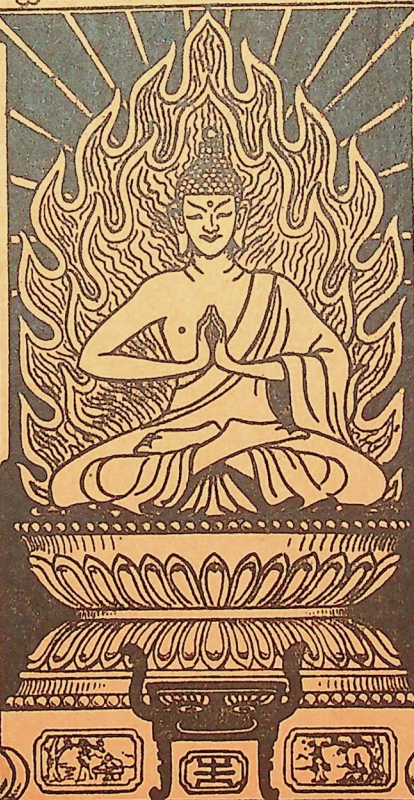


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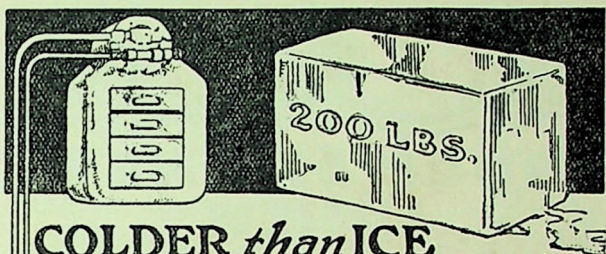
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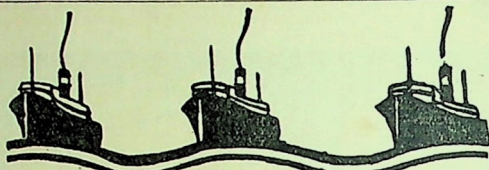
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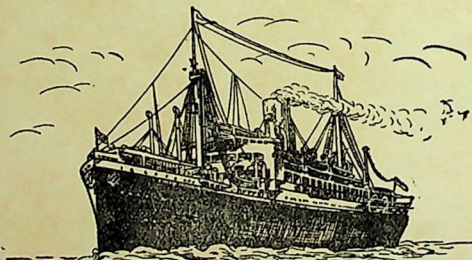
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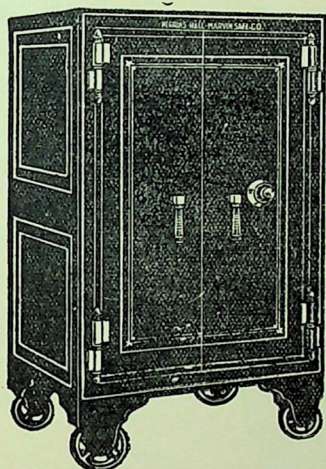


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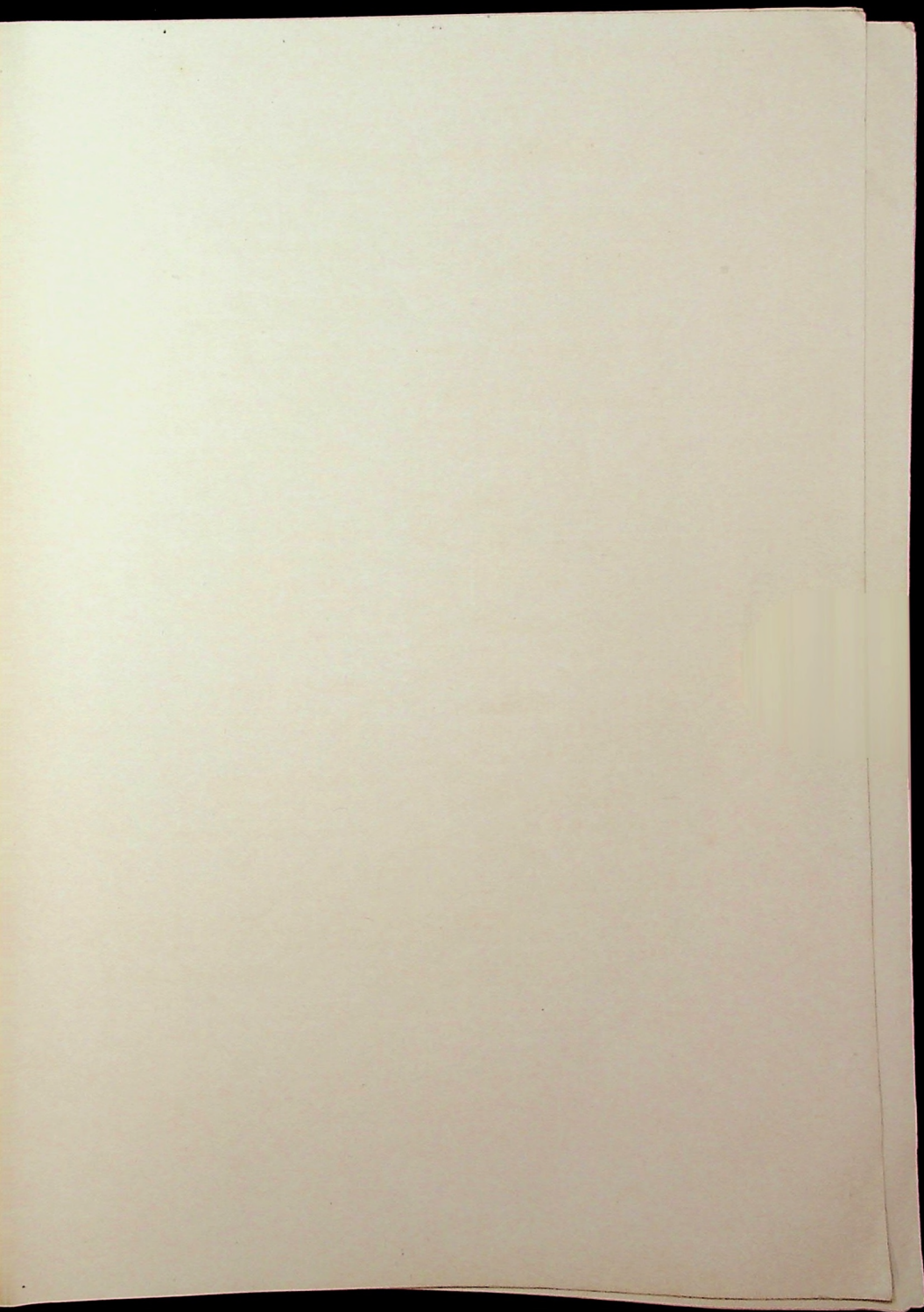




Photo by D. Sjolander.

The Chinese Tiger Snake, *Natrix tigrina lateralis* (Berthold).

(See page 231)

THE
CHINA JOURNAL
OF
SCIENCE & ARTS

VOL. IV

MAY 1926

No. 5

RESPECTING CO-OPERATION IN SCIENTIFIC
WORK

We are tempted to inquire, what are the limits of professional courtesy? Our question is prompted by two requests. One is from a colleague who states that he proposes to lecture on an abstruse subject, and who asks that we acquaint him fully not only with our practical experience, but also with our estimate of its theoretical importance. He assures us that unless we wish it, he will not quote us as having supplied the information which he proposes to turn to his advantage; but, if we desire, he will of course give us full credit. The other is a request for details respecting the organization and activities of numerous societies, concerning which the applicant naively confesses that he is but vaguely informed, but about which he nevertheless proposes to write a comprehensive article.

The ethics to which the scientist subscribes are strict. They demand, primarily, that the author of a thesis make clear every source of information that he himself has not evolved. They even require that, if it be not to his personal disadvantage, he place his laboratory, his library and other facilities at the disposal of another, who, without thought of self, is working for the advancement of science.

We note with misgiving the tendency, here in China, to construe this last to mean that the assistance which every true votary at the shrine of knowledge will unhesitatingly extend to another, shall without question be proffered all and sundry who feel that they would like to speak or to write on matters scientific. This remarkable construction is, indeed, part of the syndrome of a form of *cacoethes scribendi* apparently endemic to China, and in which the patient evinces not only an overwhelming desire to write, but to write on subjects of which he knows little or

nothing. A parallel form, which may be described as *cacoethes oratoris*, has likewise been observed. The etiology of both forms is interesting. The blood reveals a parasite resembling a leech, tentatively designated "the plasmodium of priority." In both, the unbounded optimism of the patient is a noteworthy symptom.

The most stringent tenet in the creed of the worker in science is that which deals with appropriation of the work of another. This is the unpardonable sin. It is sometimes committed unwittingly: but the swift amendment volunteered by the ethical reduces such commission to its true perspective. In China, however, there appears to be a definite psychoneurosis—a true mental aberration independent of organic lesion—which we shall term, "moral parallax" and which markedly distorts the perspective of ethics. This is the more to be deplored since original research work of value is being carried out in this country, in many instances by Chinese who are unable to express themselves in adequate English and must perforce entrust their results to some one who is. Hence we see, all too frequently, treatises by authors manifestly unfitted by training and by intellect to have achieved the results published over their names, and which leave the reader to form only one conclusion.

It is high time to call a halt to this practice, not only in the interests of ethics, but also in view of the alarming increase in the number of pseudo-scientists who abort the work of the serious and qualified investigator, and tax his patience to the point of his addressing them in the icily polite phrases of Conan Doyle's "Professor Challenger"—"No doubt, sir, we have to bow to your scientific authority, but I must admit the name is unfamiliar."

R. R. L. F.

EUROPEAN MOTIFS IN CHINESE ART

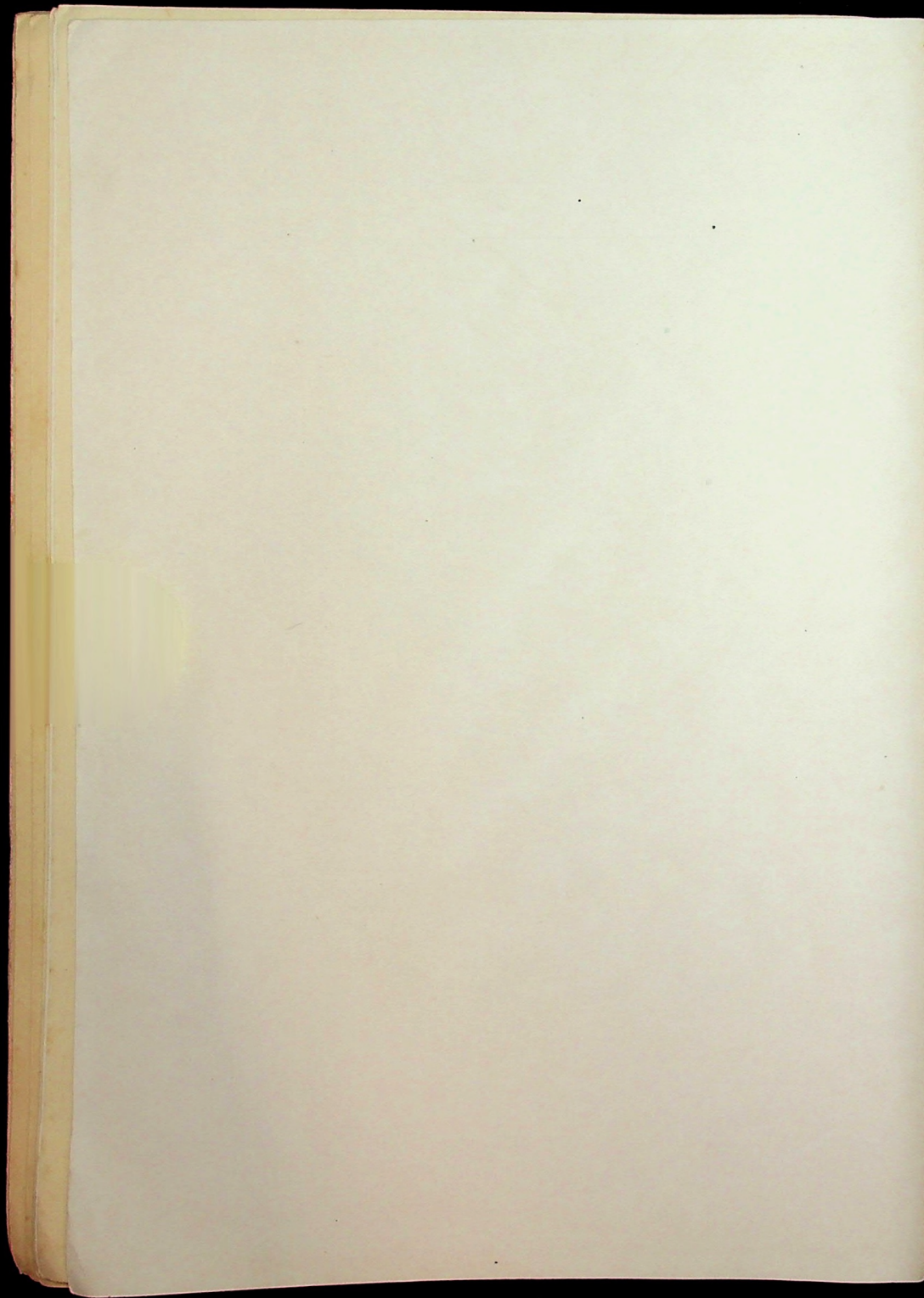
One of our contributors is preparing an article dealing with foreign subjects in Chinese art or the copying of foreign pictures or engravings by Chinese artists and artisans prior to 1815. He desires permission to inspect and photograph for reproduction any examples of such work in private collections. If any of our readers are in possession of such works of art and are willing that they should be so used, we would be very glad if they would communicate with us.—Ed.

EARLY CHINESE SCULPTURE

(Peter J. Bahr Collection)



Black Stone Figure of a Warrior, T'ang Dynasty.

