinking himself unable to walk, yet would be selling medicine for the cure of lameness? Therefore to ask the average man of the present generation to believe my teaching would avail me nothing. I have, therefore, with great diligence, intrusted my teachings to pen and ink with the fond hope that the scholars of a future age—such as love mystery and delight in truth—may examine my books, and earnestly deliberate upon the meaning of Tao (道). . . . Now, concerning the art of transmutation — how is it that it does not exist? Take the case of the human body. Normally it is visible, yet there are methods by which it can be made invisible. Spirits are normally invisible, but there are devices whereby they may be seen. Masters of these arts have always existed

in large numbers. . . . As regards lofty mountains becoming abysses, and deep valleys becoming high hills, these are instances of the transmutation of great creations. Transmutation is a natural phenomenon of the universe. Why, then, should there be any suspicion that gold and silver may not be made from other substances? . . . Because Liu Hsiang (劉向)[7] could not bring about the making of gold, unthinking people say: 'Truly, there is no such thing under heaven.' Such reasoning is as though upon seeing a farmer suffering from the irregularities of rain and drought, one were to make glib assertion that the five grains were incapable of reproduction and growth."[8]

Underlying the belief in the transmutation of metals — and shaping its content — was the monistic philosophy of Taoism. We have seen that, according to this philosophy, the entire universe was identical in substance — that it was animated and dominated by a cosmic soul, manifesting itself in the dual forces of Yin (陰) and Yang (陽).[9] As a part of creation, therefore, all objects of the mineral kingdom were substantially one and the same, but they differed in quality in proportion to their relative infusion with Yin and Yang.[10]

Since then, all things were derived from one original substance, such matters as color, form, and ductility,

[7] Liu Hsiang (80–9 B.C.) was one of the most celebrated philosophers of the Han dynasty. He was an author of repute, and much of his literary work displays a strong leaning towards the mystical speculations of Taoism.

[8] Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. XVI.

[9] It is essential to bear in mind that with the development of Taoist thought, Yang (陽) became synonymous with Tao (道) — thus representing the higher, more spiritual qualities of the universal substance.

[10] Cf. L. Wieger: *Les Pères du Système Taoiste*, Vol. I, pp. 13, 14.

in the mineral kingdom, were considered as accidental, and might by a proper process be changed. As in the process of prolonging life, so in this matter of transmuting metals, the problem was that of refining the essence. Base metals might be transmuted into precious metals by the dual method of eliminating the more material Yin qualities in their composition, and by augmenting, or refining, the more spiritual Yang (Tao) qualities. In proportion to the completeness of such a process, the various phenomena of change would be evident in the accidents of the substance undergoing transmutation. Visible change in either color, form, or ductility, or in all these accidents, would thus be considered as actual proof that the process of refinement, or transmutation, was taking place. "Whiteness is the property of lead. But if you cause it to become red, the lead will change into cinnabar. Redness is the property of cinnabar. But if you cause it to become white, the cinnabar will change into lead."[11] Thus by a process of refinement might low-grade metals be artificially transmuted into "perfect" or "noble" metals — provided only that the proper refining agent might be discovered.

For further proof that transmutation was possible, the alchemist appealed to nature. Transmutation was constantly taking place as a natural process of the world about him.[12] Minerals were generated

[11] Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. XVI.

[12] It is of interest to compare this hypothesis with the more modern theory that "nature has always performed transmutations of the elements, but these were not noticed by the scientists until 1896, when the discovery of radioactivity was made." Cf. D. P. Foote: *The Alchemist* (p. 247), in the *Scientific Monthly* (1924), Vol. XIX, pp. 239–262.

and grew in the "womb of the earth." Transmutation was an inherent feature in the process of growth. "It is said . . . that copper, gold, and silver have a common origin. The exhalation of the red Yang (陽) gives birth, through concentration, to certain filaments which, after two hundred years, become transformed into rock, in the center of which copper is formed. But there are those who say that red sulphide of mercury through absorbing the exhalations of the green Yang gives birth to a mineral called '*kung shih*' (汞石) (identified by De Mely as a species of marcasite), which at the end of two hundred years becomes native cinnabar; . . . at the end of three hundred years this cinnabar is changed into lead, which in turn, after two hundred years is changed into silver. Finally, this silver, after having been subjected to the action of the spirit of the 'Ta Ho' (大和)—the Grand Harmony—for two hundred years, becomes gold." [13]

While there is evidence, therefore, of a somewhat intangible general belief in the theory of transmutation of metals, at least as early as the second century before Christ, we do not know what particular circumstances give birth to the idea that the process might be applied in an artificial manner, and for purely practical purposes. But it is highly probable that some very simple experiment wherein thought was provoked by the change in color of the substance under treatment may have inspired the theory.

[13] F. De Mely: *Les Lapidaires Chinois*, p. XXV. Quoted from *Pen Ts'ao Kang Mu* (本草綱目) *(Chinese Materia Medica)*, Chap. XII. Liu An (劉安) (d. 122 B.C.) also taught that "gold grows in the earth by a slow process, and is evolved from the immaterial principle underlying the universe, passing from one form to another up to silver and then from silver to gold."

The seemingly visible and accredited change of lead into cinnabar, and the reversal of the process — quoted above — or the blanching of metals by the fumes of mercury might well have suggested the greater possibility. But of this we have found no direct evidence, and can therefore propose only by way of suggestion.

The first instance recorded in Chinese history of attempts to transmute metals by artificial means, we find during the reign of the famous emperor Wu Ti (武帝) (140–86 B.C.). Through the influence of the master alchemist of the imperial court, Li Shao-chün (李少君), the emperor had become interested in the dual mysteries of alchemy. Li Shao-chün made proclamation of his prowess in the following words: "I know how cinnabar transforms its nature and passes into yellow gold. I can rein the flying dragon and visit the extremities of the earth. I can bestride the hoary crane and soar above the nine degrees of Heaven." [14] He furthermore proffered specific instruction to the emperor, saying: "If you will make sacrifice to the furnace, you will be able to transmute cinnabar into gold.[15] When the gold shall have been produced, you may make of it utensils for eating and drinking. Through using them your life will be prolonged, so that you may see the blessed immortals of the island of P'eng Lai (蓬萊), which lies in the midst of the ocean. When you shall have seen them,

[14] W. F. Mayers: *The Chinese Readers' Manual*, pp. 130, 131.

[15] This incident is held by Werner to be the origin of the worship of Tsao Chün (竈君) — the Kitchen God. "His temple is a little niche in the brick cooking range; his palace is often filled with smoke; and His Majesty sells for one farthing." For a description of this worship, cf. E. T. C. Werner: *Myths and Legends of China*, pp. 166–168.

and shall have made proper sacrifices to high heaven and broad earth — then you will never die."[16] It is further recorded that "it was after this discourse that the Son of Heaven (the emperor) for the first time performed in person the sacrifices of the furnace. . . . He occupied himself in experimenting with powdered cinnabar, and all sorts of drugs, in order that he might obtain gold."[17] It is unfortunate that the historian has not left us any data concerning the exact nature of these early experiments, but the statement — and its subjection to test — that gold might be made from cinnabar is of basic importance.

It has been previously noted that in the alchemy pertaining to the prolongation of life, there were several methods which might be employed, singly or in combination, to attain the desired goal. When we come to the alchemy of transmuting metals, however, the process is manifestly centered about a single objective idea — the philosophers' stone. The philosophers' stone was primarily conceived of as a magic compound through whose instrumentality base metals might be changed into precious metals — particularly into gold. In the course of time, the concept grew to include the power to prolong life as well as to transmute metals. While, therefore, the process of transmuting metals seemed, at first thought, simple, in comparison with the multifeatured process of prolonging life, it was, in reality, exceedingly intricate and complex, for it embodied such bewildering problems as the nature, composition, potency, and methods of use of the philosophers' stone. Throughout the

[16] Ssŭ-ma Ch'ien : *Shih Chi* (史記) *(Historical Records)*, Chap. XXVII.
[17] *Ibid.*

centuries, Chinese alchemists have labored zealously to solve this composite problem, but no uniform solution was ever proposed, for there was never unanimity of opinion, and the individual solutions proposed were for the most part vague, fanciful, and, in many cases, contradictory. It is evident that from such data we can no more hope to arrive at a rational and satisfactory understanding of the philosophers' stone of the Chinese, than we can hope to fathom the mystery of that philosophers' stone of a later age, whereby Albertus Magnus is said to have animated a statue.[18]

The philosophers' stone was known among the Chinese by a variety of terms. Among them the following were in general use: "*lien tan*" (鍊丹)—the drug of transmutation, "*wai tan*" (外丹)—the exoteric drug, "*chin tan*" (金丹)—the golden drug, "*hsien tan*" (仙丹)—the drug of the immortals, and "*shên tan*"—(神丹) the divine drug. The first three terms mentioned appear to have been used in a technical sense to denote exclusively the preparation used for the transmutation of metals. The two latter terms carried a wider connotation and were used synonymously to indicate both the philosophers' stone and the elixir of life.

What were the various ingredients of the philosophers' stone? While, as has been noted, opinions differed radically, there seems to have been general

[18] Thomas Aquinas is accredited with the construction of a bronze statue which Albertus Magnus is said to have animated with his philosophers' stone. This statue proved to be very useful as a domestic servant — but was talkative and noisy. Consequently Aquinas was forced to "punish it with a hammer." Cf. P. D. Foote: *The Alchemist* (p. 241), in the *Scientific Monthly* (1924), Vol. XIX, pp. 239–262.

agreement that some form of mercury formed the basis for almost all compounds included under the above term.[19] Hanbury makes the direct — but questionable — statement that cinnabar itself constituted the philosophers' stone of the Chinese. "That wonderful body, which, when used as a chemical agent, was supposed to have the power of converting other

[19] Interesting evidence that the theory of producing gold from mercury, though old, is far from inert, may be gathered from a number of chemical experiments, recently conducted.

Perhaps the most interesting and thought-provoking of recent experiments in this realm are those which have been made with mercury by Professor Adolphe Miethe, of the Charlottenberg Technical College in Germany. Professor Miethe's theory may be briefly summarized as follows: If vapor of mercury is placed inside a glass bulb of peculiar construction — not unlike the tubes that dentists and physicians use to produce X rays — and then exposed for a considerable length of time to the passage of a powerful electric arc, the process will result in a limited number of the atoms of mercury being changed into atoms of gold.

In July, 1924, Professor Miethe announced that he had actually succeeded in transmuting mercury into gold. On the heels of this startling announcement came a similar one from Professor Nagaoka, of the Institute of Physical and Chemical Research in Tokyo, Japan, who had been at work on the same problem. These announcements were naturally of peculiar interest to the scientific world. In the November issue of the *Scientific American* for the current year (pp. 296, 297) is an illustrated article by the editors entitled *Tests Fail to Confirm Transmutation to Gold.* This is a report of elaborate experiments conducted under the auspices of the *Scientific American* by Professor H. H. Sheldon, of New York University, and Mr. Roger S. Estey, to test the validity of Professor Miethe's claim. The conclusion at which they arrived is clearly indicated by the heading of the article.

NOTE. Since the above was written the current year's November issue of the *Scientific Monthly* has appeared. In it occurs a brief article announcing the success of Professor Miethe's experiments. Cf. *The Transmutation of Mercury into Gold*, in the November, 1925, issue of the *Scientific Monthly.*

Other recent and valuable articles dealing with the subject of transmutation, are listed below:

Artificial Disintegration of the Elements, by Sir Ernest Rutherford, in the *Journal of the Chemical Society of London* (1922), Vol. CXXI, Part I, pp. 400–415.

The Transmutation of the Elements, by A. S. Russell, in *Discovery* (1923), Vol. IV, pp. 200–203.

The Alchemist, by P. D. Foote, in the *Scientific Monthly* (1924), Vol. XIX, pp. 239–262.

A Modern Theory of Alchemy, by A. J. Hopkins, in *Isis* (1925), Vol. VII, Part I, pp. 58–76.

Cracking the Lead Atom, by A. Smits and A. Karssen, in the October, 1925, issue of the *Scientific American*, pp. 230, 231.

metals into gold, and when employed as a medicine, of conferring immunity from death, is, according to the writings of the Chinese alchemists, cinnabar." [20] Hiortdahl holds that cinnabar was the substance of basic importance in the composition of the philosophers' stone — as well as in the elixir of life — for cinnabar produced mercury, the "living metal." "While the majority of other substances are burned up, reduced to nothingness, or die, when subjected to fire, cinnabar produces mercury, the living metal itself. . . . Since therefore cinnabar was in this instance capable of producing a living thing, animating ability was ascribed to it in general." [21]

"Mercury is derived from cinnabar. One method of obtaining it is to secure a jug made of potter's clay, and to place therein some cinnabar — the quantity does not greatly matter. The orifice of the jug is then stopped up with paper, and the jug is heated for a certain length of time in aromatic water. The substance is then placed in a tripod caldron, heated with coal and covered with an iron vessel. An excavation is then made in the ground, and a bowl placed in it. The liquid is then poured into this bowl, which is thereupon covered with an iron vase and hermetically sealed with soft potter's clay. Fire is then applied to the bowl and it is heated. After it has been allowed to cool, the contents may be

[20] D. Hanbury: *Science Papers*, p. 226.

[21] Th. Hiortdahl: *Fremstilling af Kemiens Historie*, in *Christiania Videnskabsselskabet Skrifter* (1905), Vol. I, Sec. VII, p. 36.