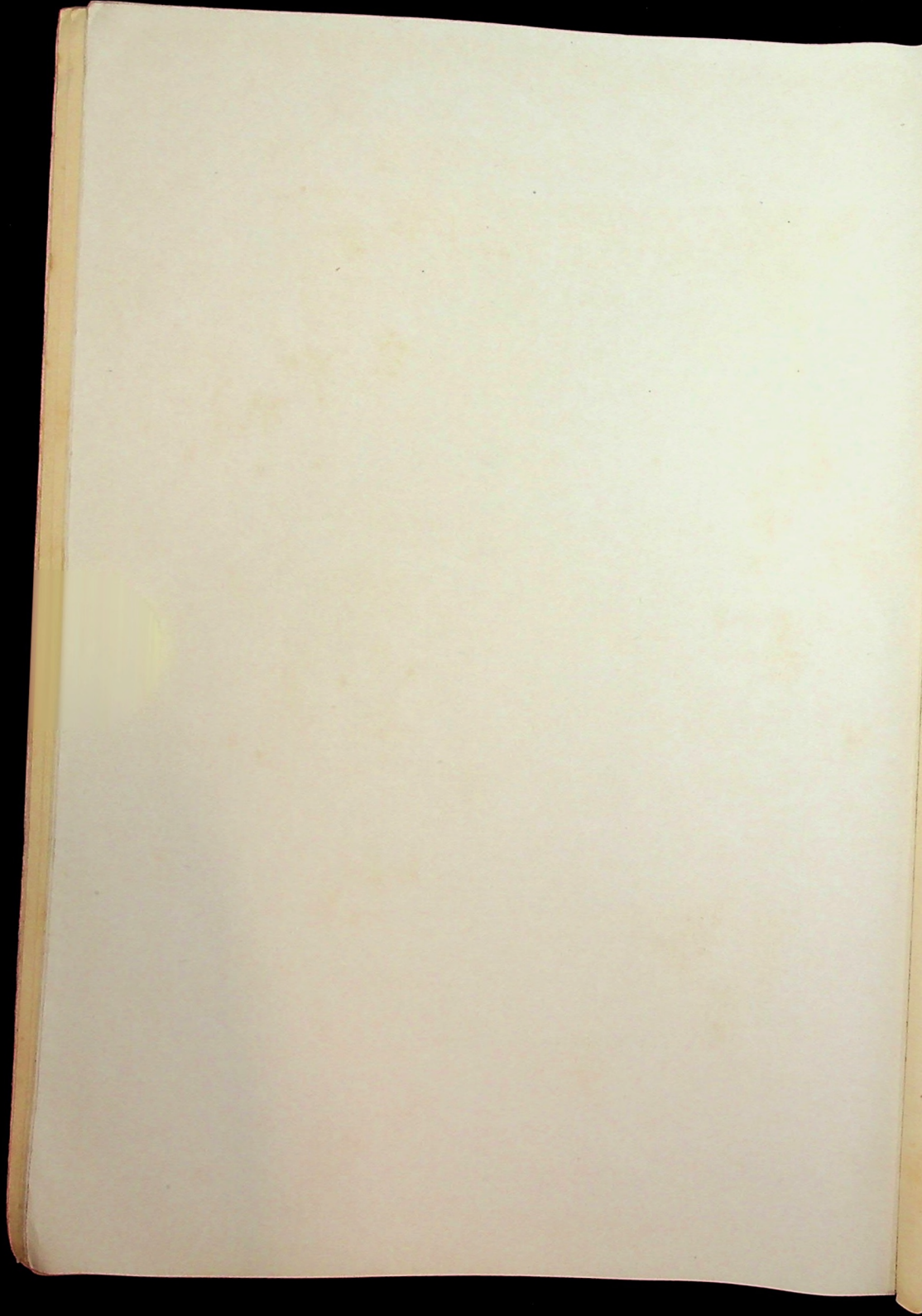


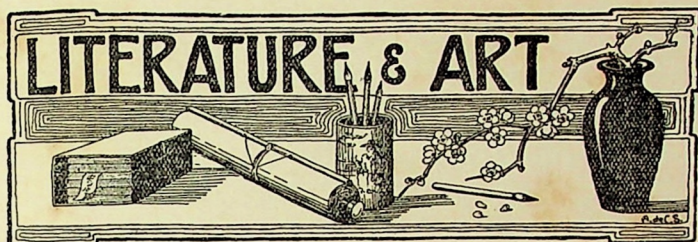
EARLY CHINESE SCULPTURE

(Peter J. Bahr Collection)



Marble Head of a Warrior, Tang Dynasty.





THE LI CHI OR THE BOOK OF RITES

BY

Dr. KIANG KANG-HU

The Li Chi is called in English the Book of Rites and is the fourth (some arrangements make it the fifth, interchanging with the Ch'un Ch'iu) of the Confucian Five Canons. In reality, it is only one of the four Books of Rites in the whole fourteen Confucian classics. This paper only attempts to outline the Li Chi, this particular Book of Rites, and to give also some general accounts of the other three Books of Rites as are necessary in order to understand this one better.

The Chinese titles and their literary translations of these four Books of Rites are : 1, Chou Kuan or Chou Li, the official rites or governmental systems of the Chou Dynasty ; 2, Yi Li, the social ceremonial rites of the same Dynasty ; 3, Ta Tai Li Chi, the records on rites by the Great Tai (a scholar of the Western Han Dynasty ; his name was Tai Sheng) ; and 4, the Hsiao Tai Li Chi, the records on rites by the Small Tai (the nephew of the Great Tai ; his name was Tai Teh).

The first two of these books are the real Ching or Canons of Rites and are believed to have been written by Chou Kung, or the Duke of Chou, a great and sagacious statesman of the Chou Dynasty. The latter two are but Chuan or commentaries on the study of the rites. The former give laws, regulations, and practical ceremonies in detail, while the latter are collections of many monographs concerning the theories and ideas of various rites and also that which is fundamental, spiritual and essential to the rites as a whole. The compilers of the latter lived three hundred years later than Confucius, but many of these monographs were written by the disciples of the sage and some were even handed down from before Confucius' time. All these writings are of the very best literature. The last work, the Li Chi by the Small Tai, contains especially very valuable writings in a more complete condition. This is the reason why this work alone was chosen in the Sung Dynasty, and placed in the Five Canons, by the great philosopher Chu Hsi, while the other three are equally important but less popular.

The book Chou Li is divided into six parts like the six ministries of the Central Government, namely : the Ministry of Heaven, the Ministry

of Earth, the Ministry of Spring, the Ministry of Summer, the Ministry of Autumn, and the Ministry of Winter. The last part was lost during the Ch'in Dynasty and was substituted by a monograph which supplied some knowledge on that ministry. In modern terms, the Ministry of Heaven was the Department of State, and Interior; the Ministry of Earth was the Department of Agriculture, Transportation and Finance; that of Spring was of Education and public Ceremony; that of Summer was of War; that of Autumn was of Law; and that of Winter was of Industry and Labour. Each of these six ministries had one minister, two vice-ministers, and under them many bureaus of various functions. This system continued from the beginning of the Chou Dynasty (that is, the 12th century B.C.) up till the late Reformation of the Manchu Dynasty. The book *Yi Li* is divided into seventeen chapters under the rites of different occasions. The text of it is very difficult to read. The Great *Tai Li Chi* contained eighty-five monographs but only thirty-nine of them now exist. The Small *Tai Li Chi* was originally composed of forty-six monographs and three more were added by Ma Yung of the Eastern Han Dynasty making the total forty-nine.

According to the Chou Li, under the Ministry of Spring, there were five Li or rites. First, the Chi Li or religious rite; second, the Hsung Li or funeral rite; third, the Pin Li or social rite; fourth, the Chun Li or military rite; and fifth, the Chia Li or wedding rite. Each of these five had again many subdivisions; e.g., religious rite included the sacrifice to Heaven, to other gods, and to ancestors; social rite included the ceremonies of visiting, banquet, school exercise and archery practice. All the works in the Small *Tai Li Chi* (hereafter called the *Li Chi*) deal, of course, with these five rites, and can generally be classified under them. But there are also many works which are quite above or beyond the merely formal rites and it is difficult for the modern student to see that they are writings on rites at all. Take for instance "The Great Learning" and "The Doctrine of the Mean," now two of the "Four Books," but formerly among the forty-six works of the *Li Chi*. We can hardly perceive in them anything concerning rites in the modern sense, because the conception of "Li" is itself much broader than that of "Rite." Its significance is more like the word "Order" as I have pointed out in one of my lectures on the "Four Books."

"Order" is indeed broad enough to define the word "Li," but is in some sense too broad. For, from the Chinese viewpoint, order is of two opposite forces, one the positive and the other the negative. The order of human society which is preserved and maintained by the positive force is that by Li, while the negative force is that by Fa or Law. We will see, therefore, "Li" represents only the positive side meaning of "Order" but not its negative side. This is probably the fundamental difference between the Chinese and the Western ideas of civilization. Our ideal government and social institutions are under the encouragement of Li, while the Westerner's are under the protection of Law. The difference between these two is very plain and great. Li shows what we shall do, while Law tells what we shall not. Li leads towards the habit of right practice, while Law warns against the wrong. Li prevents

every possibility of criminality in advance, while Law follows it by punishment afterwards. Li is therefore under the Ministry of Spring, while Law is under that of Autumn. Of course, for a complete order, law is also necessary, just as a year is not perfect without the autumn season; but the Chinese do not believe the law is almighty, and, on the contrary, prefer the Li.

In this aspect the Taoist philosophy has gone even still farther and is much more radical than Confucianism. These two great schools of Chinese philosophy were derived originally from the same spring, and ran in the same direction for at least half of the way. They believe and discuss the same principle, Tao; and their interpretations of the nature of Tao are very similar and in many points the same. But, since Tao is very abstract and incomprehensible, it needs some word or term in explanation—not to explain its T'i or body, but to explain its Yung or issue. Here these two schools split. The Taoist tries to grasp Tao through the means of Teh or virtue, but the Confucian through the means of Li or rite. Virtue is something inward but rite is something outward; virtue applies to individuals but rite applies to society. Taoism leads to anarchistic theory, Confucianism leads to socialistic system. Li is the centre of Confucian teaching and the target bitterly hit by the Taoists when they attack Confucianism. Many other ancient schools of Chinese philosophy attacked Confucianism at this same point by saying that Li is arbitrary and artificial, the thief of human nature and the maker of guilt; and that by spending a whole life time one may never have learned it, and even if he has, it is but a waste of energy. Taoism emphasizes only the Teh or virtue, which character in Chinese means "self gotten."

By this we see there are two extremes. On the one hand we have the Western type of government by law, and on the other hand we have the Taoist philosophy of the ethics of virtue. Between these two, the Confucian idea of human relation stands, and is established on the base of Li. Confucianism recognizes the Teh as the inner phase of the Li before its formation, but the Teh can not be put into actual practice in a proper way if it is not regulated by rite; and admits the law as the emergency assistant only necessary to abnormal cases when the Li calls for its enforcement. The normal and practical course in every day life of an individual and of society is neither virtue nor law but the Li. Nothing, anywhere, may be without it.

What, then, is the Li? There are indeed many definitions. By summing up all different opinions and finding out their common point, I would explain it as follows: to express or carry out the thought of gentleness and politeness indicated by various actions with various articles according to due degree on an existing occasion—that is the Li. This definition suggests three important elements through which the Li is manifested. First is the thought, second the action, and third the article. If the Li is personified, then, the first of these three is his soul, or spirit, the second, his flesh, and the third, his clothing. These three, though all important, are not equally so, as the order itself shows. Confucius said in his Analects that "Gems and silks (articles principally

used in performing ceremony) are not all that is meant by the Li", so the articles are of the least importance. Again, Mencius said in his work that "Reverence cannot be performed by mere voice and countenance," so the action is also of a lesser importance than the thought. But, on the other hand, no matter how sincere and earnest the thought is, if it is not carried out by a proper manner, such person is called a "wild man"; and if in want of right articles, such manner is said to be an "empty act." The Li Chi emphasizes the thought as the real motive behind all ceremonies, and, at the same time, records carefully the exercises of both bodily and vocal expressions and the equipment of required houses, clothes, tools and utensils.

In the Li Chi, the funeral rite is more carefully recorded than any of the other four rites. It shows that the funeral was the most important thing at that time. This is true of all ancient peoples and more for the Chinese who are a clan nation and an ancestor-worshipping race. The preserving of the body and the sacrifice to the spirit of a dead person, together with the mourning by his living relatives, were great studies of scholars of early days. The funeral rite has been regarded as a divine duty of the living ones to the dead from the religious viewpoint, and also as a legal duty from the governmental viewpoint. It has been a fixed and unified system over the empire. There were nine degrees of mourning, varying in materials and colours of clothes and lengths of time in accordance with the different relations respectively. Sacrificial rite was likewise important. Confucius believed this to be the root of civilization, having an unseen power of casting away barbarism and holding together mankind.

The ancient Oriental civilization is in many cases a reverse of that of the modern Occidental. But in the Li Chi we find something quite up to date. The Chinese sages had succeeded in realizing some ideas or ideals of scholars of the twentieth century A.D., in the time of the twentieth century B.C. After an evolution of four thousand years, these old practices have again become lively problems with fresh interests.

For example, the Chinese social unit has long been the family and not the individual. But we find the spirit of respect of the individual in the Kuan Li, or the ceremony of crowning. This was a common exercise for every male citizen when he reached the age of twenty. He was then crowned with a hat according to his rank, and wore it ever after to distinguish the adult from the children, who were bare-headed. Despite all other traditions, he was then in this ceremony before the public treated by his father as a guest of equal right. He ascended the ceremonial platform from the west steps (for the guest) and his father from the east (for the host); and they bowed to each other respectfully. He was from that time said to be free from "the youth's services" and also to be responsible for all his own deeds. He might be relieved from family duties to his parents, and marry and enter into official and social life.

There is another common belief that the Chinese look down on woman and treat her unequally. But we find the spirit of respect for women in the Hun Li, or ceremony of wedding. Woman of that date in

China was probably even more valued and honoured than woman of to-day in America. A woman would never marry unless the engaged man went to her home, worshiped her ancestors and parents, bowed to her and welcomed her personally with full procession leading from her home. This ceremony was very important and solemn. Even to-day, when free marriage is very fashionable in China, the bride-groom always goes first to the bride's home and leads her to the wedding party. When they bow to each other for the "beginning solution," the bride-groom is to do it first. The Li Chi gives the etymological explanation of the Chinese character Ch'i or "wife" as meaning Ch'i or "equal."

Democratic government was found in the Li Chi. Kings, princes, noblemen and common citizens were treated by the law with no difference. A ruler and his subject used to sit on the same mat, and when a great audience meeting was held they were both standing. Virtue and wisdom were honoured as the "heavenly nobility" which stood first, and then age and then rank. The emperor must pay his homage to his tutors, aged scholars, and high officials. He could do no wrong, for affairs were carried out only with the approval of such persons, and the majority of the people backed them. The appointment or discharge of an official and execution of a criminal must be made public first by inquiring the people's opinion, before the actual consummation of the act. Every one had the right to send his petition directly to the state government, advising or criticising the executive body. Every town or village had its own self-government dealing with local matters, being always independent and free regardless of the changing of official government or the overthrow of dynasties.

A Socialistic system was found also in the Li Chi. All agricultural lands were publically owned, equally divided and terminally tenanted to the people. All mountains, forests, and waters were of public ownership and under the national management. Foodstuffs, silk, iron, and many other industries were monopolized or supervised by special administrative boards. All schools were free to the sons of all classes. All aged, sick and defective persons, if of no family, were cared for by the state. Besides local guild organizations, every profession or occupation had its representative or delegate to the central government. This had reached the idea of syndicalism or trade-unionism.

Li Yun, one of the writings in the Li Chi, shows Confucius' ideal empire or the utopian, which is still farther beyond the conditions above given. The sage presents two types of prosperous governments. The one is named the Ta Tung or "Great Universal" and the other the Hsiao K'ang or "Small Peace." He described the governments of the Three Emperors whom he usually praised as but of the latter type, and pictured a communistic society for the former. The text follows:

"When the Great Tao is carried out, all-under-heaven is made a republic. Men of virtues are honoured and those who have abilities are elected. Sincerity and harmony are exercised. One does then not only love his own parents or his own son but others as well. The Aged are attended, adults are employed, children are nursed and educated, sick, defective and homeless ones are publicly cared for. Every man

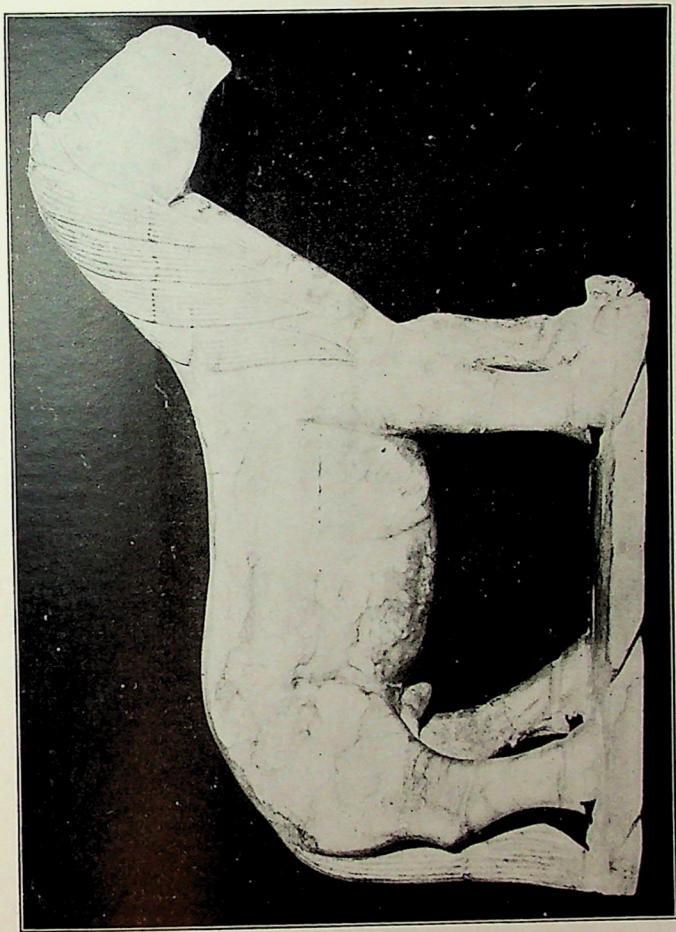
has his workplace and every woman has her home. No wealth is allowed to be wasted nor to be privately owned. No labour is allowed to be undeveloped nor to be used for the sake of any individual. Under such a condition, criminal attempts have no way to exist, thieves, robbers and rebels have no way to rise, and the outer doors are not to be closed. This is the world of Ta T'ung.

"Since the Great Tao is concealed, the empire is established on the basis of families. One loves only his own parents and his own son. Materials and labour are owned and used for individual advantage. Properties and titles are inherited. City-walls, castles, and trenches are necessary. All rites and ceremonies are thus regulated in order to justify and maintain the relations between ruler and subject, between parent and son, between husband and wife, and between brothers. Laws are introduced. Lands and homes are divided and separated. Benevolence, wisdom and strength become the means of personal achievements. Criminals and wars are inevitably involved. The great kings of the Three Dynasties were the naturally selected ones under this condition. The Li has since been of the most importance. It is the constitution of the people. Those who go contrary to it will be isolated from society. This is the state of Hsiao K'ang."

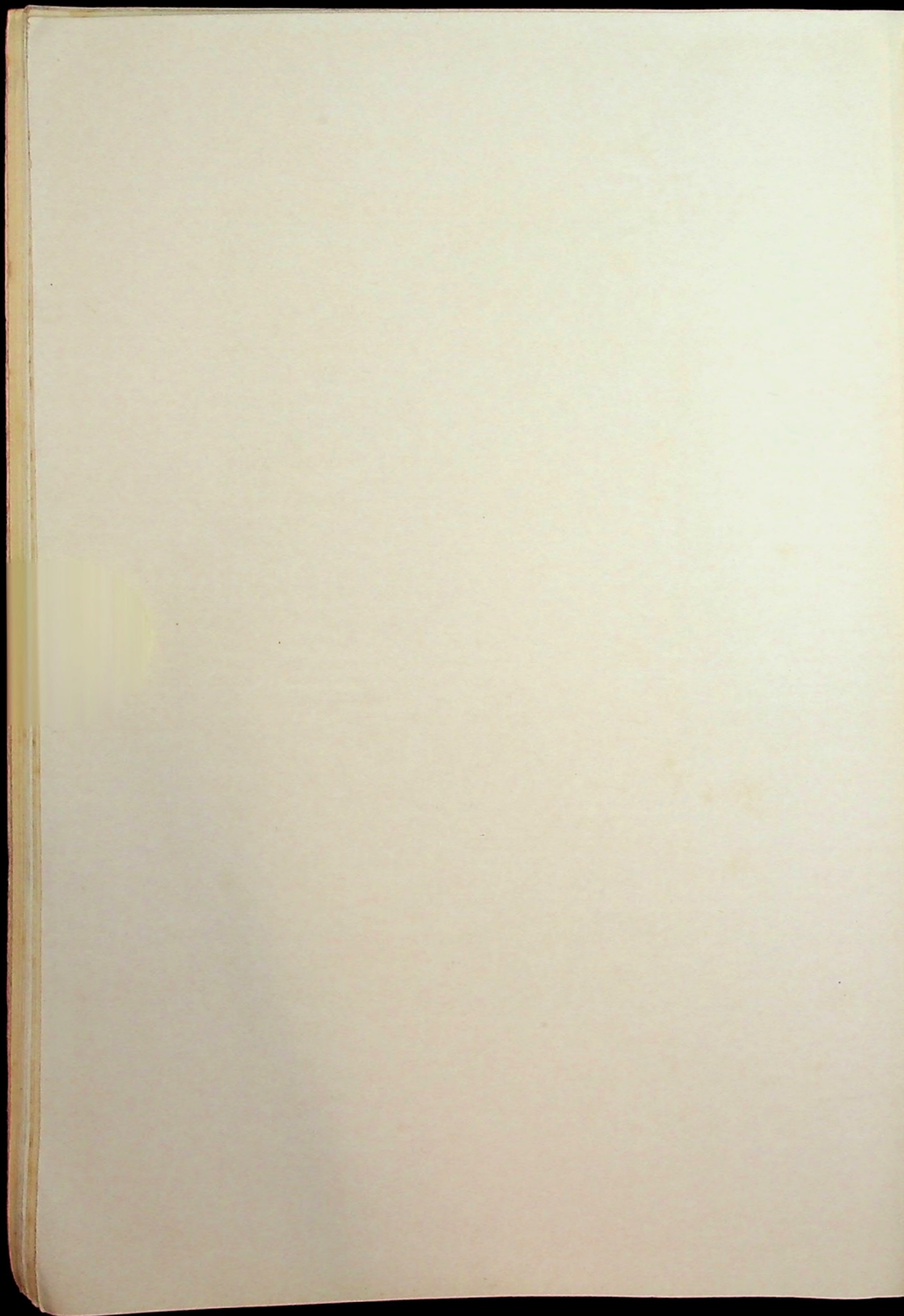
Confucius here agreed with Lao Tzu, the father of Taoism, that the Li is not yet the highest course of civilization; it is but the natural product of a society that needs it. This leads many scholars to believe that most of the teachings of Confucius recorded in the Confucian classics are thought to be adopted in the state of Hsiao K'ang, which is necessary only to serve as a stepping-stone to the world of Ta T'ung. His teaching of the latter does not appear very much in the classics, because his first and most favourite disciple, Yen Yuan, who received his teaching, died young and left no records of it. Confucius said on one occasion in the Li Chi that "there are Three Nothingnesses which are of much more importance than those 'Three Things'; they are the formless rite, the soundless music and the mourning without mourning dress. For the formless rite is the great reverence from which all the forms are brought forth, the soundless music is the great harmony from which all the musics are composed, and the mourning without mourning dress is the great mournfulness and from which all the regulations of mourning are afterwards produced. Thus, these 'Three Nothingnesses' are the roots of these 'Three Things'."

The word Yo or music was always mentioned by Confucius accompanying the word Li. It is a great loss to the Chinese civilization that the "Classic of Music," which was compiled by Confucius, was totally destroyed by the "Ch'in Fire." The reason why other classics were preserved and restored but this classic could not be, is because the former was literature while the latter consisted principally of musical notes, which are difficult to remember without written copies. "The Records of Music," the commentaries of this classic, written by the disciples of the Sage, containing twenty-four individual works, were also lost, except one, which is now placed in the Li Chi. On this account the Confucian Classics are reduced from the original number of six to five.

ANCIENT CHINESE JADES
(From the K. C. Wong Collection).



This Beautiful Jade Figure of a Horse belongs to the Han Dynasty, is White and Red in Colour and
Stands about 6 inches in height.



NOTES ON THE PROVINCIAL MINTED COINS OF CHINA

BY

A. M. TRACEY WOODWARD, F.R.G.S., F.R.N.S.

"To learn, and when the time comes do, would not that be a pleasure?" Confucius. Book I, §I.*

ARTICLE I.

FOREWORD.

About three years ago, to be precise, in the August 1922 number of the defunct *New China Review*,† there appeared from my pen, a numismatic article entitled "Minted Shantung Coins." It was a monograph hurriedly prepared to take the place of a more serious one, which, at the last moment, the lack of further particulars prevented me from placing into print. I did not hold that article to be a deep one, it was more in the nature of tabulated notes in comparison with my earlier attempts on Chinese gold and silver minted coins, but, much as this may appear strange, time proved that that mediocre article was the only one which appealed fascinatingly to local numismatists, more particularly the native element, to whose thin ranks it was the means of adding a number of fresh enthusiasts in the pursuit of collecting minted ten-cash pieces. Since that minor attempt, due to the discontinuance of the *Review*, my numismatic literary endeavours ceased: for over a year, however, I have been appealed to by numerous local collectors to continue my notes in the same field, so as to place permanently on record the data thus obtained by years of collecting and study. The editors of *The China Journal of Science and Arts* have graciously thrown open their columns to me for this purpose, and in my articles I will endeavour not only to lay before my readers full descriptions numismatically of known coins, treating every province or mint in each monograph separately, but will also annotate such matter, where desirable, guided by the above saying of my much admired and wise philosopher—Confucius.

In writing upon Chinese coins, it is important that various characteristics peculiar to native psychology, and hence to the mints in China, should be recorded. Ramsden‡ has made the pioneer attempt in this direction, but as his monograph was written in 1911, and as a considerable number of new minted copper pieces have been produced since then, his notes are much out of date. Furthermore, his researches were carried on far from the territory of his subject matter, which considerably restricted his opportunities to assemble together a representative collection, his

* The Sayings of Confucius have been translated by Ku Hung Ming; M. M. Dawson; Giles; Leonard A. Lyall and others.

† Vol. IV, No. 4.

‡ *Modern Chinese Copper Coins*. 1911.

notes were, perforce, made from much incomplete matter, as will readily be apparent from the small number of coins he describes. It would almost seem that Ramsden allowed his pen to flow without a previous meticulous investigation into the veracity of his statements, for it is evident that he wrote considerably from premature surmises, which, in the light of recent discoveries, are now proved to be incorrect.

PRODUCTION : This is a question which lies more within the scope of the statistician than the numismatist. It is also common knowledge that available statistics in China are not only incomplete, but inaccurate. One authority estimates that the following number of copper pieces were produced in China during :—

1904	..	1,693,700,000	1907	..	2,851,200,000
1905	..	1,821,000,000	1908	..	1,428,000,000
1906	..	1,709,384,000			

whilst the total output during the eighteen years from 1900 to December 31, 1917, is estimated at 31,682,102,308 ten-cash pieces.* These figures are mentioned more as an illustration of the possibilities of production: they certainly are only fragmentary evidence and cannot be deemed a criterion of actual circumstances. During 1910, the Chinese Government estimated the silver value of minted copper coins in circulation at somewhere around one hundred million taels.†

DENOMINATION : The denominations of 20, 10, 5, 2, and 1 cash pieces have been minted, with a great popularity of the ten-cash pieces, whilst the higher denominations of 50, 100, and 200 cash pieces were made in Ssüch'uan and Yunnan provinces since the advent of the republican régime.