Hiortdahl does not cite his authority for the statement given above, but it might well have been based on a statement in Pao Pu Tzŭ, *Nei P'ien* (抱朴子內篇), Chap. 4, to the effect that "all sorts of trees and plants, when subjected to fire become ashes, but when cinnabar is placed in the fire it produces mercury; . . . hence it has the power of conferring immortality upon man."

withdrawn and it will be found that the mercury has collected by itself in the bowl. This substance may, by the reversal of the process, be transformed into cinnabar." [22]

Mercury was furthermore regarded by the Chinese as the soul of metals.[23] Mercury in lead was likened to the human soul. "Now in the composition of lead there is mercury, just as in the human organism there is a soul. But the human soul is not an extraneous element. Neither is the mercury of lead to be considered as a thing apart." [24] Regarded, therefore, as the "soul of metals" or as the "living metal," mercury in some form was considered a basic ingredient of the philosophers' stone.[25]

When the dual philosophy of Yin (陰) and Yang (陽) gained a foothold in the Taoist system of thought, mercury somehow came to be associated with the Yin idea. "Mercury was Yin, but cinnabar was Yang, as evidenced by its red color. Moreover, cinnabar was not poisonous. . . . That which had

[22] Quoted from *Pen Ts'ao Kang Mu* (本草綱目) *(Chinese Materia Medica)*, by F. De Mely : *Les Lapidaires Chinois*, p. 72.

A realistic picture of a Chinese alchemist at work with his apparatus may be found in R. K. Douglas : *Chinese Stories*, pp. 321–343. The story is entitled *Love and Alchemy*, and is based on Chinese sources.

[23] Cf. E. O. von Lippmann : *Entstehung und Ausbreitung der Alchemie*, pp. 458, 459.

[24] *T'ao Kung Huan Chin Shu* (陶公還金術) *(Treatise on the Transmutation of Metals)*, p. 37.

[25] It is unfortunate that no concrete and detailed data have ever been found by students of Sinology, stating the reasons for ascribing life and animating power to mercury. However, it seems reasonable to believe that its extreme volatility very probably gave birth to the idea that it was a living substance. In this connection it is pertinent to bear in mind that our own descriptive term "quicksilver" is a very popular synonym for mercury. With regard to the animating power of mercury, its fluidity or likeness to water, is suggestive, in view of the fact that Lao Tzŭ had likened water to the universal energizing principle, Tao (道), *Tao Tê Ching* (道德經), Chap. VIII. It does not seem improbable, therefore, that in the mind of the pioneer Chinese alchemist the qualities of mercury may have been very closely associated with those of Tao.

been transmuted several times was considered to possess the most Yang of all cinnabars and it was known as the 'divine cinnabar' since its beneficial qualities had been still further enhanced by the virtue of fire."[26] By reason of such pertinent arguments, cinnabar came to be regarded, by great odds, as the favorite ingredient of the philosophers' stone.

In the descriptions of the process of refining cinnabar, the expression "*chiu chuan chin tan*" (九轉金丹),—meaning, "nine revolutions produce the golden drug"—frequently recurs. It refers to the custom of subjecting the cinnabar to nine different sublimations in order to secure the very best quality of the drug. For, the efficacy of the drug both in the transmutation of metals and in the prolongation of life, varied in proportion to the number of refining processes.[27] Likewise the term "*chiu chiu*" (九九) is frequently encountered. It is an abbreviated form of the sentence idea—"nine times subjected to fire at nine regular periods of time."[28]

It would be a mistake to conclude that no experiments for the purpose of transmuting or refining mineral substances were undertaken without the use of cinnabar or some other form of mercury. In spite of the outstanding importance attached to mercurial substances, numerous instances are recorded

[26] L. Wieger: *Les Pères du Système Taoiste*, Vol. I, p. 14.

[27] Cf. *Tz'u Yüan* (辭源) *(Chinese Encyclopœdia)*, Vol. I, Sec. I, p. 100.

[28] Many Sinologues construe this to mean that the cinnabar was daily subjected to sublimation for nine successive days. There are others, however, who champion the theory that the sublimation took place once every month, and that the process lasted over a period of nine months, in conformity with the process of development of the human embryo.

Cf. H. J. Holgen: *Iets over de Chineesche Alchimie*, in *Chemisch Weekblad* (1917), Vol. XIV, pp. 400–406.

whereby visible signs of transmutation were produced through other, very commonplace agencies. Strict consistency in thought or practice was never a characteristic attribute of the Chinese alchemist. Thus, there was a common belief, stated as an established fact, that jade might be softened by the use of vinegar, and liquefied by the use of rice wine, or by being "steeped in a mixture of black insects' blood and seeds of the red fir." [29] Silver might be refined by "melting with dragon grease." [30] It is furthermore stated that "among the books concerning the immortals, there are twenty-five volumes and over a thousand recipes that deal with the yellow and white metals" (gold and silver, respectively). [31] Only a portion of these recipes is quoted by Pao Pu Tzŭ (抱朴子) but among them are a considerable number wherein neither cinnabar nor any other form of mercury is a factor. However, this does not invalidate cinnabar's just claim to be the ranking ingredient in the philosophers' stone.

In the compounds particularly designed to produce gold, cinnabar assumed unique prominence. Gold was regarded as the perfect metal. It represented the finest essence of all metals — as was evidenced by its extreme durability. An adage of the Chinese brotherhood of alchemists states that "gold might be more easily fabricated than destroyed." [32] Its rarity made it extremely valuable, and it was

[29] Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. V.
[30] *Id.*, Chap. VII.
[31] *Id.*, Chap. XVI.
[32] Cf. L. De Rosny: *Le Taoisme*, p. 167. Note the identity of this proverb with that of the medieval European alchemists: "*Facilius est aurum facere, quam destruere.*"

therefore a highly coveted possession. Cinnabar was accredited with power to produce this rare metal.[33] This will explain the high esteem with which it was regarded in general, and its presence in gold-producing compounds in particular.

In the attempts at preparing the philosophers' stone, cinnabar was compounded with a variety of substances — the composition varying in accordance with the specific use for which it was intended. One favorite preparation known as "*pa ch'iung tan*" (八瓊丹)— "the drug of the eight excellent substances" — was composed of cinnabar, realgar, sulphur, potash, borax, orpiment, mother-of-pearl, and an unidentified substance known as "*k'ung ch'ing*" (空青).[34] This precious concoction was reputed to serve in the dual capacity of the philosophers' stone and the elixir of life.

Sulphur also was considered important. The following quotation speaks of its virtue, and is illustrative as well, of the belief — of frequent evidence in Chinese medical literature — in a strange affinity between certain mineral substances and certain organs of the human body. "Among the eight stones, he made most use of cinnabar, because from that he extracted mercury; and among the five metals, he made most use of lead, because from that he obtained silver. The fire of the heart is red as cinnabar; and the water of the kidneys is dark as lead. To these must be added sulphur that the compound may be efficacious. Lead is the mother of silver,

[33] "*The Book of the Immortals* says: 'The essence of cinnabar produces gold.'"—Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. XVI.

[34] Cf. W. F. Mayers: *The Chinese Readers' Manual*, p. 127.

mercury the child of cinnabar. Lead represents the influence of the kidneys, mercury that of the heart." [35]

The lack of definite statement as regards both the relative quantity and quality of ingredients, and the exact method of concoction, is a disappointingly frequent and characteristic feature in the descriptions of these preparations. Another notable feature is the lack of any attempt at a detailed scientific explanation of the process of transmutation — it was simply the method used for "refining the essence." But just how the essence of any given substance was refined, is not clear. Often a single sentence is assigned the duty of describing the entire process. "They selected lead and added mercury, and the essence of gold was transmuted." "Jade was dissolved and became cinnabar." [36] The following quotation is characteristic of the nonchalant and indefinite manner in which matters of great scientific import were discussed in Chinese alchemical works.

"In the city of Chengtu (成都) was an official named Wu Ta-wen (吳大文). He was a man of great knowledge. He relates that he was at one time in the service of a Taoist magician named Li Ken (李根). One day he saw the magician heating lead and tin over a fire. He took a small quantity of some drug about the size of a bean, threw it into the caldron, and stirred the mixture with an iron spoon. Upon cooling, it immediately changed into silver. Ta Wen (大文) obtained the secret formula. Whenever he

[35] Quoted by W. A. P. Martin, in *The Lore of Cathay* (p. 60), from the biography of Lü Tsu (呂祖), a famous alchemist of the eighth century of this era.
[36] *Chung Lü Ch'uan Tao Chi* (鍾呂傳道集) (*Records of Chung and Lü*), Chap. I.

desired to put it into practice, he abstained from eating meat for a hundred days. After he became a magistrate he was unable to perform the experiment successfully and with continual sighs he was wont to repeat: 'This world has abundance of trouble.' " [37]

Reference in the above quotation to the matter of physical discipline indicates that the processes of artificial transmutation were regarded as occupying a lofty moral plane, and must in no wise be attempted n any frivolous state of mind, or from unworthy motive. In another connection the author states that for the assurance of success in compounding either the philosophers' stone or the elixir of life, it was necessary that the practitioner "should abstain from eating meat, and cultivate pure thoughts for at least a year." [38] Furthermore, it was highly desirable that the compounding process be performed far from the public gaze — preferably on the summit of some lofty mountain — either in complete secrecy, or in the presence of a very few devotees of undoubted consecration and trustworthiness.[39]

It remains to make brief mention of the frequent use of symbolism in the alchemical writings of the Chinese in general, and in their references to preparations for the transmutation of metals, in particular. This use of an esoteric language was in all probability due to the obvious desire of the alchemist to keep his brotherhood exclusive, and his art secret. Thus,

[37] Pao Pu Tzŭ: *Nei P'ien* (抱朴子內篇), Chap. XVI.
[38] *Ibid.*
[39] Cf. Th. Hiortdahl: *Fremstilling af Kemiens Historie* in *Christiania Videnskabsselskabet Skrifter* (1905), Vol. I, Sec. VII, p. 36.

to quote but a few examples from many, Yin (陰) was known as the "*white tiger*" (白虎), Yang (陽) as the "*green dragon*" (青龍), realgar as the "*masculine yellow*" (雄黃), orpiment as the "*feminine yellow*" (雌黃), mother-of-pearl as "*cloud-mother*" (雲母), and vermilion as the "*fairy lady*" (蛇女), while casual references to the sun and moon were couched in the terms, the "*golden crow*" (金烏) and the "*golden mirror*" (金鏡), respectively.[40]

There are, furthermore, a large number of passages relating to alchemical processes which seem purposely garbed in a phraseology so obscure as to defy any attempt at rational interpretation. To this class belongs the following quotation: "I must diligently plant my own field. There is within it a spiritual germ that may live a thousand years. Its flower is like yellow gold. Its bud is not large, but its seeds are round and like unto a spotless gem. Its growth depends on the soil of the central palace, but its irrigation must proceed from a higher fountain. After nine years of cultivation, root and branch may be transplanted to the heaven of the higher genii." [41]

The above survey of the Chinese theory of transmutation of metals, and of attempts to put the theory into practice, cannot claim to be detailed and exhaustive. The subject is too vast for such treatment in a study of this scope. It is hoped, however, that — through the recording of a number of important features pertaining to the system — the survey may

[40] Cf. Wei Po Yang (魏伯陽): *Ts'an T'ung Ch'i* (參同契) *(A Treatise on Alchemy)*.

[41] Quoted from the works of Lü Tsu (呂祖), in W. A. P. Martin: *The Lore of Cathay*, p. 59.

prove to be of service in establishing the fact that the Chinese did actually believe that metals could be transmuted, and that they made numerous attempts to put the theory into practice. It is furthermore hoped that the survey may be helpful in the way of suggesting a very interesting subject of research. For, in the very fact that the problem is exceedingly interesting and complex, and that it is yet far from final solution, lies the most potent arguments for the desirability and need for further study.

CHAPTER V

LATER DEVELOPMENT OF CHINESE ALCHEMY

We have seen that the origins of Chinese alchemy may be traced to Taoism, and that by virtue of a literal method of interpretation of certain of its tenets, an elaborate system was developed for the dual arts of prolonging life and transmuting metals. We have also noted that, as early as the beginnings of the Christian era, this system of alchemy was firmly entrenched in popular esteem, and that it even enjoyed the favor and patronage of the imperial court.

To trace the later development of alchemy becomes a more difficult task. There are a number of reasons for this. Briefly stated they are as follows: In the course of time Taoism became saturated with the practices of magic and necromancy. Likewise, Taoism acquired a religious content, and assumed the outer garb of a highly organized religion. Moreover, Taoist thought became thoroughly inbued with the teachings of astrology. And finally, in numerous cases, accounts of alchemical practices were vitiated by the infusion of highly superstitious elements.

It is natural that the above circumstances, singly or in combination, would have a decided tendency to render both the theory and the practice of alchemy confusing and obscure. We must be prepared to

find, therefore, that alchemy was at times completely submerged in other practices and beliefs, through whose medium it can be but dimly and imperfectly viewed. Yet, in the complexities of the new Taoist religion we shall find traces of the alchemy of prolonging life. Likewise, in certain industries the processes of the alchemy of transmuting metals will become manifest, while in the practice of medicine will be found evidences of the influence of both systems.

It will be necessary, first of all, to take cognizance of two important factors whose influence was in large measure responsible for molding and directing the alchemical belief and practice of this later stage — the respective influences of Buddhism and astrology.

Buddhism was not an indigenous religion. It was officially introduced into China during the reign of the emperor Ming Ti (明帝) (A.D. 58–76) of the later Han (漢) dynasty. It is reported that one night the emperor saw in a dream "a high shining gold image of a god, which appeared to him and entered his palace." A soothsayer made interpretation of the dream and informed the emperor that the image was in reality the Buddha who appeared in this personal way to request worship among the Chinese. As a result, the emperor sent an embassy to India requesting Buddhist books and teachers. The embassy returned about A.D. 65 or 70, with images of the Buddha, Buddhist scriptures, and two Buddhist monks. The translation of Buddhist literature into Chinese was begun, more monks arrived to propagate the doctrine, and in the fourth century of this era the emperor Hsiao Wu Ti (孝武帝) (A.D. 373–397) became a convert to the new religion. This occurrence

brought Buddhism into national prominence and gave it an official status, so that it might no longer be ignored by its two rivals, Confucianism and Taoism. Thus did Buddhism, by slow degrees, win its way to recognition as one of the "three religions of China." [1]

Of vital importance to our study is the fact that the form of Buddhism which was destined to exert a preponderant influence in China, was radically different in its teaching from that of the immediate followers of Prince Siddartha, the founder of the religion. "The most flourishing sect in China is that of Amidha Buddha, so different in its teaching from that of early Buddhism that some would classify it as a separate religion. . . . Instead of an unconscious nirvana it holds out the hope of immortality in a paradise of happiness in the Western Heaven. These doctrines so foreign to early Buddhism began to flourish about A.D. 100. This popular sect is known as the Lotus Sect or the Pure Land Sect." [2]

When this form of Buddhism was introduced into China during the fourth century it immediately entered into serious competition with Taoism. For, while Taoism had its Isles of the Immortals and its Western Paradise, the Western Heaven of Buddhism was no less entrancing and — a vital factor in its popularization — it might be far more easily attained. In the Chinese phrase it was known as the "Realm of Supreme Felicity" (極樂國土). Its streets

[1] For a brief historical sketch of Chinese Buddhism, cf. *Buddhism in China*, in *Encyclopædia Sinica*, pp. 67–71. For a more comprehensive treatment, cf. R. F. Johnston: *Buddhist China*, London, 1913.