COMPOSITION : There are, or really should be, only the two metallic standards of brass and copper. The former is most probably of a composition of 80 per cent., or less, of copper with 20 per cent., or more, of zinc, and is always distinguishable by its attractive yellow hue; the issue of such coins were rather limited, and are mostly found in the coinage of the provinces of Fengtien, Ssüch'uan, Republican Kuangtung and some Hunan and Chekiang dragon pieces. The principal metal, however, is copper, not always in its standard purity but still always a "dompei" in native parlance. Up to about 1917, the mints customarily employed 88.75 per cent. of copper, 8.80 per cent. of pewter and 2.45 per cent. of lead.‡ It is in this metal that the mints—more correctly speaking, the directors of the mints—have debased China's coinage to such an extent that nearly all copper coins are now held in utter disrepute by financiers in China generally. But times were when ten-cash pieces contained 95 per cent. of pure copper and 5 per cent. of spelter; in early days, pieces have been found by actual assay to contain 7.25 grammes § (111.9 grains) of pure copper, and as the standard weight of such pieces should

* *The Chinese Economic Bulletin*. Vol. VII. No. 228. 1925.

† Wen Pin Wei. *The Currency Problem in China*. 1914.

‡ *The Chinese Economic Bulletin*. Vol. VII. No. 228. 1925.

§ Ramsden. *Modern Chinese Copper Coins*. p. 4.

NOTES ON THE PROVINCIAL MINTED COINS OF CHINA

have been in the neighbourhood of 115 grains, this proportion of pure copper must be held to be very satisfactory, such coins were, however, probably made under the regulations that were issued on August 22, 1905, wherein it was provided that copper coins must contain not less than 95 per cent. of pure copper, and 5 per cent. of zinc, whilst the weight of the coins were to be for the

20	Cash piece,	4	Mace K'uping, being equal to	230.32	grains.
10	" "	2	" " " " "	115.16	"
5	" "	1	" " " " "	57.58	"
2	" "	4	Candareens K'uping	23.03	"

Very few coins are met with that are made accordingly, for greed and lack of integrity soon set to work, disintegrating the well intentioned foundations that had been laid.

In the Currency Reform Act issued by the government during 1910, the weight and fineness of copper coins were standardised according to the undermentioned table, but, unfortunately, in company with most measures of reform in China, the above Act was never enforced. Those weights and fineness were:—

Denomination		Weight K'uping tael		* Composition
		grains		
2	Fen (20 cash piece)	28/100	being	161.22
1	Fen (10 " ")	18/100	"	103.64
5	Li (5 " ")	9/100	"	51.82
2	Li (2 " ")	45/1000	"	25.91
1	Li (1 " ")	25/1000	"	14.40

Whatever may have been the purpose of all those rules and regulations, to judge from actual pieces now met with in circulation, it is evident that various compositions were employed, resulting for the most part from the nondescript qualities of ancient *cash* pieces by melting them down and minting the material into ten-cash coins. It is well, therefore, that we should recognise only two classes of metals, the one of yellow brass, including pinchbeck, and the other to include all copper pieces, debased—such as bell-metal, bronze, etc., or otherwise. Sand-blast trial pieces are found in both metals.

DATES: Many coins in the Tai C'hing Ti Kuo series bear on their obverse the year of issue. This opens a very interesting field of research, for it will often be found that the reverse of a certain year has been used with the obverse of a subsequent, and even several subsequent years, especially for the *ting wei* 丁未, and *ping wu* 丙午 years, these are occasionally found with both the Kuang Hsü and Hsüan Tung eras. These coins, are, according to western numismatic ethics, mules pure and simple, but not so in China, where Mint Directors and Provincial Governors know no mint established practice, but act solely under the impulse of

* On the generally recognised, and most likely correct basis of 575.8 grains per K'uping tael.

their individual ethology, and, it may be added, tempted by the lure of quick personal gain, resort to all and any kind of expedient to accomplish their ends. These symbols belong to the *chia-tzu* 甲子, or Chinese Sexagenary Cycle*: one character is taken from the Ten Celestial Stems, 天干, which may be termed the Denary Cycle, and the other from the Twelve Terrestrial Branches, 地支, also denoted the Duodenary Cycle. To the Branches, there have been associated, twelve animals, and it is not uncommon for a Chinese gentleman to reveal his age by mentioning the animal associated with the year he was born in. To facilitate the task of numismatists in their studies I append a list of the Denary (Stems) and Duodenary (Branches) Cycles, accompanied by a table of the Chinese Sexagenary Cycle.

Sexagenary Cycle.

Stems	甲	乙	丙	丁	戊	己	庚	辛	壬	癸	Branches	
甲											子	Rat
乙	子	丑	寅	卯	辰	巳	午	未	申	酉	丑	Ox
丙	1864 1924	1865 1925	1866 1926	1867 1927	1868 1928	1869 1929	1870 1930	1871 1931	1872 1932	1873 1933	寅	Tiger
丁	戌	亥	子	丑	寅	卯	辰	巳	午	未	卯	Hare
戊	1874 1934	1875 1935	1876 1936	1877 1937	1878 1938	1879 1939	1880 1940	1881 1941	1882 1942	1883 1943	辰	Dragon
己	申	酉	戌	亥	子	丑	寅	卯	辰	巳	巳	Serpent
庚	1884 1944	1885 1945	1886 1946	1887 1947	1888 1948	1889 1949	1890 1950	1891 1951	1892 1952	1893 1953	午	Horse
申	午	未	申	酉	戌	亥	子	丑	寅	卯	未	Ram
壬	1894 1954	1895 1955	1896 1956	1897 1957	1898 1958	1899 1959	1900 1960	1901 1961	1902 1962	1903 1963	辛	Monkey
癸	辰	巳	午	未	申	酉	戌	亥	子	丑	酉	Fowl
	1904 1964	1905 1965	1906 1966	1907 1967	1908 1968	1909 1969	1910 1970	1911 1971	1912 1972	1913 1973	戌	Dog
	寅	卯	辰	巳	午	未	申	酉	戌	亥	亥	Boar
	1914 1974	1915 1975	1916 1976	1917 1977	1918 1978	1919 1979	1920 1980	1921 1981	1922 1982	1923 1983		

* The present Cycle began in 1924, and the year 1926 is therefore *ping yin*, 丙寅, being the 3rd. year of the 77th. Cycle.

NOTES ON THE PROVINCIAL MINTED COINS OF CHINA

ABBREVIATED SYMBOLS: When the Tai C'hing Ti Kuo series was made, to be able to distinguish what coins were produced by each province, what is generally known as the abbreviated name of such particular province or of a particular place was placed in the centre of the obverse of the coin, occasionally in relief, but generally incused, sometimes the literary name* of a province was utilized, but not invariably. To enable the reader readily to identify to what province certain coins belong, a list of such descriptive characters will be found useful.

皖	Huan for Anhui (安徽)	Province.
浙	Che for Chekiang (浙江)	"
直	Chi for Chihli (直隸)	"
淮	Huai for Chinkiang (清江)	"
閩	Ming for Fukien (福建)	"
奉	Fung for Fungtien (奉天)	"
汴	Bien for Honan (河南)	"
湘	Shiang for Hunan (湖南)	"
鄂	Ngau for Hupei (湖北)	"
川甘	Chuan Kan for Ssüch'uan/Kansu (四川甘肅)	"
贛	Kung for Kiangsi (江西)	"
寧	Ning for Kiangnan (江南)	"
蘇	Su for Kiangsu (江蘇)	"
吉	Chi for Kirin (吉林)	"
桂	Kuei for Kuangsi (廣西)	"
粵	Yueh for Kuangtung (廣東)	"
黔	Ch'ien for Kueichow (貴州)	"
山	Shan for Shansi (山西)	"
陝	Shen for Shensi (陝西)	"
東	Tung for Shantung (山東)	"
川	Ch'uan for Ssüch'uan (四川)	"
雲	Yun for Yunnan (雲南)	"
滇	Dien for Yunnan (雲南)	"
川滇	Dien for Yunnan/Ssüch'uan (雲南四川)	"

* Most provinces in China are known by a single literary name, but in minting coins, only a few such names were employed, the more practical character representing one syllable of the provincial name having been selected as appealing more to the masses, since those literary names are even to many students, somewhat of an enigma.

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CLASSIFICATION : Chinese minted coins should be classified in several divisions, two of which must be reserved to the coins issued under the Imperial régime. We have, then :

Section I for coins forming the Regular Provincial Series

Section II for coins forming the Tai C'hing Ti Kuo Series

Section III for coins forming the Republican Series.

As it is my intention to dwell upon the coins of each province serially, I will assign a number to each known specimen, and endeavour to continue that list in consecutive numeration, so that an easy reference may be made to any particular coin on future occasions.

MISS-STRIKES : Where minting takes place in China it is reasonable to presume that a very large number of irregular and defective coins should be found in circulation, such as double impressions, *vice versa* incused designs (due to the disc being re-struck before the previous piece was removed), circular pieces "bitten off," specimens off centre and various other freaks, not to speak of blank planchets with no trace of any impressions at all. We must not overlook the fact that where the relation of copper with silver is measured, as it is done in China, in terms of value, and where the sole object of the mint is to cash in, in silver, the maximum weight of silver against the delivery in copper, of the minimum weight of copper, then it is only reasonable to expect any and all specimens of the freaks and miss-strikes just mentioned. But this, be it remarked, applies specially to copper pieces, for such irregular pieces are very seldom met with among silver coins, and over three-quarters of the apparently irregular or defective silver coins found are eventually traced as complete forgeries or bogus pieces.

A few words should be said concerning the relative position of the reverse and obverse dies, but, as in China it is the rule and not the exception that minted coins are made with no regard to the position of each respective die, it being a matter of great indifference to the mints as to whether both sides are erect, or the obverse † and the reverse ‡, or each side at right angles to each other, it would only invite irritation in the minds of my Chinese readers to narrate here the farcical comedy enacted in Fukien province some years ago, as related by Macdonald's article in "Corolla Numismatica" entitled: "Fixed and Loose Dies in Ancient Coinage."

GENERAL REMARKS : Such subjects as the cause of the introduction of copper ten-cash or other pieces, their first appearance, their inscriptions, designs, size *et cetera*, have not been touched upon under any particular heading: obviously, some of these questions fall within the scope of the historian or the currency expert, whilst the majority will be referred to in their respective places.

There now only remains to draw up a consultative table denoting at a glance the various countermarked, provincial and republican issues. This will be found of great assistance not, only to the numismatist, but also to the statistician.

NOTES ON THE PROVINCIAL MINTED COINS OF CHINA

CONSULTATIVE TABLE

		Section I					Section II					Section III								
		20 cash	10 "	5 "	2 "	1 "	20 cash	10 "	5 "	2 "	1 "	20 cash	10 "	5 "	2 "	1 "	50 "	100 "	200 "	
Anhui ..	..	×	×	×	—	—	×	×	—	—	—	—	—	—	—	—	—	—	—	
Chekiang	..	×	×	—	—	—	×	×	×	×	—	—	—	—	—	—	—	—	—	
Chihli	..	—	—	—	—	—	×	×	×	—	×	—	—	—	—	—	—	—	—	
Chinkiang	..	—	×	—	—	—	—	×	—	—	—	—	—	—	—	—	—	—	—	
Fukien	..	×	×	×	—	—	—	×	—	×	—	—	—	—	—	—	—	—	—	
Fengtien	..	×	×	—	—	—	×	×	×	—	—	—	—	—	—	—	—	—	—	
Honan	..	—	×	—	—	—	×	×	—	—	×	×	×	—	—	—	×	—	—	
Hunan..	..	—	×	—	—	—	—	×	—	—	—	×	×	—	—	—	—	—	—	
Hupei ..	..	—	×	—	—	×	×	×	×	×	×	—	—	—	—	—	—	—	—	
Hupoo	..	×	×	×	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Kansu/Ssüch'-uan	..	—	—	—	—	—	—	×	—	—	—	—	—	—	—	—	—	—	—	
Kiangsi	..	×	×	—	—	—	—	×	—	—	—	—	×	—	—	—	—	—	—	
Kiangnan	..	×	×	—	—	—	—	×	×	×	×	—	—	—	—	—	—	—	—	
Kiangsu	..	×	×	×	—	—	×	×	×	×	—	—	—	—	—	—	—	—	—	
Kirin ..	..	×	×	—	×	—	×	×	—	—	—	—	—	—	—	—	—	—	—	
Kuangsi	..	—	×	—	—	—	—	×	—	—	—	—	×	—	—	—	—	—	—	
Kuangtung	..	—	×	—	—	—	—	×	—	—	—	×	×	—	—	—	—	—	—	
Peiyang	..	×	×	—	—	×	—	—	—	—	—	—	—	—	—	—	—	—	—	
Shansi	..	—	—	—	—	—	—	—	—	—	—	—	×	—	—	—	—	—	—	
Shantung	..	—	×	—	—	—	—	×	—	×	—	—	—	—	—	—	—	—	—	
Sinkiang	..	×	×	—	—	—	—	—	—	—	—	×	×	—	—	—	×	—	—	
Ssüch'uan	..	×	×	×	—	—	×	×	—	—	—	×	×	×	—	—	×	×	×	
Thibet	..	—	×	×	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Yunnan	..	—	—	—	—	—	×	×	—	—	—	—	—	—	—	—	×	—	—	
Yunnan/Ssuch'-uan	..	—	—	—	—	—	×	×	—	—	—	—	—	—	—	—	—	—	—	
Miscellaneous or General use..		×	×	×	—	×	×	×	×	×	—	×	×	×	—	—	—	—	—	

TO AN UNKNOWN BIRD

I know not your name, Oh lovely bird,
I know only the joy you are giving,
For whenever I see you my heart is stirred
With a strange new zest in living.

You make me think of the white-robed throng,
Round the sapphire throne assembling,
So sparkle and shine your feathers among
The branches softly trembling.

When graceful you spread your wings in flight,
Then thrill I in rapt admiration.
Like a flying moon, reflecting sunlight
In streams of feath'ry undulation.