[2] E. T. Williams: *China Yesterday and Today*, p. 296.

were paved with gold, silver, pearls, and crystal. On the shores of its seven lakes, with their pure water and sands of gold, were beautiful pavilions built of richly colored transparent jewels. Beautiful birds chanted prayer and praise, while the fragrance of gorgeous and multicolored flowers permeated the air.[3] Unlike the Taoist rules for attaining immortal bliss, admittance to this happy realm was not conditioned upon a strict and lengthy regimen of physical and moral discipline, but simply upon faith in the might and mercy of Buddha Amidha, and through faithful repetitions of his holy name. "The sutra itself informs us that the man who with steadfast faith and quiet mind calls upon that name for the period of only a week, or even for a single day, may face death with perfect serenity: for Amitabha, attended by a host of celestial bodhisats, will assuredly appear before his dying eyes, and will carry him away to a joyful rebirth in that Pure Land in which sorrow and sighing are no more."[4]

Furthermore, the Buddhist doctrine of a personal immortality which might readily be attained by ordinary mortals, was greatly enhanced through its sponsorship by a religion whose outward forms were picturesque, impressive, and highly developed. The unified impression was that of a priceless truth in a precious setting.

The popularization of a religion of this nature constituted a serious challenge to Taoism, which had long since lost the greater share of its original idealistic

[3] Cf. W. Grube: *Religion und Kultus der Chinesen*, p. 149; and E. J. Eitel: *Buddhism*, pp. 119–122.

[4] R. F. Johnston: *Buddhist China*, p. 99.

content, and was now hardly more than a name adding dignity to a system of magic and necromancy.[5] The challenge did not pass unnoticed. "The contests between Buddhism and Taoism are commemorated in stories which often remind us of the legends relating to the early struggles in Europe between paganism and Christianity. The two Eastern religions seem to have competed for the royal favor in China just as Saint Patrick (to take one example) is said to have competed with the Druids in Ireland for the favor of King Loigaire, each of the contesting parties striving to vanquish its rival by giving evidence of a superior skill in the working of miracles." [6]

The arrival of Buddhism in China affected Taoism in a twofold manner. It furnished Taoism with the materials for religious trappings, and it greatly stimulated the search for the elixir of life. It was through the example and influence of Buddhism that Taoism attained to the name and dignity of a religion. In imitation of Buddhism, temples and monasteries were erected, an elaborate priestly hierarchy was established, and the regions of eternal bliss were even more concretely and attractively delineated than heretofore. In the course of time Lao Tzŭ (老子) himself suffered deification and became the first personage in the Taoist Trinity — the "Three Pure

[5] The name of Chang Tao-ling (張道陵) (b. A.D. 34)—often referred to as the "first Taoist pope"— is popularly connected with the beginnings of this phase of Taoism. He devoted his life to the study of alchemy and magic, and is reported to have ascended to the heavens to enjoy the bliss of immortality, as a result of partaking of a "grand elixir" which he had himself compounded. "He may be considered the founder of Taoism as a system of magic, charms, and talismans. . . . The Confucian writers dubbed him 'rice thief.'" Cf. S. Couling: *Encyclopædia Sinica*, p. 89.

[6] R. F. Johnston : *Buddhist China*, p. 137.

Ones" (三清). Not only were famous men and virtuous women deified, but the visible manifestations of nature were personified, and reverenced as gods. In this manner a vast pantheon of superior and inferior deities was created.[7]

The cumulative effect of all this was the placing of special emphasis on the alchemy of prolonging life. For, with admission to the ranks of the Buddhist immortals conditioned upon mere faithfulness of ritual observance for a limited period of time — and thus within the reach of all mortals — there was dire necessity for the proponents of Taoism to devise some method whereby immortality might be the more easily and universally obtained. What was more natural than to extend the scope and to redouble the intensity of their alchemical researches, in the hope of finding some potent and readily obtainable elixir whereby the life of every mortal might be indefinitely prolonged? In consequence, there arose a veritable army of such as made earnest search for the immortalizing drug which was forever heralded, but never truly found. Professors of alchemy abounded at the imperial courts and that the influence wielded by them was not inconsiderable may be seen from the fact that the famous emperor Hsüan Tsung (玄宗) (A.D. 713–754) of the T'ang (唐) dynasty gained sudden and unexpected entrance to the ranks of the immortals by swallowing an overdose of some magic potion.[8]

[7] For detailed description of the gods of Taoism, cf. H. Doré: *Recherches sur les superstitions en Chine* in *Variétés Sinologiques*, Vols. XLIV, XLV, and H. C. Du Bose: *Dragon, Image and Demon*, Chaps. XXIII, XXIX.

[8] Cf. W. Grube: *Geschichte der Chinesischen Litteratur*, p. 170. Of particular interest as portraying the status of alchemists at the imperial courts is the

Such devotees as were particularly successful in both the theory and the practice of immortality were known as "*hsien*" (仙), meaning genii, or immortals. The Chinese ideograph for this term is composed of the characters which denote "man" (亻) and "mountain" (山), respectively. It is, in the primitive sense, a word picture wherein the man on the mountain — with opportunity for research and meditation in privacy — attains alike the secret of immortality and the state of immortality itself. In keeping with the artificial character of this stage of Taoism, these genii or immortals assumed classification — roughly descriptive of status — under five different heads. According to this classification — sadly lacking in clarity and rational delimitation — they were known, respectively, as demon, human, terrestrial, celestial, and divine immortals.[9]

As the numbers of Taoist practitioners grew, the great majority became bolder in their claims and

following memorial, presented by a statesman to one of the emperors of the ninth century.

"May it please Your Majesty,

"I have heard that he who eradicates evil himself reaps advantage in proportion to his work; and that he who adds to the pleasures of others, himself enjoys happiness. Such was ever the guiding principle of our ancient kings. Of late years, however, the court has been overrun by a host of 'professors,' who profess to have the secret of immortality.

"Now supposing that such beings as immortals really did exist—would they not be likely to hide themselves in deep mountain recesses, far from the ken of man? On the other hand, persons who hang about the vestibules of the rich and great, and brag about their powers in big words—what are they more than common adventurers in search of pelf? How should their nonsense be credited, and their drugs devoured? Besides, even medicines to cure bodily ailments are not to be swallowed casually, morning, noon, and night. How much less, then, this poisonous fiery goldstone, which the viscera of man must be utterly unable to digest?

"Of old, when the prince took physic, his prime minister tasted it. I humbly pray that all those who present to Your Majesty their concoctions, may be compelled first of all to swallow the same periodically for the space of one year. Thus will truth be effectually separated from falsehood."—H. A. Giles: *Gems of Chinese Literature (prose)*, p. 152.

[9] Cf. *Chung Lü Ch'uan Tao Chi* (鍾呂傳道集) *(Records of Chung and Lü)*, Chap. I; and W. Grube: *Religion und Kultus der Chinesen*, pp. 104, 105.

pretentions, and instead of confining their efforts to legitimate alchemical research, they sought proficiency in the practices of magic and necromancy, as a means of ingratiating themselves into public favor. How thoroughly the ideas of immortality became infused with those of magic is admirably portrayed in the fantastic accounts of the "Eight Immortals" (八仙) of Taoism. These eight personages took the highest rank in the hierarchy of the Taoist genii. To them was ascribed not only the secret and the gift of immortality, but such other supernatural gifts as voluntary invisibility, immunity from fire, instantaneous transformation of bodily form, swift and effortless locomotion through boundless space, and the like.[10] The idea of immortality had thus become concretely identified with illimitable magic powers.

As Buddhism thus exerted a pronounced influence on Chinese alchemy, so astrology added its quota of superstitious and fatalistic elements. The historical records of the Chinese show that very early in their history they were careful observers of celestial phenomena. During the reign of the emperor Yao (堯) (*ca.* 2300 B.C.), two astronomers were commanded "to calculate and delineate the movements and appearances of the sun, moon, the stars, and the zodiacal spaces, and to deliver respectfully the seasons to the people."[11] During the Chou (周) dynasty

[10] For detailed individual accounts of the "Eight Immortals," cf. P. C. Ling: *The Eight Immortals of the Taoist Religion*, in *Journal of the North China Branch of the Royal Asiatic Society* (1918), Vol. XLIX, pp. 53–75, and W. P. Yetts: *The Eight Immortals*, in *Journal of the Royal Asiatic Society of Great Britain and Ireland* (1916), Vol. XLVIII, pp. 773–807, and E. T. C. Werner: *Myths and Legends of China*, pp. 288–304.

[11] James Legge: *The Chinese Classics*, Vol. III, Part II, p. 18.

(1122–249 B.C.) the dual offices of court astronomer and astrologer were established. "The astronomer did good work in connection with the calendar, and what we learn in the *Chou Li* (周禮)[12] about his duties betokens an advanced state of scientific development. The astrologer held a different office from that of his colleague just mentioned. The latter had to watch the position and movements of the heavenly bodies; the astrologer was required to interpret their forebodings, since numbers of ceremonies were connected with the seasons." [13]

The fundamental principles of Chinese astrology are stated in the *Hung Fan* (洪範)—*The Grand Plan*—which forms a part of the *Shu Ching* (書經)—*The Book of History*.[14] It is there asserted that "the common people are like the stars. Some stars love the wind, and some love the rain. The course of the sun and moon give winter and summer. The course of the moon among the stars gives wind and rain." [15] In the process of time a complex astrological system was evolved, the salient features of which are herewith indicated.

The heavenly bodies were animated with the dual cosmic soul of Yin (陰) and Yang (陽). As "T'ai Yang" (太陽)—the Great Yang—the sun represented the universal, positive, vitalizing principle—analogous to Tao (道) in Taoist thought. Likewise, as "T'ai Yin" (太陰)—the Great Yin—the moon

[12] The *Chou Li* is an ancient work describing the rites at the court of the Chou dynasty. Chou Kung (周公), brother of the founder of the Chou dynasty, is its reputed author.

[13] F. Hirth: *Ancient History of China*, p. 118. Cf. also Pan Ku (班固): *Han Shu* (漢書) *(History of the Han Dynasty)*.

[14] Cf. James Legge: *The Chinese Classics*, Vol. III, Part II, pp. 320–344.

[15] *Id.*, p. 342.

represented the antithetical, negative, quiescent principle. The fixed stars were known as the "Lesser Yang" (少陽), and the planets as the "Lesser Yin" (少陰). A further development is noted in the intimate relationship of the stars and planets with certain essences of matter. This feature has been summarized as follows: "The stars are regarded as the sublimated essences of things. As the soul is an essence of matter, the purest form of matter in the body, so there are essences belonging to other things which, when very pure, obtain a life and individuality of their own. They constitute the souls of coarse matter. Of these there is a series of five which correspond to the five modes of subsistence found in material nature, viz., metal, wood, water, fire, and earth. These souls of the five elements rose, when highly purified, through the air to the region of stars and became the five planets. Mercury is the essence of water, Venus of metal, Mars of fire, Jupiter of wood, and Saturn of earth. The fixed stars are also the essences or souls of matter, and other essences, believed to wander through space impelled by an internal active life, are also called stars though not visible in the heavens." [16]

It was but a step to the next inference. The celestial bodies were thought of as possessing divine attributes, and were variously regarded as divinities or dwelling places of divinities. From the refined atmosphere of the firmament, these star divinities looked down upon the more material earth. They exerted a vital influence on terrestrial affairs —

[16] J. Edkins: *Religion in China*, p. 106.

especially on human destiny. But the influence of the celestial bodies was not arbitrary, for theirs was a realm of law and order. "All the stars are ranged into constellations, and an emperor is installed over them, who resides at the north pole; five monarchs also live in the five stars of Leo, where is a palace called Wu Ti Tso (五帝座), or 'Throne of the Five Emperors.' In this celestial government there are also an heir apparent, empresses, sons and daughters, and tribunals. . . . The Great Bear, or Dipper, is worshiped as the residence of the Fates, where the duration of life and other events relating to mankind are measured and meted out." [17]

All this will seem fanciful and absurd to minds of a scientific age, but we must bear in mind that in its unscientific day and age, this system of belief was regarded with the utmost veneration and respect.

As a system of thought vitally concerned with the problem of human destiny, astrology could not escape the attention of the alchemist, who sought a solution to the same problem, by planning for a life of infinite duration, and of freedom from all care. Chinese alchemy, therefore, from its very beginnings, associated itself with the system of astrology, and in the course of time the teachings of these two systems became very closely interwoven. The alchemist's search for the elixir of life was made the more interesting — and baffling — by the fact that no mundane affairs — however small — were exempt from the influence of the celestial bodies. "The cosmic breath which animates vegetation, animal life, man and the dead,

[17] E. T. C. Werner: *Myths and Legends of China*, p. 176.

waxes and wanes with the cycles of the Sun and Moon."[18] The search for the philosophers' stone was likewise vastly complicated by the knowledge that the success or failure of experiments was, in very great measure, dependent upon the direct and powerful influence of the five planets. The effect of astrology upon alchemy was therefore by no means negligible.

Up to the present point in our study, we have been dealing mainly with the rather grotesque and impractical features of Chinese alchemy. But, that the system was not wholly devoid of practical features is evident from its pronounced influence in the dual realms of medicine and industry. A detailed account of the incorporation of alchemical belief and practice in these two realms does not lie within the scope of this study. But it is proper that we should indicate, briefly, certain features which may serve, in a measure, to show the nature of the contributions of Chinese alchemy to these two spheres of activity.