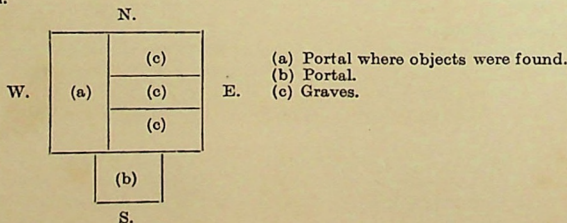
A thought of God's, you are to me,
From the infinite realm descending:
To reveal the truth that its harmony
With that of our earth is blending.

ELFRIDA HUDSON.

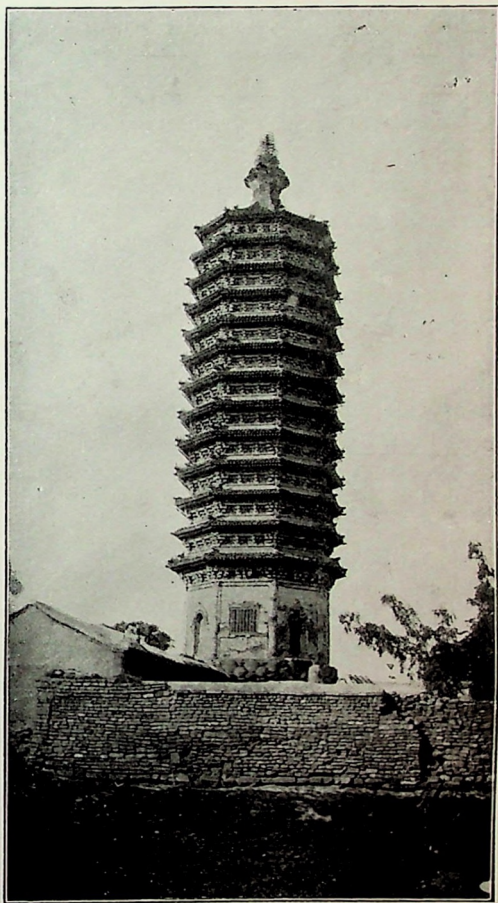
EDITORIAL COMMENTS

RECENT ARCHEOLOGICAL DISCOVERIES

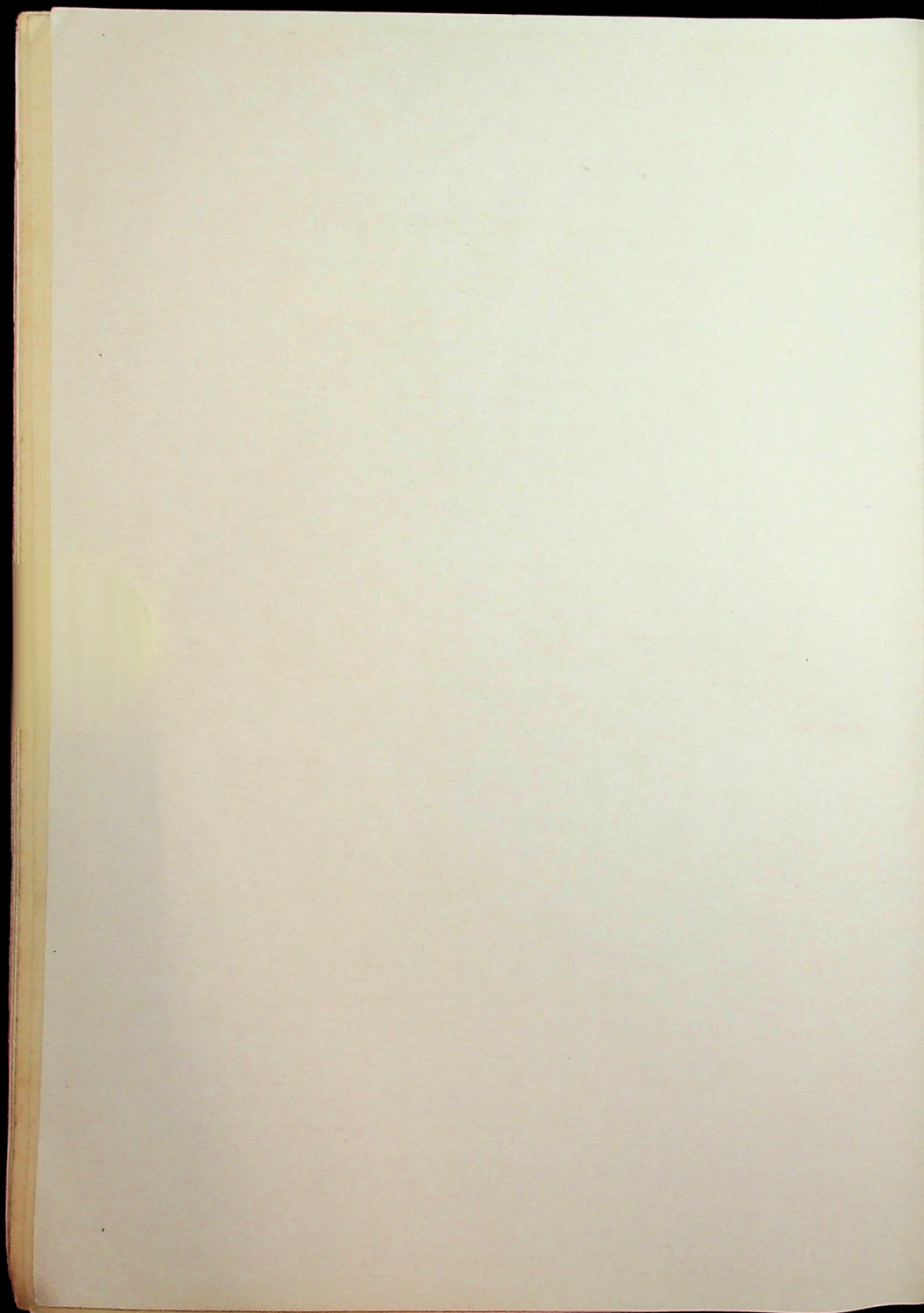
For several years the Japanese Governor General of Korea has encouraged the study by his countrymen of the remains of the Han dynasty civilization in the northern part of the country which at that time was under the direct control of China. An annual fund was set aside by the Korean Administration for this purpose and it was devoted to a study of the contents of abandoned graves along the Ta-t'ung River east of Pheng-yang. Specimens of Han dynasty pottery were found during the investigations of the last few years and these have been stored in the Seoul Museum. This year, on account of the lack of a government appropriation, this work was undertaken by a joint committee composed of professors of the Tokyo and Kyoto Universities who succeeded in raising a small sum by voluntary contributions. The results of this year's digging have been more important than those of previous years. A site containing three graves, outside of which were two portals, was opened and the contents carefully noted. The general shape of the graves may be seen from this diagram.



PAGODAS OF CHINA



An Interesting Old Pagoda at Kuei-hua Ting,
N. W. Shansi.



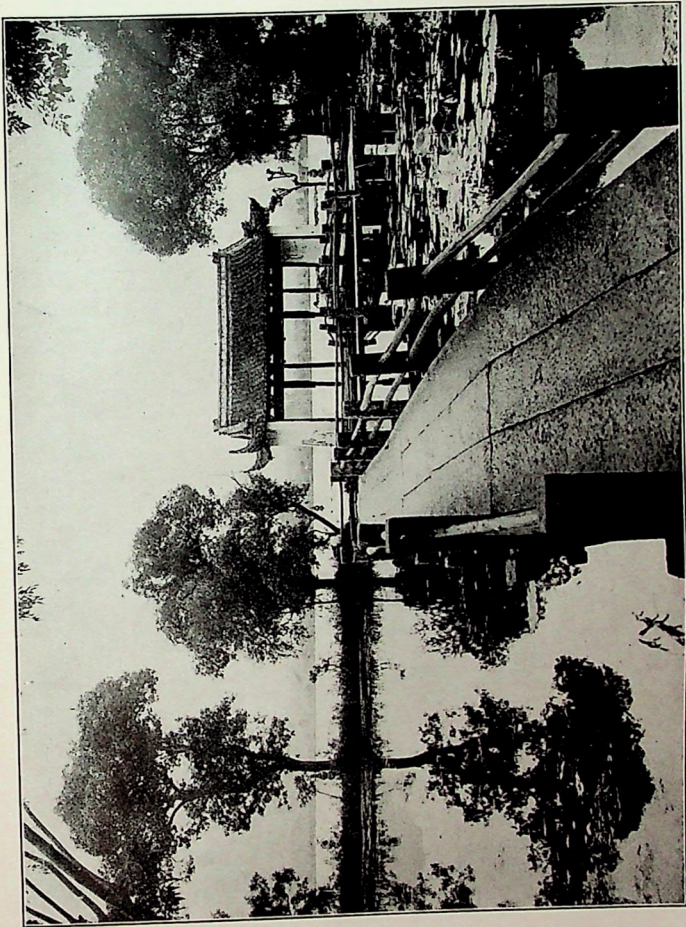
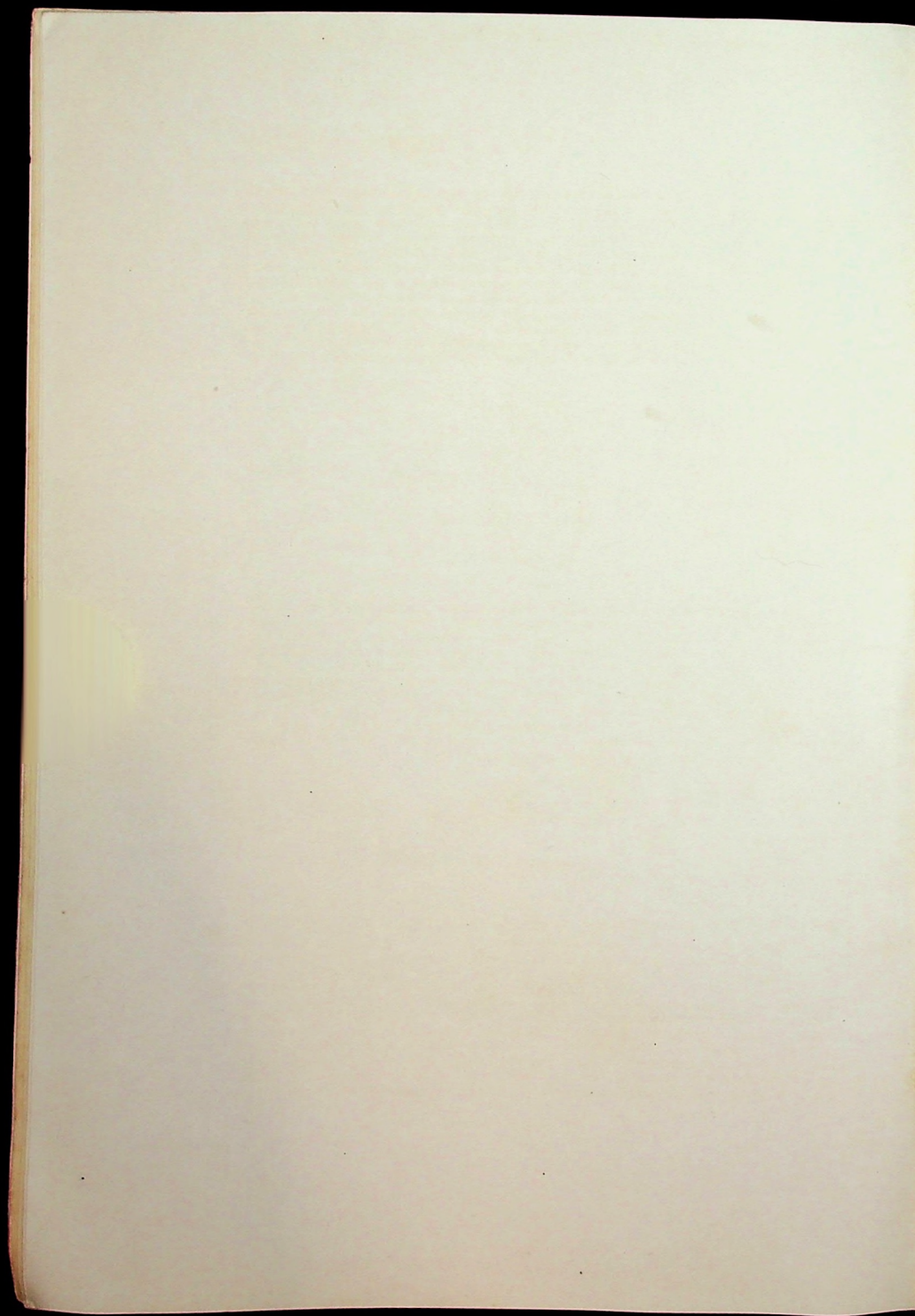


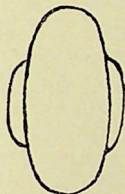
Photo by Young Photo Co.

A Corner of West Lake, Hangchow. Stone Causeway and Tea Pavilion.



EDITORIAL COMMENTS

Apart from a few specimens of Han dynasty pottery, which were of no especial importance, the chief object of interest was a lacquered round box more than a foot in diameter. The lid of this box was separated from the bottom by a piece of silk which fitted so tightly that it was impossible at first to open the box. After the lid had been carefully removed the silk was laid aside. It was found that it had already turned to a dark blackish colour, indicating that it had probably been red at first. The box contained several smaller boxes, one of oblong shape, two round ones and also a flat cup, such as we are familiar with in porcelain. All of these were lacquered and several of them were decorated in several colours. In the two small round boxes face powder was found, and it had retained its original white colour. The oblong box contained what appeared to be broken glass or silicate. The flat cup had a copper rim around the edge similar to that found on pottery objects of the Sung dynasty.



Cup.

These discoveries were made only during the latter part of September, and it has been impossible up to the present to make a careful study of the objects which were obtained. Professor Ma Heng, of the Peking National University, was invited to be present at the opening of these graves and has written a short preliminary article on his observations in the fourth issue of the new monthly published by the Peking National University. Although no detailed accounts or photographs of these objects may be available for several months, it is already certain that our knowledge of Han dynasty art will be greatly enlarged by these new finds.

The site is the place known in Han dynasty history as Lo Lang Chün (樂浪郡). At that time the Ta-t'ung River was known as Pei Shui (渭水). These Han dynasty names will assist students to locate the site of these graves.