It is significant that, throughout its history, Taoism has been closely associated with the practice of the medical art in China. The Chinese physician of universal renown, Hua T'o (華佗) (d. *ca.* 220 A.D.) is reputed to have been versed in all the secrets of Taoism. In their search for the elixir of life, the devotees of Taoism discovered a variety of substances of distinct medicinal value. "The discovery of such substances is generally ascribed to Taoists; it was the Taoists also who proved their salutary effect by their own longevity. . . . Many of

[18] S. Couling: Article on *Astrology*, in *Encyclopædia Sinica*, p. 38, also cf. *Ch'in Ting Ku Chin T'u Shu Chi Ch'êng* (欽定古今圖書集成) *(The Chinese Imperial Encyclopædia)*, section on *Hsing Ming* (星命)—*Stellar Destiny*.

its [the medical art's] practitioners and theorists, whose books are standard works to the present day, were at the same time Taoists, and medicine is now practiced generally by the Taoist 'Tao Shih' (道士) or Taoist doctors, along with exorcising magic."[19] "It is they who created and have developed the art of preparing and properly consuming elixirs of life, and have thus richly furnished the pharmacopæia of China with life-giving medical herbs, impressing a Taoistic character on the therapeutic art."[20]

A cardinal feature of Chinese medicine is the basic importance attached to the dual principle of Yin (陰) and Yang (陽). As these two forces dominate the universe, so, too, they are the controlling forces in the physical organism. Health is dependent upon their existence in proper proportions. In a recent work on Chinese medicine, the matter is stated as follows: "According to the Chinese, two great forces are latent in the human organism, and by their coöperation life is supported. The one is 'Yang,' the principle of heat and dryness, the other is 'Yin,' the principle of cold and humidity. . . . The normal state — that of perfect health — cannot exist save as these two principles exist in perfect equilibrium. The Yang is heat, irritability; the Yin is the moderating action of the nervous system. . . . The blood is dependent on the Yin, the passive principle, and the vital breaths are dependent on the Yang, the active principle. There are vital breaths which agitate the blood as the wind stirs up the sea. The action of the blood and the vital breaths cause the

[19] De Groot: *Religion in China*, pp. 167, 168.
[20] *Id.*, p. 173.

walls of the blood vessels to expand, causing, thus, the phenomenon of the pulse, which varies in different organs. . . . The pulse, they believe, keeps record in each region, of the exact state of harmony or disharmony of the Yang and Yin principles — that is to say, of the health or disease of each organ." [21]

Furthermore, the curious conception concerning human anatomy prevails, that various organs of the body are intimately allied with the five elements. Thus the heart is regarded as having the nature of fire; the liver, of wood; the lungs, of metal; the kidneys, of water; and the stomach, of earth.[22] In the preparation of medicines, therefore, account must be taken both of the dominance of the human body by the forces of Yang and Yin, and of the respective relationship of the five elements with various organs of the body.

Evidence of the extensive use of mineral substances in the compounding of Chinese medicines is furnished by the *Pen Ts'ao Kang Mu* (本草綱目) — a standard *Chinese Materia Medica*.[23] In the preface of this work, the recipes containing mineral substances are classified under five heads, as follows: recipes containing metals, precious stones, ordinary stones, minerals, and miscellaneous mineral substances, respectively. The total number of recipes thus classified is two hundred and fourteen.[24]

[21] E. Vincent: *La Médicine en Chine*, p. 29.

[22] For detailed accounts of this theory, cf. J. B. Du Halde: *Description geographique, historique, etc., de l'Empire de la Chine*, Vol. III, pp. 463, 464.

[23] This work was prepared by Li Shih Chên (李時珍), during the sixteenth century of this era, "with the design of obviating the difficulties and confusion arising from a multitude of authorities, by supplying in one work a compendium of all that was most valuable in its predecessors."—D. Hanbury: *Science Papers (Notes on Chinese Materia Medica)*, p. 212.

[24] Cf. J. B. Du Halde: *Op. cit.*, p. 539.

In Hanbury's *Science Papers*, prominent notice is given to such ingredients of Chinese medicine as sulphur, arsenical substances, compounds of zinc, lead, and copper, ferruginous and — in particular — mercurial substances.[25] It is a significant fact that these same substances were very generally used in the experiments of the Chinese alchemist. Another feature of Chinese medicine which reminds us of alchemical practice is brought to light in the following quotation: "There are certain seasons which are appropriate for the gathering and the preparation of medicinal substances. Some substances must be dried in the sun — others in the shade." [26]

Finally, it is worthy of record that there is a striking analogy between certain hygienic rules of the Chinese medical system and the regimen of physical and mental discipline of the Taoist seeker of immortality. The *Pen Ts'ao Kang Mu* (本草綱目) contains a comprehensive treatise on *The Art of Acquiring a Long and Healthy Life.*[27] In this treatise four main points are emphasized, viz.:

(1) Regulate the affections of the heart.

(2) Be moderate in the use of food and drink.[28]

[25] Cf. D. Hanbury: *Science Papers*, pp. 211–228.

[26] J. B. Du Halde: *Description geographique, historique, etc., de l'Empire de la Chine*, Vol. III, p. 550. Quoted from *Pen Ts'ao Kang Mu* (本草綱目) *(Chinese Materia Medica)*.

[27] This treatise may be found, in French translation, in Du Halde: *Op. cit.*, pp. 631–652.

[28] Regarding the use of wine, the author expresses himself as follows: "Wine, when it is partaken of in moderation, will bring cheer to dejected spirits, revive the forces of nature, and restore to the blood and the pulse their natural animation. . . . Nothing seems to me more shameful and more unworthy of rational beings than a joint argument during some festive occasion as to who can drink the greatest number of bumpers and who can the soonest empty his cup. As for me, when I entertain my friends, I gladly invite them to partake of two or three cups, to put them in good humor; but I stop at that point without further urging, lest from the violence of too much wine, their health might suffer ruin."—*Id.*, p. 641.

(3) Perform the day's work according to plan and system.

(4) Rest and sleep according to certain definite rules.

Passing now to the sphere of Chinese industries we shall find, even in this limited survey, that in certain of these industries there are unmistakable evidences of the influence of alchemy. It is probable that, in the majority of cases, the detailed steps by which the labors of the alchemist led to important scientific discovery will never be known. Nevertheless, the successful and very general application of such discoveries in industrial life constitutes the finest testimony to the practical contributions of alchemy. Alchemy is properly regarded as the parent of chemistry, and we shall find that whereas the Chinese never evolved a detailed chemical science, they nevertheless exhibited, at an early date, a very commendable proficiency in many matters which pertain to practical chemistry. Their skill in metallurgy, their brilliant dyestuffs and manifold pigments, their early knowledge of gunpowder and pyrotechnics, their asphyxiating and anæsthetic compounds — all bear eloquent testimony to this fact.

One of the oldest and most renowned of Chinese industries is the making of ceramic ware. As early as the time of the Western Han (西漢) dynasty (206 B.C. to A.D. 25) most beautiful specimens of this art were produced.[29] The glossy paste for the production of ceramic glazes was at that period known by the term "*liu li*" (璃琉). With regard to this

[29] In B. Laufer's volume, *The Beginnings of Porcelain in China*, are a number of excellent photographs of the work of this period.

product, Laufer says: "We have a few intimations to the effect that '*liu li*' was appreciated also by the Chinese alchemists. Tung-fang So (東方朔) obtained multicolored dew and placed it in glazed vessels, which he offered as a gift to the emperor Wu (武帝)." [30] Attention is also called to the white clay called kaolin (高陵), one of the two main ingredients of porcelain. "It probably played a rôle also in alchemical experiments. There is every reason to believe that it was the nature-loving and drug-hunting professors of Taoism who first experimented with this clay." [31]

Gunpowder was manufactured from sulphur, saltpeter, and charcoal, but the Chinese never seemed to attain uniformity of quality in its preparation.[32] Among inflammable substances which might be used for military purposes may be mentioned — in their native terminology — the following: the "poisonous fire" (毒火), the "divine fire" (神火), and the "fire which blasts into fragments" (開花火球). Alloys of silver and copper might be resolved into their component parts by the use of lead.[33]

[30] B. Laufer: *The Beginnings of Porcelain in China*, p. 142.
The emperor Wu reigned during the period 140–86 B.C.

[31] B. Laufer: *Op. cit.*, p. 118.
An interesting description of the Chinese method of gilding porcelain is given in M. Stanislaus Julien: *Industries anciennes et modernes de l'Empire Chinois*, pp. 39, 40.

[32] With regard to a popular Chinese belief concerning gunpowder, Julien says: "The Chinese—like unto our own early alchemists—held rather bizarre ideas concerning the chemical substances within their ken, and among other substances sulphur was subject to peculiar hypotheses. It was regarded as a male principle, and saltpeter on the other hand was regarded as a female principle. The union of these two products in marriage gave birth to the powder which explodes with violent detonation upon contact with fire."—M. Stanislaus Julien: *Op. cit.*, p. 26.

[33] For a description of this process, cf. M. Stanislaus Julien: *Op. cit.*, pp. 51, 52.
In *Journal Asiatique* (1835), II Series, Vol. XVI, pp. 130–154, is a valuable article by E. Biot, entitled *Sur quelques procedes industriels connus en Chine*

The use of mercury enters very largely into Chinese industry. This was no doubt due to the superior qualities ascribed to the metal, for we recall that the Chinese regarded it as the "living metal" (生金). From it, they produced a very fine quality of calomel.[34] It also enters into the manufacture of mirrors — an art in which the Chinese showed great proficiency. "In Chinese texts it is stated that the metal used in the manufacture of mirrors is ordinarily derived from copper and tin, in equal proportions. On the surface of the metallic slab of such composition, an amalgam is produced by the addition of mercury, and, by rubbing, a polished surface is produced which reflects rays of light. At another period (from 713 until 741) during the reign of the T'ang dynasty, the mirrors destined for the imperial palace were manufactured from silver and copper, and the luster was produced by the use of powdered cinnabar."[35] From mercury, vermilion was derived. Large quantities of vermilion were used by the Chinese in the manufacture of paints, varnishes, and red ink. According to an old Chinese recipe, fourteen ounces of vermilion might be produced from one pound of

au XVIe siècle. This article is based on Chinese sources, and deals largely with the manner of refining metals, and of the uses made of the finished product in the realm of industry. The following is a quotation from the article: "To separate gold and silver — which are often found in alloyed form — it is necessary to inclose the substance to be treated in bowls of potter's clay. Place the bowls in a crucible and dissolve the substance with borax. By this process the silver will become blended with the potter's clay, leaving the gold pure and unmixed. The silver may then be separated from the potter's clay by the addition of lead" (p. 143).

[34] A very interesting account of the preparation of calomel by a genuinely Chinese process is given in J. F. Davis: *China*, Chap. XVIII.

[35] M. Stanislaus Julien: *Industries anciennes et modernes de l'Empire Chinois*, p. 63.

mercury.[36] The modern method of making vermilion is described by a Chinese student of chemistry as follows: "Chinese vermilion is made in Wing Kat in Canton. It is the finest quality of vermilion, and its manufacture was long kept a secret. It is known to be made by heating mercury and sulphur together in shallow iron pans until they combine to form a black mercuric sulphide. This is pulverized, and put into retorts in small amounts at a time. The larger part of the black sulphide sublimes into the upper part of the retort as a bright red powder. This is ground, washed, and dried. Owing to the patience and care exercised by the Chinese workmen a very fine product is obtained." [37]

The scattered references given above are designed simply to indicate a few phases of Chinese achievement in the realm of chemical industries, wherein the influence of alchemy is clearly in evidence. It is highly proper to add, however, that the history of Chinese chemical industries is voluminous, as well as of fascinating interest, and is eminently deserving of intensive study and detailed exposition.

It remains to make reference to a philosophical movement in the nature of a revolt against the vagaries of both Taoist and Buddhist thought. In this study we are concerned only with the effect upon Taoism, as the representative of Chinese alchemy.

[36] Cf. M. Stanislaus Julien: *Industries anciennes et modernes de l'Empire Chinois*, p. 62.

[37] Yan Tsz Chiu: *Chemical Industry in Kwang Tung Province* (p. 141), in *Journal of the North China Branch of the Royal Asiatic Society* (1919), Vol. L, pp. 133–143. This article also describes modern Chinese methods in the manufacture of a number of products, such as pottery and porcelain, rice wine, peanut oil, lime, "Chinese wood oil" (used in making varnishes), red lead, and soap.

As we have observed, Taoist speculation had, with the centuries, grown more and more fanciful and grotesque. The basic ideas of alchemy had become hopelessly intertwined with the ideas of astrology, magic, and necromancy. Professors of charlatanism abounded at the imperial courts.

The revolt came at the time of the Sung (宋) dynasty (A.D. 960–1278). With the complete obsession of its third emperor, Chên Tsung (眞宗) (A.D. 998–1023), by the degenerate teachings and practices of Taoism, seriously minded thinkers awoke to the peril of the situation, and pronounced reaction against all heterodox teaching set in.[38] This movement was given a certain objective and standing by being heralded as a revival of Confucianism. But it was frankly skeptical of all dogma, and questioned the validity of all teaching that was not concretely based on logic and reason.[39] Such being the case, Confucianism itself did not escape a certain transformation, but the brunt of the attack was naturally directed against the heretical sects of Buddhism and Taoism.

The man whose name is popularly associated with this movement is that of the famous Confucian commentator, Chu Hsi (朱熹) (A.D. 1130–1200), but other scholars had served as a vanguard, and prepared his

[38] For a brief account of this movement, cf. E. T. Williams: *Philosophy in China*, in *University of California Chronicle* (1923), Vol. XXV, pp. 83–86.
For a detailed treatment, cf. J. P. Bruce: *Chu Hsi and His Masters*.

[39] There are certain interesting analogies between this movement and a certain movement which has occurred in China during the last decade, known variously as the "Renaissance Movement," the "New Tide Movement," and the "Students' Movement." A feature of this latter movement is that it demands logical proof for every belief, and a reason based on practical utility for every institution of society. As a result—wholly or in part—of this movement, momentous changes in several widely differing spheres of activity, are taking place in China. Such, for instance, are the rapid growth of agnosticism, a simplified literary style, new methods in education, and the fostering of a new spirit of nationalism.

way. Chu Hsi had in his youth been an earnest student of Taoist teaching. At this period of Taoist degeneracy he pleaded for a return to, and a rational application of, the idealistic teachings of Lao Tzŭ (老子). "Though Tao(道)is present everywhere, . . . how are we to find it? The answer is: simply by turning and looking within. We need not talk about empty and far-away things: if we would know the reality of Tao we must seek it within our own nature."[40] As a universal principle, he regarded Tao as the "Moral Order."

The work of Chu Hsi and his predecessors resulted in a break within the ranks of Taoism. Many of its serious devotees denounced the corrupt practices which had developed during the centuries, and bent their energies towards the propagation of the idealistic teachings of the Master. Thus, the nobler form of Taoism never wholly perished, but has been preserved, in isolated instances, even to the present day. Unfortunately, the rank and file of Taoist devotees were too engrossed with their own selfish devices to give ear to the challenge of Chu Hsi and his coworkers. They continued their superstitious practices, and their successors have constantly enlarged upon their work. The ordinary Taoist practitioner of to-day is principally occupied with the worship of many idols, the exorcising of demons, fortune telling, geomancy, witchcraft, and the preparing of charms and amulets. Yet, in the midst of all this absurdity, the dream of the Taoist alchemist still survives, and not infrequently in the remoteness of some mountain

[40] J. P. Bruce: *Chu Hsi and His Masters*, p. 162.

temple, may be found earnest men making diligent and persistent search for the elixir of life — that they may live forever — and for the philosophers' stone — that they may live in freedom from all material cares.

CHAPTER VI

ALCHEMY EAST AND WEST

Alchemy is too closely related to the aspirations of mankind in general to be confined to any one race or nation. It is probable that, could proper research be made, we should find that in the history of every civilized people there is a time at which alchemical ideas of some sort have flourished — the period which immediately precedes the age of scientific thinking. It is evident that alchemy may either make its appearance as an indigenous growth at the proper stage of development of any given people, or it may be acquired from another people or race, among whom it has already attained growth and development.

We find thus that alchemy was practiced in China before the Christian era, and we also find it flourishing in medieval Europe more than fifteen hundred years later. Is there any connection or relationship between these two systems? The answer to this question cannot by any means be absolute or final at this stage, for it is conditional upon a number of historical, geographical, and ethnographical factors which are as yet imperfectly known. That there is some connection between the alchemy of China and that of medieval Europe seems highly probable, and it is the object of this chapter to state several reasons for such a belief. For the sake of convenience and clarity, we shall separate the reasons adduced into two groups· viz., historical evidence and internal evidence.

The first fact of historical significance is that of the early intercourse between China and the West.[1] As early as the second century before Christ, the emperor Wu Ti (武帝) (140–86 B.C.) sent an embassy into central Asia to seek an alliance with a powerful tribe called "Hsiung-nu" (匈奴). This embassy proved to be a very important factor in paving the way for commercial relations between China and the West. "While the mission failed to accomplish the purpose for which it was sent, Chang Ch'ien (張騫) brought home valuable information of the country, which ultimately led to the isolation of the Hsiung-nu. In Bactria he found bamboo staves, cloth, and other goods, which he recognized as products of Szechwan, offered for sale, and was told that they were brought there from Sindhu [India]. He reported to the emperor the existence of a foreign trade with China by way of the southwest."[2] During the first century of this era, the territory now known as Chinese Turkestan came under Chinese control, and in the year A.D. 97, communication was established with the

[1] Four books may be mentioned as of particular value for a detailed study of this subject:

1. G. Pauthier: *Histoire des Relations politiques de la Chine avec les Puissances Occidentales*, Paris, 1859.
2. M. Reinaud: *Relations politiques et commerciales de l'Empire Romain avec l'Asie orientale*, Paris, 1863. This work deals with the relations of the Roman Empire with "Hyrcania, India, Bactriana, and China, during the first five centuries of the Christian era, according to the testimony of Latin, Greek, Arabian, Persian, Indian, and Chinese writers."
3. F. Hirth: *China and the Roman Orient*, Shanghai, 1885. This valuable work contains the Chinese texts of seventeen references from Chinese historical works, to "Ta-ts'in" (大秦),—generally regarded as the "Roman Orient,"—with critical translation and critical commentary by the author. The texts date from 91 B.C. to the time of the Sung (宋) dynasty (A.D. 960–1278), respectively.
4. G. Coedes: *Textes d'auteurs Grecs et Latins, relatifs à l'Extrême Orient, depuis le IVe siècle av. J. C. Jusqu' au XIVe siècle*, Paris, 1910.

[2] Li Ung Bing: *Outlines of Chinese History*, pp. 75, 76.

Persian Gulf.[3] In accordance with the axiom that "trade follows the flag," trade relations now became established between China and the Roman Empire. An important fact in this connection is that the disintegration of the Greek power in Asia was succeeded by the establishment of the Parthian dynasty, and in Mediterranean lands, it had succumbed to the might of the Roman Empire. "For three centuries the diplomacy of these two powers was focused on their trade relations. The Parthians controlled the great overland trade route, and levied onerous taxes on the rich commerce that passed over it to the new market of the West: the Romans sought to create new trade routes, or failing that, to force better terms from Parthia. The trade was largely in gems, spices, and fine textiles from India, and in silk from China."[4] Even before the beginning of the Christian era, therefore, certain trade relations existed between China and the Roman Empire. This fact is further corroborated by the testimony of Pliny the Elder, who makes repeated references to the "seric tissues" of which the Romans were very fond, affirming that they were worth their weight in gold, and that the trade was a serious drain upon the resources of the Empire.[5]

[3] An embassy under the leadership of Kan Ying (甘英) planned to proceed farther west by sea, but was deterred from the voyage by tales of hardship. "'There is something in the sea which is apt to make a man homesick, and several have thus lost their lives.'—When Kan Ying heard this, he stopped." Cf. F. Hirth: *China and the Roman Orient*, p. 39.

[4] W. F. Schoff: *Some Aspects of the Overland Oriental Trade at the Christian Era*, in *Journal of the American Oriental Society* (1915), Vol. XXXV, p. 31.

For accounts of Chinese historians concerning the rôle played by Parthia in Chinese-Roman trade relations, cf. F. Hirth: *Op. cit.*, pp. 42, 70, 173, 174.

[5] Cf. Pliny: *Natural History*, VI, 20; XI, 26; XXI, 8; XXXII, 67.

The author of *Périple de la Mer Erythrèe* (*ca.* A.D. 80) also makes mention

With the establishment—above noted—of Chinese authority over the territory now known as Chinese Turkestan, trade between China and the West assumed greater proportions. It was conducted over two main routes. Both led across Parthia with Ctesiphon as the immediate goal. There they divided, one route leading, by way of the Persian Gulf and the Red Sea, to such important commercial centers as Alexandria and Antioch. The second route continued as an overland route from Ctesiphon through Palmyra to Antioch and Byzantium.

At the time of the Parthian War (A.D. 162–165), this overland traffic was temporarily interrupted, and the need of an alternative naval route became apparent. "The first Roman embassy mentioned in Chinese history is dated in the year 166 of our era: it was dispatched by the emperor 'An Tun'—that is to say, Antonius Marcus Aurelius. . . . As the commerce of China with the Roman Empire had, until now, been conducted through the agency of the Parthians—a commerce consisting of precious silks, murrhine vessels and vases of jade—it is not to be wondered at that Marcus Aurelius, during his war with the Parthians, entertained plans for sending emissaries to China for the purpose of establishing direct relations with that empire, and thus escape the necessity of depending any longer on the good or ill will of his enemies for fancy merchandise."[6] This embassy reached the coast of Indo-China, whence it made its way to the Chinese capital at Loyang (洛陽)—

of "a great city in the interior of China" whence silk was exported by caravan. Cf. G. Coedes: *Textes d'auteurs Grecs et Latins*, p. 24.

[6] G. Pauthier: *Histoire des Relations politiques de la Chine*, pp. 17, 18.

on the Yellow River. Sixty years later a second embassy reached China by the sea route. As a result of these expeditions, a maritime trade was established between China and the nations of the West. From its very beginnings, this trade was almost exclusively in the hands of the Arabs, who had entered into commercial relations with Tongking (Hanoi) before the close of the second century, and who had established a colony in Canton as early as A.D. 300.[7]

Without further reference to details, it may simply be recorded, on the evidence of abundant historical data, that during the succeeding centuries, both land and sea routes were utilized in conducting this important and growing trade. With the constant intercourse between traders of Eastern and Western lands — incidental to such commercial relationship — it is natural and inevitable that there should have been a mutual, very generous interchange of ideas, in general. Likewise, it is in keeping with human nature, that matters of a strange and unusual nature would command particular attention.[8] It is not unreasonable to believe, therefore, that during these early centuries, the basic ideas of Chinese alchemy should have found their way westward to the shores of the Mediterranean and — in later centuries — to regions beyond. Nor is it at all improbable that in the process of transmission, these ideas should have undergone considerable embellishment and change.

A second fact of historical importance is, that alchemy first made its appearance in the West at some

[7] For references to Arabian enterprise in the early Chinese-Occidental trade, cf. F. Hirth and W. W. Rockhill: *Chau Ju Kua*, pp. 2–15.

[8] It will be recalled that the scene of *The Story of Aladdin and the Wonderful Lamp* was laid in the capital of China.

time between the third and the fifth century of the Christian era—when commercial intercourse between China and the West was already well established. "Thus, in a treatise known as Physica and Mystica . . . various recipes are given for coloring and gilding metals, but the conception of transmutation does not occur.[9] . . . Later, however, in the commentary on this work, written by Synesius to Dioscorus, priest of Serapis at Alexandria, which probably dates from the fourth century, a changed attitude becomes apparent; the more practical arts are obscured or omitted, and the processes for preparing alloys and coloring metals, described in the older treatise, are by a mystical interpretation represented as resulting in real transmutation." [10]

According to Stillman, "the earliest alchemical writers of whom we have literary remains and of whom we have any items of personal history" are Zosimus, Synesius, and Olympiodorus, who lived at some period from the third to the fifth century.[11]

The fact that these alchemical ideas first made

[9] For an interesting article dealing with the coloring and gilding of metals, cf. A. J. Hopkins: *A Modern Theory of Alchemy*, in *Isis* (1925), Vol. VII, Part I, pp. 58–76.

[10] Article on *Alchemy*, in *Encyclopædia Britannica*, eleventh edition, Vol. I, p. 519.

[11] Cf. J. M. Stillman: *The Story of Early Chemistry*, p. 150.

Stillman also gives an interesting account of two important Greek manuscripts, originally discovered at Thebes, and now known, respectively, as "Papyrus X of Leyden" and "Papyrus Græcus Holmiensis"—the latter now preserved in the Victoria Museum at Upsala, Sweden. The date ascribed to these manuscripts is the third century of this era. But in these manuscripts, "there is no illusion as to any transmutation of the baser metals into precious metals," p. 99. The manuscript at Upsala contains nine recipes dealing with metals and alloys, while the manuscript "Papyrus X of Leyden" "comprises about seventy-five recipes pertaining to the making of alloys, for soldering metals, for coloring the surfaces of metals, for testing the quality of metals, or for imitating the precious metals" (p. 80). A number of recipes from these manuscripts are quoted in Stillman's work. Cf. J. M. Stillman: *Op. cit.*, pp. 78–103.

their appearance in the West at some period "from the third to the fifth century" of this era is of particular interest. At that period Alexandria was still a mighty intellectual center, and even with the gradual decline of the Roman Empire, the city remained a commercial metropolis, second in importance only to Rome itself. A large portion of the Chinese trade, both by land and sea routes, passed through Alexandria. With the constantly increasing numbers of Oriental traders frequenting Alexandria, it is but natural that many ideas imported from the Orient should find congenial soil for growth in this center of culture and intellect. There seem to be no reasons why the alchemical ideas of China, already well developed at the beginning of the Christian era, should not have reached Alexandria by the trade routes, to appear again after a certain transformation in Greek garb, and in an Occidental setting.[12] That the alchemy of transmuting metals is primarily emphasized, and that of prolonging life practically ignored, may be accounted for by the fact that — as we have seen — both the theory and practice of working in metals were well developed in Egypt as early as the third century of this era.

[12] The report that Greeks in Egypt were practicing alchemy, received official notice in the year 290 of our era, when the emperor Diocletian issued an edict commanding that diligent inquiry should be made "for all the ancient books which treated of the admirable art of making gold and silver," and that, without pity, such books, should be committed to the flames.

Cf. Gibbon, E.: *The History of the Decline and Fall of the Roman Empire*, Vol. I, pp. 427, 428.

Cf. *Encyclopædia Britannica*, eleventh edition, Vol. I, p. 519.

It is quite conceivable, and altogether probable, that many of these ideas concerning alchemy should have come to Alexandria, from China, through Arabia, for, as we have seen, the Arabs had well-established trade relations with Tongking—in southern China—before the close of the second century of the Christian era.

A third fact of historical significance is, that alchemy reached Spain during the eighth century, under Moslem auspices. With the growing power of Christianity during the fourth and fifth centuries, pagan philosophy and science fared none too well. The church of that day was concerned with preparing for the world to come and had little interest in such mundane matters as natural or physical science. The schools of philosophy and science at Alexandria maintained a precarious existence until the year 415, when they ceased to exist. Fortunately, a large share of the learning and literature of the Alexandrian schools was preserved by Syrian scholars who took refuge in Persia and founded other schools in which such subjects as astrology, medicine, and alchemy were given a prominent place in the curriculum. In these schools, the works of a number of the Alexandrian alchemical writers were translated into Syrian.[13] In the process of time these Syrian scholars were patronized by the caliphs, and a large number of the Syrian manuscripts of Alexandrian authors were translated into Arabian. "The Arabs soon began to translate the chief works of the Greek philosophers and scientists into their own tongue, although these translations were often made from Syriac or Aramaic versions rather than directly from the Greek original. . . . Medicine, mathematics, and natural science were especially cultivated by the writers in Arabic; and in these fields they seem to have learned something from India and the Orient as well as from the ancient Greeks." [14]

[13] Cf. J. M. Stillman: *The Story of Early Chemistry*, pp. 140, 141.
[14] L. Thorndike: *The History of Medieval Europe*, pp. 182, 183.