J. C. F.

REVIEWS

DRAGON LURE, by N.H. Pittman; Commercial Press, Ltd., Shanghai: Price \$4.00

Whether this book has been written with a purpose, or is merely meant to be a novel based on the present day life and conditions in China of the upper class rising generation, it has achieved only a measure of success. It contains a good plot, more of one than the majority of modern novels, and the reader is held by the working out of this plot to the end of the last chapter. A young Chinese student, having returned to China from America, where he has distinguished himself during eight years of training as an engineer, finds his lawful wife given in marriage to another, he himself bound by a contract made by his father to a "well-known foreign firm" of Shanghai merchants to assist them in Peking in their nefarious dealings in opium (the dragon lure), and his fellow returned students, male and female, expecting him to take a lead in the much needed reforms and the fight against reactionaries and

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old-time politicians that characterized the early days of the Republican regime under Yuan Shih Kai. He is in love with one of the young lady reformers, also returned from America, where he had met her, proposed marriage and been temporarily rejected. There is a sinister ring of opium dealers, amongst whom are some high officials, who are also plotting to sell China to Japan for a good round sum; and our young hero comes into contact with these villains, at first, by reason of the contract made by his father, helping them in their machinations. Subsequently he denounces them, nearly loses his life by strangulation in a mysterious dungeon in the Vice-Minister's palace, and, finally, with the help of an aeroplane and his lady loves (for he gets tangled up with two girls who turn out to be cousins, one of whom is the daughter of the infamous Vice-Minister), outwits the whole gang, deposits the Vice-Minister with a band of robbers in the hills north of Nankow Pass, and marries the girl he has always been in love with.

While showing up some of their weaknesses, the author succeeds in making out a good case for the young returned students of China. They appear as ardent and heroic young patriots. But in doing this he makes ridiculous certain American missionaries in Peking, casts slurs on Great Britain and France, and gives Japan the rôle of China's arch-enemy. The attempts at humour in the book—the punning kind—are feeble and somewhat mar it. An English pun in the mouth of a Chinese supposed to be speaking Chinese is ridiculous, for the simple reason that what is meant to be a joke, if rendered in the Chinese language, would be no joke at all. Also we do not agree with the author in his interpretation of Chinese modes of thought, a serious failing in a book of this nature.

POEMS TO WU, by Emma Service Lester: Commercial Press, Ltd., Shanghai.
Price \$2.00.

Miss Lester is to be congratulated on the production of this book of delightful poems. She is further to be congratulated on having secured the services of so talented an artist as Mr. C. Bokisch to illustrate them. Indeed, we hardly know which to admire most, the poems or the pictures, for both are above the average. Several of the poems are written to a "little maiden of Cathay," presumably of the modern, educated type. These we consider the weakest in the book. Two having to do with Wang Wei, the great Chinese painter, are much better, but the best are "The Wheelbarrow Man" and "The Great Pagoda—Soochow." In these there is a lilt and rhythm that is pleasing, and which so much of our modern poetry completely lacks. The poem entitled "Junks" is a good example of Miss Lester's work.

Oh, the Ningpo junk is the sail for me!
Like a great black fish she swims the sea,
Like a great black bird she flies along,
While her sailors brown chant a deep sea song.

At dawn she sleeps with a low ebb tide,
By noon she wakes and begins to glide
On a full, free wave for the open sea,
Oh, the Ningpo junk is the sail for me!

When the sunset colors dip her rail
And the glory shines on her painted tail
Of all the craft on the Yellow Sea,
Oh, the Ningpo junk is the sail for me.

Our poetess is a keen observer, and her poems faithfully portray China and Chinese life.

Turning to the pictures, which illustrate this charming little book, we would say that the artist is happier in his rendering of landscapes than other subjects. Particularly lovely are the drawings of Soochow Pagoda and an old grave by the side of a creek. In the picture illustrating the poem of the kingfisher, the bird is all out of drawing. Neither do we altogether like the drawing of the human figures, which is weak. But the technique of the black and white work is excellent.

The book is attractively bound in Chinese style covers of jade-green silk.

BRIDGES OF CHINA

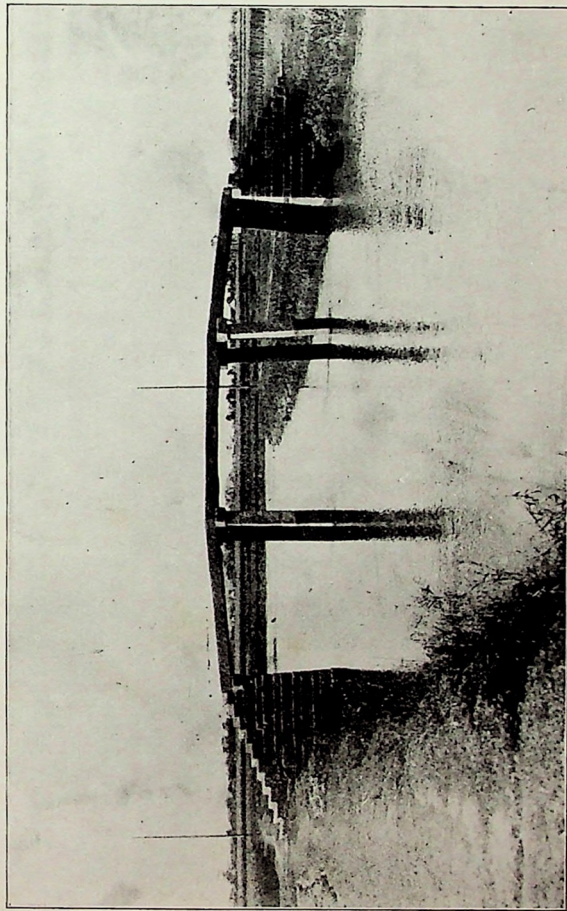


Photo by the Chung Hua Studio.

One of the Numerous Stone Bridges Spanning the Creeks that Form a Network of Waterways in Kiangsu and Northern Chekiang.

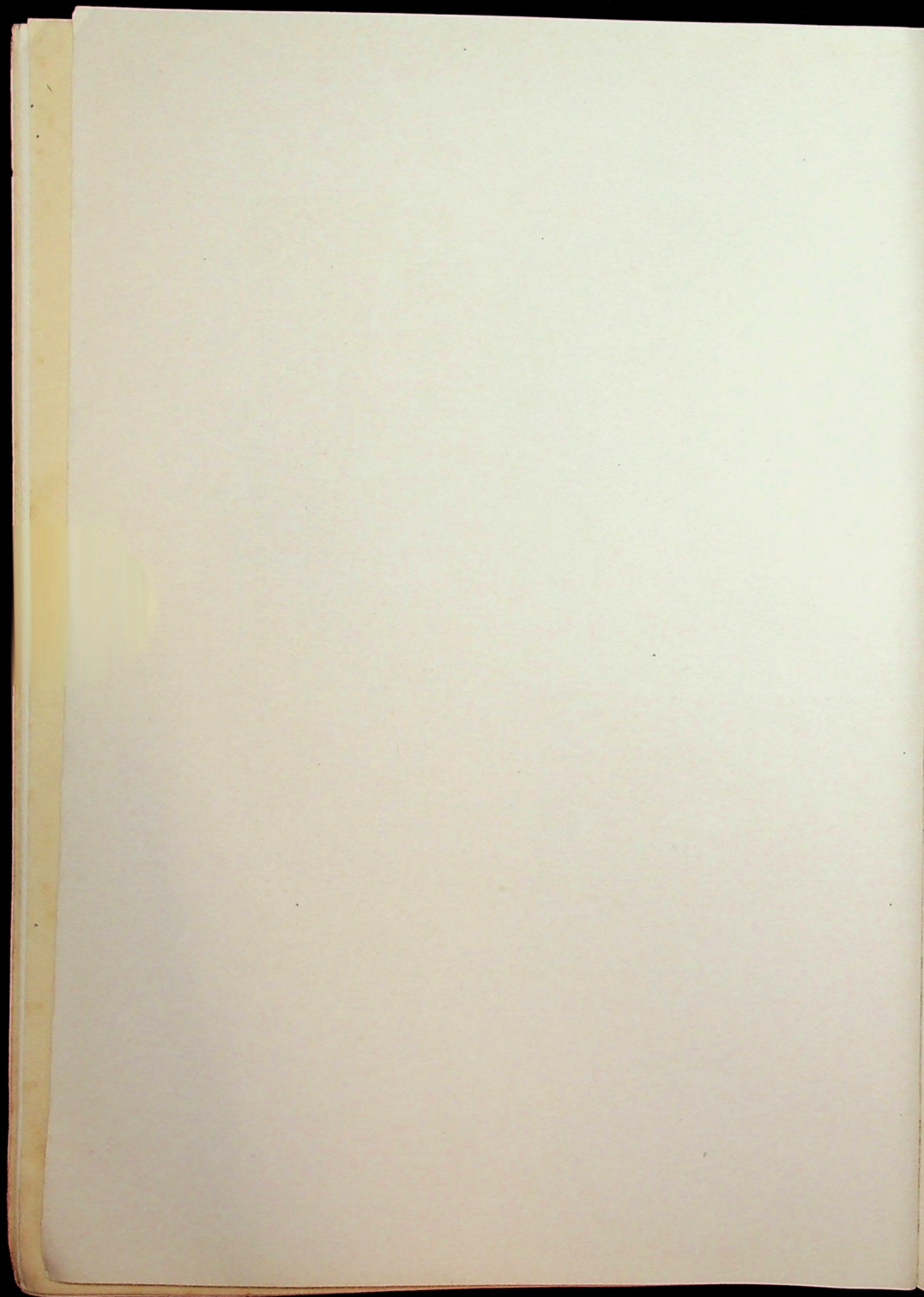




Photo by D. Mennie

The Tien Zuk Temple at Hangchow.

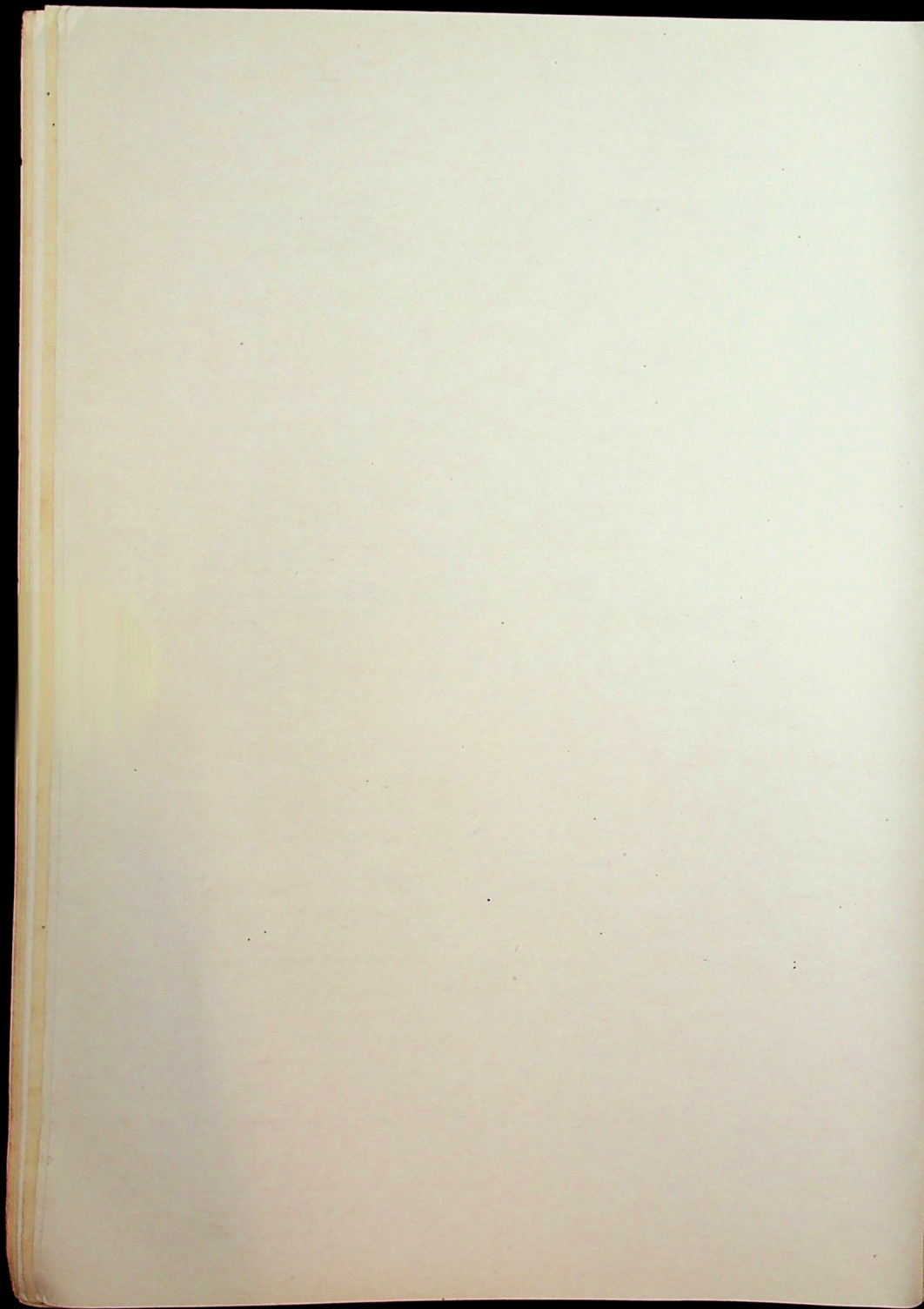
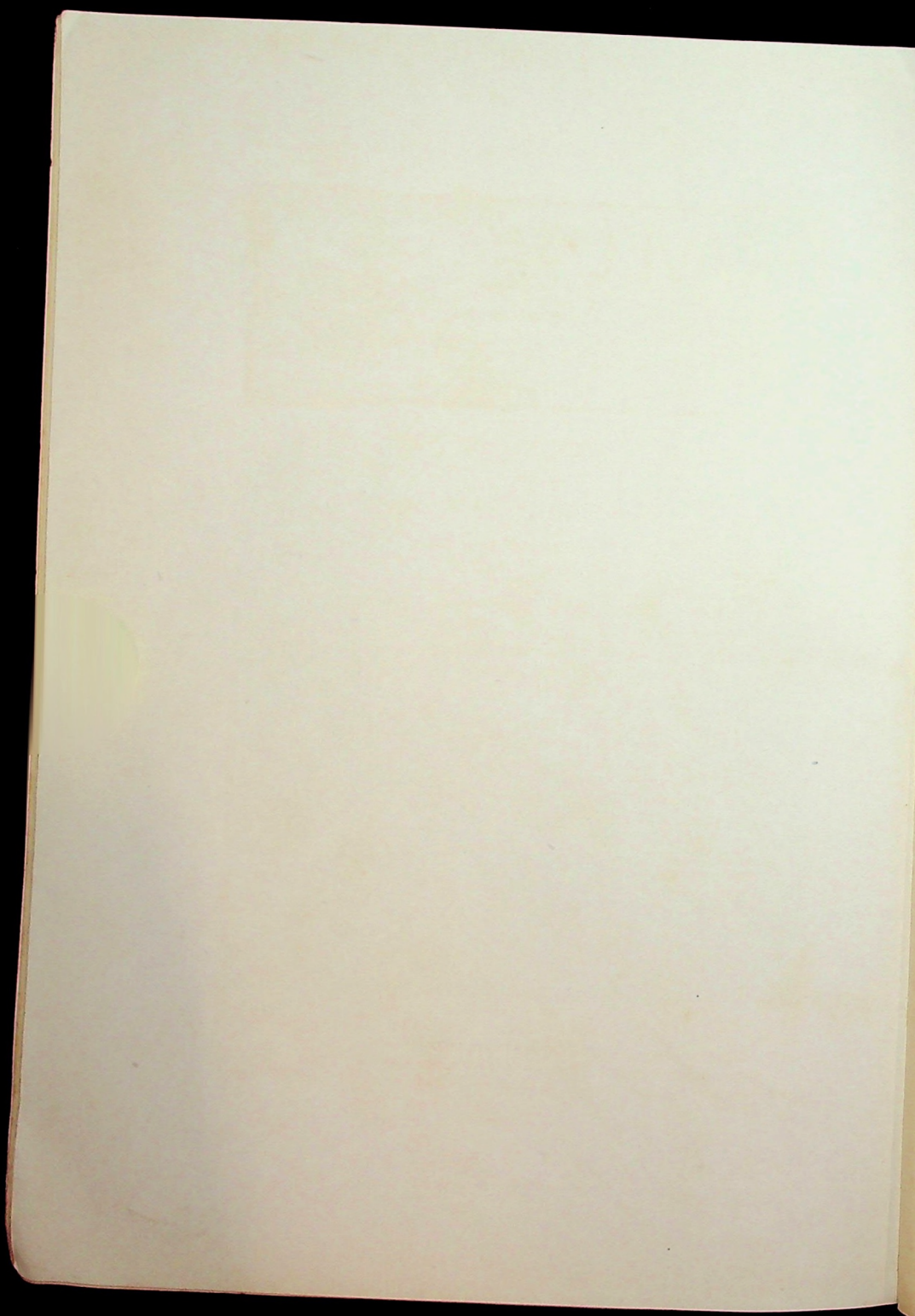
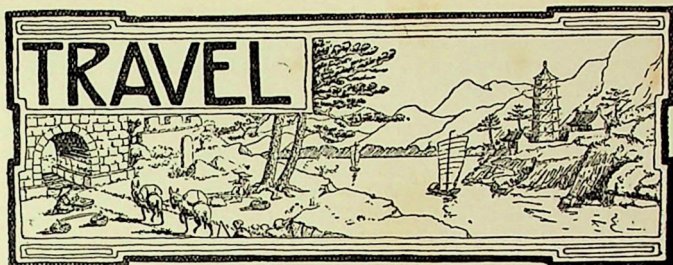