The statement, above recorded, that Arabian writers "seem to have learned something from India and the Orient as well as from the ancient Greeks" seems eminently fitting and reasonable when we recall that, during the centuries in question, an extensive commerce was carried on between China and the West through Arabian agency. In the eighth century embassies were exchanged between the rulers of Arabia and China. "One of the most renowned seats of alchemic industry was Bagdad while it was the seat of the caliphate." [15]

It seems reasonable to infer, therefore, that from these two sources — Alexandrian manuscripts, and the accounts related by Oriental merchants — Arabian scholars derived a varied and fairly comprehensive knowledge of Chinese alchemy.

In the wake of the Mohammedan conquest of northern Africa and Spain in the seventh and eighth centuries, Arabian learning followed How firmly it intrenched itself in the universities of Spain during the succeeding centuries is a matter of historical record. Particularly in the realms of mathematics, medicine, and chemistry, the Arabian scholars were held in high esteem. From Spain, Arabian learning gradually penetrated, in Latin dress, to the seats of learning of western and central Europe. Coincident with this process, we find that many of the foremost scholars of those institutions were becoming actively interested in the problems of alchemy. Is it not a legitimate inference, therefore, that in all probability, through Arabian mediatorship, the essential problems of the pioneer Chinese alchemist were transferred to a different race and age ?

[15] W. A. P. Martin: *The Lore of Cathay*, p. 67.

In dealing with the internal evidence for a probable connection between the two systems of alchemy under discussion, we shall call attention to four features wherein the two systems display a significant similarity. The manifestations of these features in Chinese alchemy have already been noted, and need not, therefore, be reiterated at this point.

1. In both systems the twofold object of pursuit — immortality and riches — was identical. In medieval Europe the former object was far less in evidence than the latter, but this was very probably due to the fact that Christianity placed great emphasis upon the future life, and there was consequently little need of having recourse to the arts of alchemy for its attainment. On the other hand, the practical use of alchemy for the related purposes of prolonging life and renewing youth received the greater emphasis. "In the thirteenth century arose for the first time the idea that the philosophers' stone possessed the powers of healing disease and of restoring youth. . . . Hollandus, in his *Opus Saturni*, says: 'A portion of it, the size of a grain of wheat, should be laid in wine and then given to the patient. The action of the wine will penetrate to the heart, and spread itself through all the juices. The patient will sweat, and thereby become, not more weary, but ever stronger and more cheerful. This dose should be repeated every ninth day, when the patient shall think he is no longer a man, but a spirit. He shall feel as if he were nine days in Paradise, and living on its fruits.' Solomon Trismosin maintains that when an old man, he renewed his youth by means of a grain of the philosophers' stone. His yellow wrinkled skin became

smooth and white; his cheeks rosy; his gray hair black; his back, bowed with age, became erect. He restored, as he asserts, perfect youthfulness to ladies ninety years of age." [16]

The chief purpose of alchemy, however, in the minds of the medieval European alchemists, was the transmutation of base metals into gold. Gold was regarded as the perfect metal. Robert Bacon taught that real gold is formed by the interaction of the proper proportion of the purest forms of quicksilver and sulphur. Consequently — since all other metals are derived from these two metals — all that is needed to produce gold from other metals is to remove their infirmities, thereby curing their diseases.[17] As in Chinese alchemy, so in that of medieval Europe, this process might be performed through the agency of the philosophers' stone. Albertus Magnus is portrayed as being particularly interested in the search for this magic compound. In his treatise entitled *Libellus de Alchimia*, eight interesting conditions are enumerated for observance by such as would seek the philosophers' stone.[18] They are herewith quoted:

a. "The alchemist should be discreet and silent, revealing to no one the result of his operations.

b. "He should reside in a private house, in an isolated situation, containing two or three rooms set apart for the experiments.

c. "He should choose his days and hours for labor with discretion.

[16] J. von Liebig: *Familiar Letters on Chemistry*, pp. 78, 79.
[17] J. S. Brewer: *Opera quædam hactenus inedita*, pp. 375, 383.
[18] There is not unanimity of opinion among students of medieval history in ascribing the above-mentioned work to Albertus Magnus.

d. "He should have patience, diligence, and perseverance.

e. "He should perform, according to fixed rules: trituration, sublimation, fixation, calcination, solution, distillation, and coagulation.

f. "He should use only vessels of glass or glazed earthware.

g. "He should be sufficiently rich to bear the expenses of his art.

h. "He should avoid having anything to do with princes and noblemen." [19]

2. Both systems closely associated themselves with astrology. In medieval Europe alchemy and astrology remained very closely related throughout their centuries of development. The alchemist was generally regarded as an authority not only in the art of transmuting metals, but in the realms of astrology, medicine, and magic, as well. Most alchemists believed that the planets had the power of maturing metals, and could thus influence the operations which aimed at their transmutation. "In the world of the alchemist, the material world and the material heavens, the intellectual, the moral, and the spiritual world were regarded as one great whole, the parts of which were continually acting and reacting on each other. . . . The alchemist came to believe that special forms of matter were more or less directly under the influence of the heavenly bodies. In time the connection became fixed, both in the language and in the symbols employed by the alchemist. Thus,

[19] H. C. Bolton: *The Follies of Science at the Court of Rudolph II*, pp. 62, 63.

gold was associated with the sun,
silver was associated with the moon,
copper was associated with Venus,
iron was associated with Mars,
tin was associated with Jupiter,
lead was associated with Saturn,
quicksilver was associated with Mercury." [20]

Grosseteste urged the selection of favorable hours for experiments in alchemy, subscribing to the theory that the seven planets were associated with the seven metals.[21]

3. Both systems were attended by the practices of magic, divination, and charlatanism in general. So powerful was the influence of magic in the Europe of the Middle Ages that one author asserts: "At the bottom, the whole structure of medieval thought rested on magic." [22] Magic and divination were largely based on astrology, which — as we have seen — was inseparably bound up with alchemy. "The supreme power in the natural universe was reserved to the stars. By the movements of the planets all changes in the world of physical nature, and many in the life of man were supposed to be regulated. It was from the stars that gems and herbs derived their occult virtues. Many doctors inspected the sky with reference to the diseases and treatment of their patients, and many rulers kept astrologers at their courts. Even bishops and popes were at times known to consult them. The alchemists tried to convert other

[20] M. M. Pattison Muir: *Heroes of Science*, pp. 10, 11.
[21] L. Baur: *Die philosophischen Werke des Grosseteste, Bischofs von Lincoln*, p. 5.
[22] V. Rydberg: *The Magic of the Middle Ages*, p. 30.

metals into gold, and often proceeded toward this goal by mystic methods with incantations and useless ceremonial." [23]

Even before the year 1100, Raoul d'Ardent, of the diocese of Poitiers, had sounded a warning against divination: "Be on your guard, my brethren, against those who assert that each one on coming to this earth is born under a star which shapes his life's destiny. There is no such destiny, my brethren; the hour is neither happy nor unhappy, the day is neither good nor bad, and those who make such assertions to you are evidently dreaming. . . . Be therefore on your guard, my brethren, against such as make a practice of divination and of auguries, for such practices are prohibited in our sacred books." [24]

In the matter of astrological magic, Roger Bacon transgressed the bounds of orthodoxy. While he condemned magic by the aid of demons, he asserted that images and verbal charms, if made under the proper constellations, became endowed with extraordinary powers, because they stored up the mysterious energy of the stars and of the human spirit.[25]

Indicative of the bad repute into which astrology and alchemy had fallen by the end of the thirteenth century, is the fact that Dante makes pertinent reference to both astrologers and alchemists in his *Divine Comedy.* Dante places astrologers in the fourth Gulf of the eighth Circle of the Inferno — "the abode of such as presumed, while living, to predict future

[23] L. Thorndike: *The History of Medieval Europe*, pp. 387, 388.
[24] L. Bourgain: *La Chaire française au XIIe siècle d'apres les manuscrits*, pp. 212, 213.
[25] Cf. J. H. Bridges: *Opus Maius of Roger Bacon*, Vol. I, p. 392.

events." To this class of malefactors belonged "those who had practiced the arts of divination and astrology." [26] Alchemists were assigned to the tenth Gulf of the eighth Circle of the Inferno.

"So shalt thou see I am Capocchio's ghost, who forged transmuted metals by the power of alchemy; and if I scan thee right, thou needs must well remember how I aped creative nature by my subtle art." [27]

In the fourteenth century, the papacy itself took official notice of the situation. In 1317, Pope John XXII issued a decree against alchemists. "Alchemies are here prohibited, and those who practice them or procure their being done, are punished. They must forfeit to the public treasury for the benefit of the poor as much genuine gold and silver as they have manufactured of the false or adulterated metal. If they have not sufficient means for this, the penalty may be changed to another at the discretion of the judge, and they shall be considered criminals." [28]

4. Both systems made frequent use of symbolic and mystical language. The following quotation from *De Natura Rerum* of Paracelsus may serve as an illustration of the use of symbolism: "The life of metals is a secret fatness; . . . of salts, the spirit of aquafortis; . . . of pearls, their splendor; of marcasites and antimony, a tinging metalline spirit; . . . of arsenics a mineral and coagulated

[26] C. H. F. Cary: *The Vision of Dante Alighieri*, pp. 83, 84.

[27] *Id.*, p. 126.

[28] The complete text of this decree in Latin, and in English translation, is found in J. J. Walsh: *The Popes and Science*, pp. 125, 126. Walsh contends valiantly and at length that the decree was aimed at "false alchemists," and that it in no wise hindered the study and practice of the legitimate art.

poison. The life of all men is nothing else but an astral balsam, a balsamic impression, and a celestial invisible fire, an included air and a tinging spirit of salt. I cannot name it more plainly although it is set out by many names." [29]

As an example of occult and mystical language, the following alchemical formula, dating from the fourteenth century, is noteworthy: "To fix quicksilver. Of several things take 2, 3, and 3, 1; 1 to 3 is 4: 3, 2, and 1. Between 4 and 3 there is 1; 3 from 4 is 1; then 1 and 1, 3 and 4; 1 from 3 is 2. Between 3 and 2 there is 1. 1, 1, 1, and 1; 2, 2, and 1; 1 and 1 to 2. Then 1 is 1. I have told you all." [30]

In an investigation of this nature there is, manifestly, no method whereby it can be proved with mathematical accuracy and certainty, that the above-mentioned fourfold identity of the two systems guarantees an historical connection between the two. It is quite conceivable that each of these features might have come into being singly or in combination, as a typical phenomenon of any alchemical system, and quite independent of the system or systems of any other place or period. While that is a possibility, nevertheless the fourfold identity of the two systems pertinently suggests the probability that there actually is a definite historical relationship between them. In addition to this internal evidence, we have the significant testimony of history. From it, we know that definite trade relations had been established between the Chinese

[29] Quoted by P. D. Foote: *The Alchemist*, in the *Scientific Monthly* (1924), Vol. XIX, pp. 239–262.

[30] Quoted in J. E. Mercer: *Alchemy; Its Science and Romance*, p. 172.

and the Romans, mainly via Alexandria — as early as the first century of the Christian era. Furthermore, we know that genuinely alchemical ideas—such as the transmutation of metals — did not make their appearance in Alexandria until some time "from the third to the fifth century" of this era[31] — after trade relations between China and the West had been thoroughly established. And finally we have seen that definite ideas of alchemy found their way from Alexandria to Spain during the eighth century, under Moslem auspices, and that, from Spain, Arabian learning gradually spread, until it permeated the medieval schools and universities of central and western Europe. It is worthy of more than passing notice that in those very seats of learning, at that period of time we discover the identical fourfold features of alchemy which we have found to be distinctly characteristic of the Chinese system of alchemy.

From such circumstantial but cumulative evidence, it seems to the author just and reasonable to conclude that there is, in all likelihood, a definite historical connection between the alchemy of China and that of medieval Europe. If such a conclusion is warranted, then it follows that the skilled, scientifically trained chemist of our own civilization and age owes a very real debt of gratitude to the ancient Taoist devotee of the Middle Kingdom who, through the subtleties of alchemy, made crude but consecrated search for the secret of a life-eternal, and free from all material care.

[31] Cf. *Encyclopædia Britannica*, eleventh edition, Vol. I, p. 519.
Cf., also, J. M. Stillman : *The Story of Early Chemistry*, p. 150.

Corrigenda

Page 121, line 8, change "Robert" to "Roger."

,, 136, ,, 23, ,, "Bushnell" to "Bushell."

BIBLIOGRAPHY

In the preparation of this bibliography the writer's aim has been to incorporate all known sources dealing in some appreciable measure, directly or indirectly, with the subject under discussion. Though it is believed that the list is comprehensive, it cannot be hoped that it is absolutely complete. Not all the works in this list have been quoted in the monograph, but all have been examined — as time would permit — for materials pertaining to this study.

For the sake of convenient reference the following classification is made:

1. Primary sources.
2. Secondary sources.
3. Dictionaries.
4. Periodicals.

It has been thought helpful to append a brief descriptive account to each of the primary sources.

Primary Sources

1. *Shu Ching* (書經) — *The Book of History*

This work was compiled by Confucius and consisted originally of one hundred chapters of historical data covering a period from the twenty-fourth to the eighth century before Christ. In the tragic "Burning of the Books," 213 B.C., this work was almost completely destroyed. From fragments which were recovered in later years, a partial restoration was made. The text which we now possess consists of fifty-eight chapters.

2. *I Ching* (易經) — *The Book of Changes*

The authorship of this work is ascribed to Wen Wang (文王) (*ca.* 1200 B.C.), the father of the founder of the Chou (周) dynasty. It is a treatment of the eight trigrams, and consists of sixty-four chapters. A commentary known as the "Ten Wings" was later added by Confucius. The work is said to have escaped destruction during the conflagration of 213 B.C., because it was regarded as a text on divination.

3. *Shih Ching* (詩經) — *The Book of Odes*

This work is a collection of more than three hundred odes and ballads used by the people of the various states of ancient China. Confucius is generally credited with having made selection and compilation of these odes, from a total of three thousand. *The Book of Odes* is especially valuable for its portrayal of the manners, customs, and beliefs of ancient China.

The three works noted above hold highest rank among Chinese classical writings. Principal translations of these works are:

James Legge, in *The Chinese Classics* (text and translation), 7 vols., London, 1861–1893.
W. Gorn Old: *The Shu King*, New York, 1904.
Ch. de Harlez: *Le Yih King*, Brussels, 1889.
C. F. R. Allen: *The Book of Chinese Poetry* (*Shih King*), London, 1891.

4. *Li Chi* (禮記) — *The Book of Rites*

This Confucian classic was not actually compiled by Confucius. It is a kind of *chi*, or record, kept by the disciples of Confucius and later Confucian scholars of what they had heard or read about the rites and etiquettes of the Chou dynasty. It was first gathered together and edited, with one hundred thirty-one chapter headings, at the beginning of the Han dynasty. Later, the book was much boiled down and revised. At present, it consists of forty-nine chapters. Commentators on this classic have been numerous, the most noted among them being Chêng K'ang-ch'êng (鄭康成), of the Han dynasty, and K'ung Ying-ta (孔穎達), of the T'ang dynasty. It has been tsanslated into English by James Legge.

5. *Shih Chi* (史記) — *Historical Records*

Ssŭ-ma Ch'ien (*ca.* 163 B.C. to *ca.* 85 B.C.)— frequently referred to as the "Chinese Herodotus"— was the author of this work. Its scope extends from the semi-mythical reign of Huang Ti (黃帝) (*ca.* 2700–2600 B.C.) to the year 122 B.C. The work is divided into five main sections and contains a total of one hundred and thirty chapters. It is the first attempt of the Chinese at a comprehensive survey of their history, and is generally regarded as the norm and standard for all succeeding dynastic histories of China. An excellent translation of the first forty-seven chapters exists in

E. Chavannes: *Les Mémoires historiques de Se Ma Ts'ien*, 5 vols., Paris, 1895–1905.

6. *Ch'ien Han Shu* (前漢書) — *The Book of the Former Han*

This work is attributed to Pan Ku (班固) (d. A.D. 92). It deals with the period of the former Han (漢) dynasty (206 B.C. to A.D. 24). There is no translation of this work.

7. *Tzu Chih T'ung Chien* (資治通鑒) — *Comprehensive Mirror for the Aid of the Government*

Ssü-ma Kuang (司馬光) (A.D. 1019–1086) was the author of this work. It is a compilation of the main facts of historical accounts dating from the fifth century before Christ to the tenth century of this era. Originally it consisted of 354 volumes, but in its present form it is composed of 294 volumes. It is regarded as a highly authorative work — second in importance only to the *Shih Chi* (史記) — *Historical Records* — of Ssŭ-ma Ch'ien. The work has not been translated.

8. *Tao Tê Ching* (道德經), by Lao Tzŭ (老子)

This work has been described in Chapter I of the text.

Principal translations :

James Legge, in *The Texts of Taoism*, 2 vols., Oxford (*The Sacred Books of the East*, Vols. XXXIX and XL), 1891.
Paul Carus : *The Canon of Reason and Virtue*, Chicago, 1898.
W. Gorn Old : *The Simple Way*, London, 1913.
V. von Strauss : *Lao Tse's Tao Te King*, Leipzig, 1870.
L. Wieger : *Tao Tei King* in *Les Pères du Système Taoiste*, Hochienfu (China), 1913.

9. *Lieh Tzŭ* (列子)

Brief reference to this work will be found on page 47 of the text.

Principal translations :

Lionel Giles : *Taoist Teachings* (a translation of extracts from the work), London, 1912.
L. Wieger : *Lie Tzeu* in *Les Pères du Système Taoiste*, Hochienfu (China), 1913.

10. *The True Canon of Nan Hua* (南華眞經), by Chuang Tzŭ (莊子),

This work has been dealt with in Chapter I of the text.

There are three translations :

James Legge, in *The Texts of Taoism*, 2 vols., Oxford, 1891.
H. A. Giles : *Chuang Tzŭ, Mystic, Moralist, and Social Reformer*, London, 1889.
L. Wieger : *Tchoang Tzeu*, in *Les Pères du Système Taoiste*, Hochienfu (China), 1913.

11. *Shan Hai Ching* (山海經) — *The Mountain and River Classic*

The date of this work has been placed as early as 1200 B.C. and as late as 300 B.C. It purports to be a descriptive geography, but is mainly concerned with the strange animals, medicinal plants, and minerals of the various localities described.
Translation by
Leon de Rosny : *Chan Hai King*, 2 vols., Paris, 1891.

12. *Hai Nei Shih Chou Chi* (海內十洲記) — *Island Records*

An ancient book in one volume attributed to T'ung-fang Shu (東方朔), of the Han dynasty. It contains highly imaginary descriptions of the various islands within the great encircling sea — the abodes of the immortals, their manner of life, and the various drugs with which they attained immortality. The real authorship of the book must be dated much later, perhaps the fifth or the sixth century of this era.

13. *Ts'an T'ung Ch'i* (參同契) — *A Treatise on Alchemy*

This work is from the hand of Wei Po-yang (魏伯陽), a Taoist philosopher of the second century before Christ. It is regarded as the oldest complete work dealing with Chinese alchemy. While it contains numerous references to alchemy, there is much extraneous matter. The work has not been translated.

14. *Huai Nan Tzŭ* (淮南子), by Liu An (劉安) (d. 122 B.C.)

The author was a devoted Taoist, and an ardent searcher for the elixir of life and the secret of transmuting metals. In its present form the work consists of twenty-one chapters. It is regarded as one of the standard works of the Taoist Canon. There is no translation of this work.

15. *Lieh Hsien Ch'uan* (列仙傳) — *A Taoist Biography*

Some scholars ascribe this work to the authorship of Liu Hsiang (劉向), of the first century before Christ, while others assign it to the third century of this era with authorship unknown. It consists of the biographies of seventy-one Taoist immortals. The work has not been translated.

16. *Pao Pu Tzŭ* (抱朴子)

This is the pseudonym under which Ko Hung (葛洪), of the fourth century of this era, published a comprehensive work dealing largely, but not exclusively, with alchemy. Ko Hung was a devoted Taoist, and one of the most celebrated adepts in the art and practice of alchemy. His work is of primary importance in any investigation of this subject. It is divided into two parts. The first part consists of twenty chapters, in which such subjects as transmutation of metals, elixirs of life, ascetic rules for

prolonging life and attaining immortality, are discussed. The second part consists of fifty chapters, devoted largely to matters of government and politics but with occasional references to alchemy. Only brief portions of this work have been translated.

17. *Shên Hsien Ch'uan* (神仙傳) — *Biographical Records of the Immortals*

This work is by the same author as the preceding entry. The biographies of eighty-four immortals are recorded — Lao Tzŭ (老子) being placed first on the list. The miraculous element — both in the attainment of immortality, and in subsequent career — is predominant in this work. The biographies were written as an answer to a question by one of Ko Hung's disciples as to the actual existence of immortals. The work has not been translated.

18. *Wu Chên P'ien* (悟眞篇) — *Essays on Alchemy*

This is an important work on alchemy, written by Chang Po-tuan (張伯端), *ca.* A.D. 1075. A number of commentaries have been written on this book, some of them of recent date. The work has not been translated.

19. *T'ao Kung Huan Chin Shu* (陶公還金術) — *Treatise on the Transmutation of Metals*

In this work on Chinese alchemy, the transmutation of metals receives particular attention. It is divided into three chapters, and contains a valuable commentary. "The preface dates 1546, but the work itself should be dated earlier than that." (From a review of the work by the Chinese assistant in the Library of Congress.)

Through the kind courtesy of Dr. Putnam, Librarian of the Library of Congress, a photostat copy of this work has been secured for the University of California Library. There is no translation of this work.

20. *Ko Chih Ching Yüan* (格致鏡原)— *Mirror of Scientific Discovery*

This is really a cyclopedia of concrete objects. It is divided into one hundred chapters, touching almost everything in the world, from astronomical phenomena to insects, from jewels to playthings. It is not a work based upon actual observation, but rather a compilation of accounts regarding the various objects recorded in a thousand and one ancient Chinese books. The chapters

on geology, botany, and zoölogy occupy more than one third of the whole work and contain much valuable information. The compiler was Chên Yuan-lung (陳元龍), who lived during the beginning of the Ch'ing dynasty.

21 *Po Wu Chi* (博物記) — *A Treatise on Natural Science*

This book was originally written by Chang Hua (張華), of the Ching dynasty, but having been destroyed it was recompiled by some later scholars from what had been quoted from it in various works, with probably additions by the compilers. At present it consists of ten books, treating of the fauna and the flora in China and many other natural objects, especially as they were in ancient times. There is a sequel to this book, called *Hsü Po Wu Chi* (續博物記), by Li Shih (李石), of the Sung dynasty.

22. *Pen Ts'ao Kang Mu* (本草綱目) — *Chinese Materia Medica*

This voluminous work, divided into fifty-two books, was compiled by Li Shih-chen (李時珍), of the Ming dynasty. It deals with the *materia medica* of China in a very minute and exhaustive way. Although much of the facts recorded and efficacies attributed to different medicines would seem impossible in the light of modern science, yet there remains a large quantity of useful information derived from the experiences of many centuries. The work is still much consulted by the old-type Chinese physicians of to-day.

23. *Ch'in Ting Ku Chin T'u Shu Chi Ch'êng* (欽定古今圖書集成) — *The Chinese Imperial Encyclopædia*

This monumental work was first published in Peking in 1726. A second edition was issued, as a reprint in Shanghai, in 1888. This encyclopedia consists of ten thousand volumes, each volume averaging forty pages. The material is grouped under six main categories, corresponding roughly to (1) Heaven, (2) Earth, (3) Man, (4) Science, (5) Literature, (6) Government. These categories are in turn subdivided into sections, numbering thirty-two in all.

This work has never been translated, but its value has been greatly enhanced by a good English-Chinese index, prepared by Lionel Giles, and published in London, 1911. The index also contains a detailed historical account of the preparation and publication of the work.

Secondary Sources

Antenorid, J.: *Die Kenntnisse der Chinesen in der Chemie*, in *Chemiker Zeitung*, Cöthen (1902), Vol. XXVI, pp. 627, 628.

Ball, C. J.: *Chinese and Sumerian*, Oxford, 1913.

Ball, J. Dyer: *Things Chinese*, New York, 1904.

The Chinese at Home, London, 1912.

Baur, L.: *Die philosophischen Werke des Grosseteste, Bischofs von Lincoln.*

Beal, S.: *Buddhism in China*, London, 1884.

The Life of Hiuen Tsiang, London, 1888.

Bertholet, M. P. E.: *Les origines de l'alchimies*, Paris, 1885.

Histoire des sciences: la chimie au moyen age, 3 vols., Paris, 1893.

Biot, E.: *Le Tcheou-li, ou rites des Tcheou*, Paris, 1851.

Bolton, H. C.: *The Follies of Science at the Court of Rudolph II.*

Boulger, D. C.: *History of China*, London, 1881.

Bourgain, L.: *La Chaire française au XIIe siècle d'apres les manuscrits*

Bretschneider, E.. *Botanicon Sinicum*, 3 vols., Shanghai, 1881–1895.

Bridges, G. H.: *Opus Maius of Roger Bacon.*

Bruce, J. P.: *Chu Hsi and His Masters.*

Brewer, J. S.: *Opera quœdam hactenus inedita.*

Bushnell, S. W.: *Chinese Art*, 2 vols., London, 1910.

Carus, Paul: *Chinese Philosophy*, Chicago, 1902.

Cary: *The Vision of Dante Alighieri.*

Chavannes, Edouard: *Les Mémoires historiques de Se Ma Ts'ien*, 5 vols., Paris, 1895–1905.

Mission Archéologique en Chine, Paris, 1909–13.

Les Documents Chinois découverts par Aurel Stein dans les Sables du Turkestan, Oxford, 1913.

Coedes, G.: *Textes d'auteurs Grecs et Latins, relatifs à l'Extrême Orient, depuis le IVe siècle av. J. C. Jusqu' au XIIe siècle*, Paris, 1910.

Coltman, Robert: *The Chinese, Their Present and Future*, Philadelphia, 1891.

Cordier, Henri: *Yule's Travels of Marco Polo*, 2 vols., New York, 1903.

Biblioteca Sinica; dictionnaire bibliographique des ouvrages relatifs a l'empire Chinois, 4 vols., Paris, 1904.

Histoire generale de la Chine et de ses relations avec les pays estrangers, 4 vols., Paris, 1920.

COULING, S.: *Encyclopædia Sinica*, Oxford, 1917.

DAVIS, J. F.: *China*.

DE GROOT, J. J. M.; *The Religious System of China*, twelve volumes planned — five completed. Leyden, 1892–1907.

Religion in China, New York, 1912.

DE HARLEZ, CH.: *L'École philosophique moderne de la Chine*, Brussels, 1890.

Les Religions de la Chine, Leipsic, 1891.

Le Livre des Esprits et des Immortels, Brussels, 1893.

DE LACOUPERIE, A. TERRIEN: *The Western Origin of the Early Chinese Civilization*, London, 1894.

The Yh King and Its Authors, London, 1894.

DE MELY, F.: *Les Lapidaires de l'Antiquité et du Moyen Age.* (Tome I, *Les Lapidaires Chinois*), 2 vols., Paris, 1896.

DENNYS, N. B.: *The Folklore of China*, London, 1876.

DE ROSNY, LEON: *Le Taoisme*, Paris, 1892.