Photo by D. Mennie

Canal in Sungkiang, Kiangsu.





THE SALT INDUSTRY OF TZELIUTSING

BY

WALLACE CRAWFORD, M.D., D.P.H.

(Continued from page 175)

IV

THE MECHANISM OF BRINE RAISING

It is difficult to say exactly when the work of drilling, ends and that of brine raising commences. These thrifty workers will boil a questionable quality of brine, with any amount of sediment in it, if they can get a small proportion of salt. So the brine boiling may be begun while the well digging is still in progress.

The bamboo pipe which is lowered into the well to raise the brine is of special material and preparation. Groves of this bamboo are located east of Chungking and the fully grown pipes are rafted all the way to Tzeliutsing. In no other part of Szechuan is this special kind of bamboo grown. It will be seen further, that, the transportation being so distant, the product delivered is more expensive, the carriage being more than the original cost of the material. The bamboo must also be rafted here as it would split if placed on boats and carried up. A split pipe is useless, so great care must be taken in its delivery.

The pipes are about fourteen feet in length and six inches in diameter, inside measurement. The pipe is almost three quarters of an inch in thickness, and the green product is very strong. It is only after sunning and airing that they are easily cracked. To prevent the cracking they are bound securely with strips of bamboo, overlapping one another. These are tightened with bamboo wedges and will last ordinarily for about three years, but the binding must be changed annually and often more frequently. Men are hired to watch the pipes and to see when this wrapping becomes loose or broken. Sometimes the heat of the sun will crack the pipes despite careful wrapping.

Good pipes cost two taels each, and some specially large bore ones come as high as three taels. It is a risky business delivering the pipes,

and if they become useless for the purpose for which they are intended, they sell for one-tenth the original price. We once secured several hundred of them in this way and used them for scaffolding, for which purpose they answered splendidly.

Ordinarily the pipes run through the air on trestles. But there are times when it is necessary to bury them. The pipes are then treated with a heavy coat of a preparation made of lime and wood oil beaten together and applied on hempen rope and bamboo strips. This preparation when well dried will withstand the elements for five or six years.

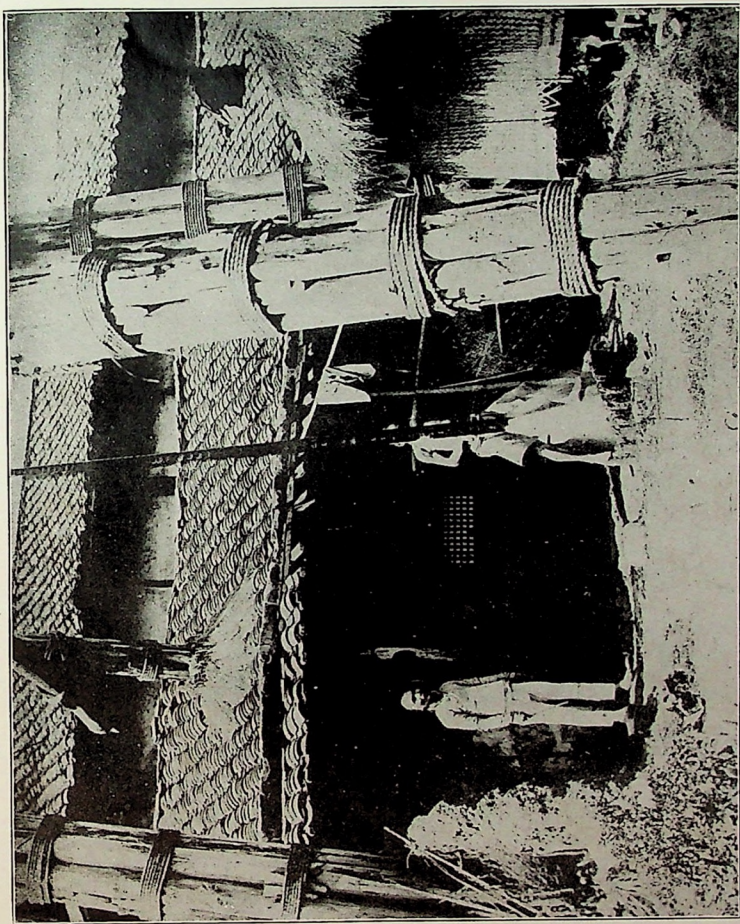
When the pipes are to be used specially for the well brine, they are further treated to a process of coring, ridges being planed in them at intervals of three or four inches. These cored places are then bound with hemp specially woven into a strong cord. This keeps the brine pipe from cracking as it comes to the surface with its load of brine. The lengths of pipe are spliced by being telescoped and are then bound with small iron bands. Their manufacture is a speciality by itself, and a mechanic who can do this work commands a more than ordinary wage.

At the lower end of the brine pipe is a suction valve. This is not unlike the valves used in an ordinary pump. It is located a few inches from the bottom of the pipe, and is opened by an iron key on a crude handle. The other end of the brine pipe is fastened to the bamboo cable by hempen rope lashed round the pipe. This cable then runs over the wheel at the top of the derrick, then down behind the derrick and under a great wheel, about thirty feet from the well mouth, and back to the drum or windlass around which it is wound by the motive power, buffalo, mule, donkey engine, or man power.

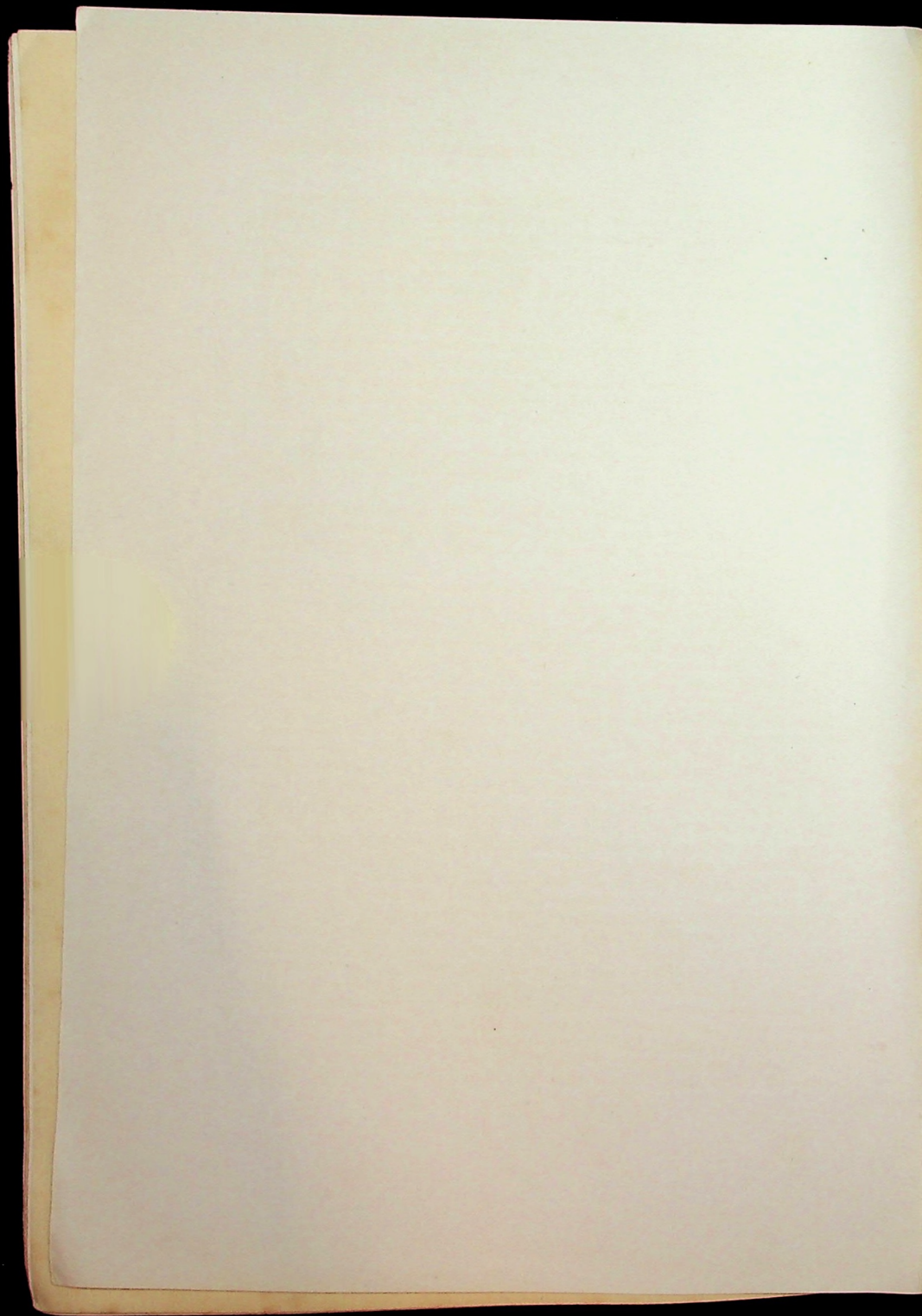
The drum or windlass upon which the cable is wound, is a huge crude wooden structure, set on a vertical axle, which is tipped with iron rods some two inches in diameter. The lowest of these rests in a huge stone, of special consistency, which does not wear out quickly. The upper tip of the wooden axle runs in a hole in a great beam which traverses the building and is built into its structure. The spokes of the great wheel, which are some eight feet in length, are mortised into the rim, and lashed to it with old bamboo cable. Each piece of the rim will have about four spokes fitted into it, and the spokes will be lashed together and trussed with old bamboo cable. The cable from the well is wound around this crude drum or windlass by the motive power.

After the brine has been run from the pipe, the latter falls by its own weight into the well, the cable being released from the drum by reversing. The drum thus spins with incredible speed, and three minutes is enough for the brine pipe to reach the bottom of the deepest well. The speed of unwinding is controlled by a bamboo brake which is attached to the drum above the place where the cable is wound on it. It is almost uncanny, the complete control of the running of the brine pipe and cable which can be exerted by this bamboo brake.

The water buffalo is attached to the windlass by means of crude poles which are lashed to the spokes of the drum. There may be as many as seven of these poles, but the average drum has five buffaloes to draw it.



Releasing the Brine from the Brine Pipe, just Pulled out of the Well. There is a Sucker in the bottom of the Brine Pipe. The Operator takes a Crooked Piece of Iron and Releases the Sucker when the Brine Falls into a Tub and is Piped into a nearby Reservoir.