DOOLITTLE, JUSTUS: *The Social Life of the Chinese*, 2 vols., New York, 1865.

DOUGLAS, R. K.: *China*, London, 1887.

Confucianism and Taoism, London, 1889.

Chinese Stories, London, 1893.

Society in China, London, 1901.

DU BOSE, H. C.: *Dragon, Image and Demon*, New York, 1887.

DU HALDE, J. B.: *Description geographique, historique, etc., de l'Empire de la Chine*, 4 vols., La Haye, 1736.

EDKINS, J.: *Chinese Buddhism*, London, 1890.

Religion in China, London, 1893.

EITEL, E. J.: *Feng Shui*, Hongkong, 1873.

Buddhism, Hongkong, 1884.

Encyclopædia Britannica.

FERGUSON, J. C.: *Outlines of Chinese Art*, Chicago, 1919.

FLÜCKIGER, F. A.: *Zur Geschichte der ältesten Beziehungen zwischen Ostasien und dem Abend lande, Halle*, 1886.

GILES, H. A.: *Strange Stories from a Chinese Studio*, London, 1880.
A Chinese Biographical Dictionary, London, 1898.
Chinese Literature, New York, 1901.
China and the Chinese, New York, 1902.
The Civilization of China, London, 1911.
Gems of Chinese Literature, 2 vols. (prose and poetry), Shanghai, 1923.
GILES, LIONEL: *Taoist Teachings*, London, 1912.
Musings of a Chinese Mystic, London, 1920.
GOWEN, H. H.: *An Outline History of China.*
GRANET, M.: *La Religion des Chinois*, Paris, 1922.
GRAY, J. N.: *China, a History of the Laws, Manners and Customs of the People*, London, 1873.
GROUSSET, R.: *Histoire de l'Asie*, 3 vols., Paris, 1922.
GRUBE, WILHELM: *Geschichte der Chinesischen Litteratur*, Leipsic, 1902.
Religion und Kultus der Chinesen, Leipsic, 1910.
Die Religion der Alten Chinesen.
HANBURY, D.: *Science Papers.*
HASKINS, C. H.: *Studies in the History of Mediæval Science*, Cambridge (Mass.), 1924.
HERMANN, H.: *Chinesische Geschichte.*
HIRTH, F.: *China and the Roman Orient*, Shanghai, 1885.
Ancient History of China, New York, 1911.
HIRTH, F., and ROCKHILL, W. W.: *Chau Ju Kua*, St. Petersburg, 1911.
HOEFER, F.: *Histoire de la Chimie*, 2 vols., Paris, 1866.
HOLGEN, H. J.: *Jets over de Chineesche Alchemie*, pp. 400–406, and *Jets uit de Geschiedenis van de Chineesche minerologie en Chemische Technologie*, pp. 468–476, in *Chemisch Weekblad* (1917), Vol. XIV.
HOPKINS, A. J.: *A Modern Theory of Alchemy*, in *Isis* (1925), Vol. VII, Part I, pp. 58–76.
HIORTDAHL, TH.: *Fremstilling af Kemiens Historie* in *Christiania Videnskabsselskabet Skrifter* (1905), Vol. I, Sec. VII, pp. 1–86.
HORNE, C. F.: *Sacred Books and Early Literature of the East.* (Vol. XI deals with ancient China), New York, 1917.

HUC, M. : *The Chinese Empire*, London, 1855.
JOHNSON, SAMUAL : *Oriental Religions*, 2 vols., Boston, 1878.
JOHNSTON, R. F. : *Buddhist China*, London, 1913.
JULIEN, M. STANISLAUS : *Histoire et Fabrication de la Porcelaine Chinoise*, Paris, 1856.
Industries anciennes et modernes de l'Empire Chinois, Paris, 1869.
KOLMODIN, ADOLF : *Lao Tse, en profet bland hedningarne*, in *Dissertations, Upsala Universitet*, Upsala (1888), Vol. III, No. IX, pp. 1–150.
LAUFER, B. : *Chinese Pottery of the Han Dynasty*, Leyden, 1909.
Jade, Chicago, 1912.
The Beginnings of Porcelain in China, Chicago, 1917.
LEGGE, JAMES : *The Religions of China*, New York, 1881.
Confucian Analects.
LI UNG BING : *Outlines of Chinese History*, Shanghai, 1914.
LIEBIG, J. VON : *Familiar Letters on Chemistry*, London, 1859.
LILLY, W. : *An Introduction to Astrology*, London, 1913.
LIPPMANN, E. O. VON : *Entstehung und Ausbreitung der Alchemie*, Berlin, 1919.
LOCKHART, W. : *The Medical Missionary in China*, London, 1861.
MACGOWAN, J. : *The Imperial History of China*, Shanghai, 1906.
MAILLA, P. : *Histoire generale de la Chine*, Paris, 1777.
MARTIN, W. A. P. : *A Cycle of Cathay*, London, 1896.
The Lore of Cathay, New York, 1901.
MATSUMURA, JINZO : *Chinese Names of Plants*, Tokyo, 1921.
MAYERS, W. F. : *The Chinese Readers' Manual*, London, 1910.
MERCER, J. E. : *Alchemy; Its Science and Romance*, London, 1921.
MEYER, E. VON : *A History of Chemistry* (translation by George McGowan), London, 1898.
MOULE, A. E. : *New China and Old*, London, 1892.
MUELLER, H. : *Das Taoistische Pantheon der Chinesen*, in *Zeitschrift für Ethnologie*, Berlin (1911), Vol. XLIII, pp. 393–428.
MUIR, M. M. PATTISON : *Heroes of Science, Chemists*, London, 1883.
PARKER, E. H. : *China Past and Present*, London, 1903.
Ancient China Simplified, London, 1908.
China, Her History, Diplomacy and Commerce, London, 1919.
Studies in Chinese Religion.

PAULSEN, F.: *Introduction to Philosophy.*

PAUTHIER, G.: *Histoire de Relations politiques de la Chine avec les Puissances Occidentales*, Paris, 1859.

PELLIOT, P.

PFIZMAIER, A., in *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften*, Vienna (1868): Vol. LX, pp. 7–74, *Zur Geschichte der alten Metalle* (1869); Vol. LXIII, pp. 217–286, *Die Täolehre von den wahren Menschen und den Unsterblichen* (1870); Vol. LXV, pp. 311–376, *Die Lebensverlangerungen der Männer des Weges.*

PLATH, J. H.: *Die Religion und der Kultus der Alten Chinesen*, in *Abhandlungen der Koniglich Bayerischen Akademie von Wissenschaften*, Munich (1860), Vol. IX, pp. 731–969.

POTT, F. L. H.: *A Sketch of Chinese History*, Shanghai, 1903.

RAY, P. C.: *A History of Hindu Chemistry*, 2 vols., Calcutta, 1903.

REINAUD, M.: *Relations politiques et commerciales de l'Empire Romain avec l'Asie orientale*, Paris, 1863.

REMUSAT, J.

RICHARD, L.: *Comprehensive Geography of the Chinese Empire*, Shanghai, 1908.

RICHTHOFEN, F.: *China*, Berlin, 1912.

RYDBERG, V.: *The Magic of the Middle Ages.*

SARKAR, B. K.: *Chinese Religion Through Hindu Eyes*, Shanghai, 1916.

SIMCOX, EDITH, J.: *Primitive Civilizations*, New York, 1894.

SOOTHILL, W. E.: *The Three Religions of China*, London, 1913.

SPECHT, M. E.: *Études sur l'Asie Centrale d'aprés les Historiens Chinois*, in *Journal Asiatique* (1883), Vol. II of Series VIII, pp. 317–350.

STEIN, AUREL: *Sand-Buried Ruins of Khotan*, London, 1903.
Ruins of Desert Cathay, London, 1912.
Serindia, Oxford, 1921.

STILLMAN, J. M.: *The Story of Early Chemistry*, New York, 1924.

STUART, G. A.: *Chinese Materia Medica*, Shanghai, 1911.

SUZUKI, D. T.: *A Brief History of Ancient Chinese Philosophy*, London, 1914.

THOMPSON, J.: *The Land and People of China*, New York, 1876.

THORNDIKE, L.: *A History of Magic and Experimental Science During the First Thirteen Centuries of Our Era*, New York, 1923. *The History of Medieval Europe.*

VINCENT, E.: *La Médicine en Chine*, Paris, 1915.

WAITE, H. E.: *Lives of Alchymistical Philosophers*, London, 1888.

WEDEL, T. O.: *Mediæval Attitude Toward Astrology*, New Haven, 1920.

WERNER, E. T. C.: *China of the Chinese*, New York, 1920. *Myths and Legends of China*, London, 1922.

WIEGER, LEON: *Folklore Chinois Moderne*, Hochienfu (China), 1909. *Le Canon Taoiste*, Hochienfu (China), 1911. *Les Pères du Système Taoiste*, Hochienfu (China), 1913.

WILLIAMS, C. A. S.: *A Manual of Chinese Metaphor*, Shanghai, 1920.

WILLIAMS, E. T.: *China Yesterday and Today*, New York, 1923.

WILLIAMS, S. WELLS: *The Middle Kingdom*, 2 vols., New York, 1883.

WYLIE, A.: *Notes on Chinese Literature*, Shanghai, 1902.

YULE, SIR HENRY: *The Book of Ser Marco Polo*, London, 1871.

DICTIONARIES

(1) Chinese Dictionaries

Chih Wu Hsiao Ta Tz'u Tien (植物學大辭典) *(A Complete Dictionary of Botanical Terms)*, Commercial Press, Shanghai, 1918.

Chung Kuo I Hsiao Ta Tz'u Tien (中國醫學大辭典) *(Encyclopædic Dictionary of Medical Terms)*, 2 vols., Commercial Press, Shanghai, 1922.

Chung Kuo Jen Ming Ta Tz'u Tien (中國人名大辭典) *(Biographical Dictionary of Famous Chinese Men and Women)*, Commercial Press, Shanghai, 1921.

Hsin Tzŭ Tien (新字典) *(New Chinese Dictionary)*, Commercial Press, Shanghai, 1912.

K'ang Hsi Tzŭ Tien (康熙字典) *(K'ing Hsi's Imperial Dictionary)*, Peking, 1717.

Tz'u Yüan (辭源) *(Chinese Encyclopædia)*, 2 vols., Commercial Press, Shanghai, 1912.

(2) Chinese-English Dictionaries

E. J. Eitel: *A Chinese Dictionary of the Cantonese Dialect*, London, 1877.

H. A. Giles: *A Chinese-English Dictionary*, 2d ed., Leyden, 1912.

D. MacGillivray: *A Mandarin Romanized Dictionary of Chinese*, 3d ed., Shanghai, 1911.

A. H. Mateer: *New Terms for New Ideas*, Shanghai, 1917.

Lee Yu-wen: *A New Chinese English Dictionary*, Commercial Press, Shanghai, 1921.

S. Wells Williams: *A Syllabic Dictionary of the Chinese Language*, Shanghai, 1896.

(3) English-Chinese Dictionaries

W. W. Yen: *English and Chinese Standard Dictionary*: Commercial Press, Shanghai, 1912.

K. Hemeling: *English-Chinese Dictionary of the Standard Chinese Spoken Language*, Shanghai, 1916.

Periodicals

Asia Major, Leipsic, 1924–
Asiatic Journal, London, 1816–1844
Asiatic Quarterly Review (since 1914, published as *Asiatic Review*), London, 1886–
Annales du Musée Guimet
Bulletin de l'École de l'Extréme Orient, Paris, 1900–
China Journal of Science and Arts, Shanghai, 1923–
Chinese Repository, Canton, 1832–1851
China Review, Hongkong, 1872–1901
Chemisch Weekblad, 1917
Discovery, 1923
Isis, 1925
Journal of the American Oriental Society, Boston and New Haven, 1849–
Journal Asiatique, Paris, 1822–
Journal of the Royal Asiatic Society of Great Britain and Ireland, London, 1834–
Journal of the North China Branch of the Royal Asiatic Society, Shanghai, 1858–
Journal of the Chemical Society of London, 1922
Revue de l'Orient, Paris, 1842–1852
Scientific American, 1924–1925
Scientific Monthly, 1924–1925
The Chinese Recorder, Foochow and Shanghai, 1868–
The New China Review, Hongkong, 1919–1923
T'oung Pao (通報), Leyden, 1890–
University of California Chronicle, 1923
Variétés Sinologiques, Shanghai, 1892–
Zeitschrift fur Ethnologie

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GOLD

HISTORICAL AND ECONOMIC ASPECTS

An Arno Press Collection

[Bonus, Petrus of Ferrara]. The New Pearl of Great Price. 1894

Emmons, William Harvey. Gold Deposits of the World: With a Section on Prospecting. 1937

Father Coughlin on Money and Gold: Three Pamphlets. 1974

Gold and Silver in the Presidential Campaign of 1896. 1974

Gold Mining Company Prospectuses. 1974

Hammond, John Hays. The Autobiography of John Hays Hammond. 1935. 2 volumes in one

Johnson, Obed Simon. A Study of Chinese Alchemy. 1928

Letcher, Owen. The Gold Mines of Southern Africa. 1936

Nesbitt, L[ewis] M[ariano]. Gold Fever. 1936

Ogilvie, William. Early Days on the Yukon and the Story of its Gold Finds. 1913

[Preshaw, G. O.]. Banking Under Difficulties or Life on the Goldfields of Victoria, New South Wales & New Zealand. By a Bank Official. 1888

Rickard, T[homas] A[rthur]. Man and Metals. 1932. 2 volumes in one

Russell, Henry B. International Monetary Conferences. 1898

Seyd, Ernest. **Bullion and Foreign Exchanges Theoretically and Practically Considered.** 1868

Speculation in Gold and Silver Mining Stocks. 1974

Taylor, F. Sherwood. **The Alchemists:** Founders of Modern Chemistry. 1949

United States Congress. House of Representatives. Committee on Banking and Currency. **Gold Panic Investigation.** 41st Congress, 2d Session, House Report No. 31. 1870

Weaver, James B. **A Call to Action.** 1892