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The harness of the buffalo is the irreducible minimum, consisting of a whiffletree, lashed to the pole by a piece of old bamboo cable. The tugs are of bamboo cable, and attached to a yoke of wood at the shoulders of the beast. A bamboo rope is run through the nose, and all is ready for the beast to begin his task of raising the brine pipe. The driver uses a piece of discarded cable to "persuade" the great beast to his task, and each time he strikes the animal with this improvised whip, one is reminded of a log being dropped into the mud on the foreshore. It does the trick, and the lazy buffalo bends the more assiduously to his task.

Ordinarily the complete act of raising the brine, releasing it, and lowering the tube for a second load takes from twenty to twenty five minutes. From the time the brine pipe reaches the bottom of the well, to the time the buffalo starts it on its upward journey may be ten seconds, but it is more often five.

Man power is rarely employed hereabouts, as the wells are deep and the load too heavy. The same system of raising the brine is used where man power is utilized.

Mules or horses are much quicker than the buffalo, but they are rarely used now, as they were for the most part commandeered in the late military troubles and have not been replaced. The buffalo is still the popular motor.

Some ten years ago one enterprising well owner invested in an English donkey engine to raise the brine. The price of this staggered other owners, but, seeing the results of this venture, which were most satisfactory, others proceeded to purchase a machine made in Shanghai and Hankow. These machines last some three to five years. The English engine is still running and is among the best in use. The short life of the other engines is due to two causes. First, the quality is poor, and shoddy. There is no finish to them, and they are as crude as they can be made. Secondly, the engineers are calloused, and demand every last ounce of energy from the machine. More often than not the steam gauges are so covered with dirt that is almost impossible to read them, and the safety valve is commonly tied down to save that much energy. Were it not for the occasional "blow out" the engineers would be more careless than they are, if that were possible. There is no idea of conservation of energy, or coal, but one obsession—to get all the power out of the machine possible, and, when finished, scrap it.

Engines of two powers are imported, the fifteen and the the thirty horse power. The smaller engine can be landed at the well side for about seven thousand taels and the larger one at eight thousand.

Of late, steel cable has been tried out, but it does not last long in the well. However, the steel cable is not run into the brine any more than possible, the old fashioned bamboo cable being lashed to the brine pipe and then onto the steel cable. Even with the steel cable being used and the donkey engine, the cable is nearly always run around the old fashioned drum. If anything should happen to the engine, it would be much easier to return to the water buffalo if the cable were still around the drum.

There is an abundance of coal at the mines at Wei Yuan, but the price has more than doubled since the engines came upon the scene.

Engine owners now pay as high as twenty five cash per catty of sixteen ounces for the coal. Formerly it cost only ten cash.

The water buffaloes remain the popular motor power, and they are still in great demand hereabouts. The biggest wells keep in constant use as many as one hundred head, and must be constantly buying new cattle to replace the worn-out beasts. The average life of a buffalo in a properly operated well is three years. He is then sold for buffalo meat, or some poorer well purchases the discard and his life is then most miserable.

Buffaloes are to be seen coming into Tzeliutsing by every road. They are imported chiefly from Chungking. Men make a special business of purchasing them for sale to the merchants. A good buffalo to-day is worth from ninety to one hundred taels, and some fetch a higher price, according to their size and weight. A fair estimate of the number of buffaloes in the industry here would be ten thousand.

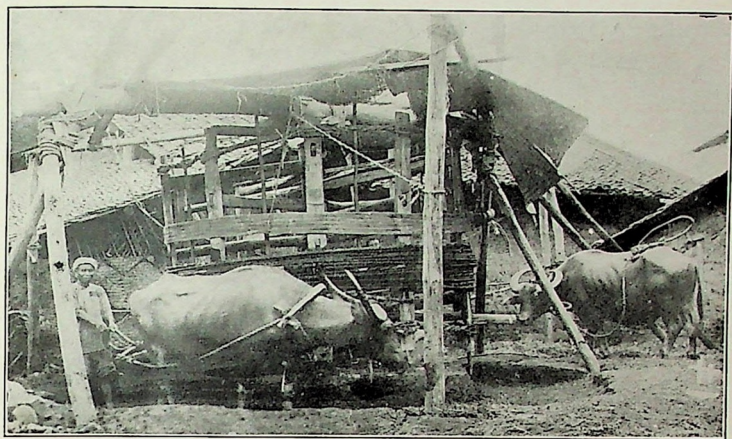
With such a great herd of the animals in one place, it is not to be wondered at that the pest gets among them and they die off like flies. Some four years ago, the foot and mouth disease attacked the buffaloes here, and in less than a week some three thousand of them were dead. The native does not know enough, or is unwilling, to kill off those which are ill, and thus help to arrest the endemism. They hire a so-called veterinary who knows practically nothing about their troubles. How the pest stops before it goes through the whole herd is a mystery.

The buffalo feeds on green grass, cut by coolies with a hand sickle; and it will be seen that great areas must be reserved for the cutting of this grass, which might otherwise be under cultivation, and provide even better fodder than the green grass cut by the coolies, which is often more weeds and waste than green grass. There are those who claim that the endemism among the cattle results from some of the weeds cut by these coolies in the spring of the year. They are also fed rice straw in winter when the grass cannot be cut.

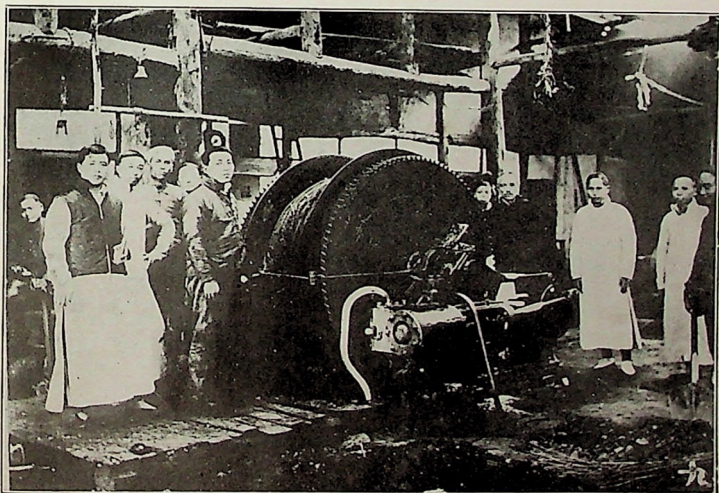
Their staple diet, however, is the horse bean or "fu teo," which is grown hereabouts in abundance and is fed to the buffaloes daily. The beans are dried before marketing and subsequently must be soaked for hours before they are fed to the cattle. About a peck of these beans is the daily ration.

All over the place will be seen water tanks of various dimensions. These are about forty feet by eighty, and vary in depth according to the contour of the ground. If they can be built in the valleys, they are much deeper, and, naturally, less expensive. If the locality is flat, then considerable stone work must be erected to form embankments for holding the water. In these great water tanks, the buffaloes disport themselves daily, and in the hottest weather they will be allowed to go down to them several times a day. If the well is close to the river, this serves instead of artificial pools and great expense is saved the well owner. Buffaloes will not stand the hard work without this water. At the good wells, the buffalo is changed each time the brine pipe is brought to the surface.

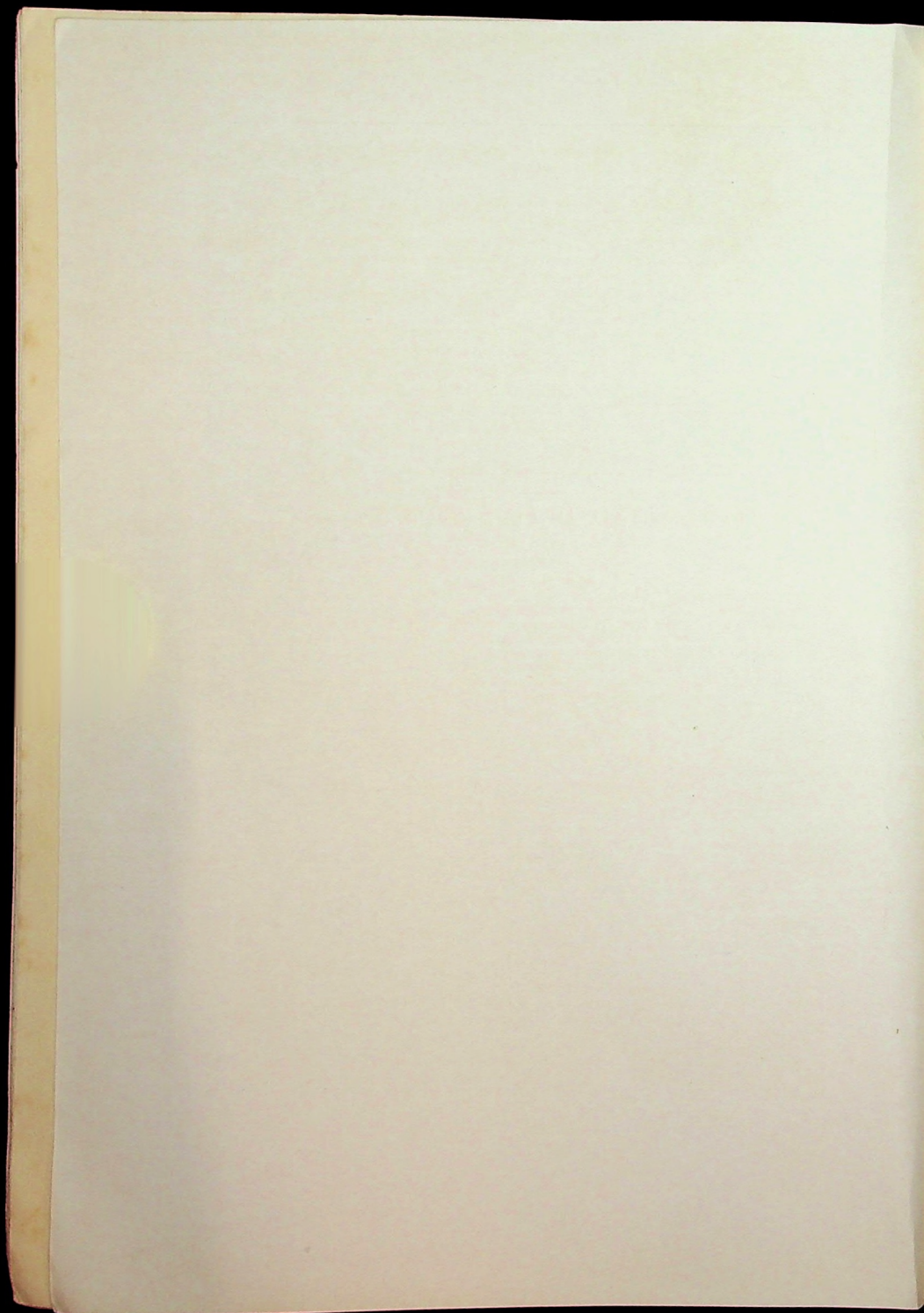
The engine is relatively the cheaper motive power. Taking fifty buffaloes as an average for each well and the average cost per buffalo at ninety taels, we have an initial outlay of Tls. 4,500.00. The majority of



The Old : a close-up of the Windlass, the Break and the Buffaloes. The Break is the Wide Band seen above the Cable.



The New : a Donkey Engine. There are now some 200 of these used at the wells.



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the engines are of fifteen horse power, and cost about seven thousand taels. But it will take twenty five dollars a day, at least, to feed the buffaloes, and not more than half of this sum would be needed to supply fuel for the engine. Again, one has to consider illness and possible death of the beasts. Furthermore, the engine will raise, in a given time, three times and sometimes five times as much brine as the buffalo. Thus the engine is the cheaper method of brine raising.

Some years ago a gas engine was imported and attempts were made to operate it with natural gas. Power sufficient to operate the engine by itself was generated, but the variable pressure of the gas prevented the raising of the brine pipe in addition. If the gas were collected in tanks under pressure, gas engines would answer for brine raising.

(To be Continued)

TRAVEL AND EXPLORATION NOTES

PALEONTOLOGICAL AND ARCHÆOLOGICAL EXPLORATION IN SZECHUAN: Mr. Walter Granger and Mr. N. C. Nelson, palæontologist and archæologist, respectively, of the Third Asiatic Expedition of the American Museum of Natural History, have recently returned from several months' exploration along the Upper Yangtze between Ichang and Wan Hsien in Szechuan. They were accompanied by their wives, who appear to have stood the rigours of the travelling well. Mr. and Mrs. Granger spent the past winter at Wan Hsien, carrying out further investigations upon the cave deposits of an early Pleistocene fauna. Mr. Granger investigated these deposits during the winters of 1921-2 and 1922-3, making numerous interesting discoveries. Amongst others, remains of *Stegodon*, rhinoceros, a giant tapir, hyena, and *Eluoropus*, or giant panda, were found. The best thing secured on the present trip was an almost complete skull of *Eluoropus*, somewhat larger than the present day species, *E. melanoleucas*, to be found in the highlands of Western and North-western Szechuan. The fossil *Eluoropus* has been given the specific name of *fovealis*.

Mr. Nelson chartered a junk at Ichang last November, and, accompanied by Mrs. Nelson, explored the whole of the gorge area up as far as Fu Tan, about 10 miles above Wan Hsien—a distance of about 200 miles. Throughout this region he discovered numerous evidences of a late prehistoric pre-Chinese stone culture, no trace of metals being found connected therewith. Chiefly wood-working stone implements were found, some possibly for agricultural purposes. Practically no weapons were found and no indication of hunting. In one deposit of 18-ft. thickness an abundance of fish bones were found: and it is thought that the people of this culture fished. Their artifacts were almost all found close to the river, mainly between high and low water levels. Mr. Nilson also examined thoroughly the numerous caves, some of which are very extensive; but found very little in the way of implements in these or in cave shelters. This culture appears to be a hitherto undiscovered one, and is thought to date back about 5,000 years. The implements found were for the most part made from a quartzite and other igneous rock, obtained either from a conglomerate in the vicinity of Ichang, or from the shingle banks along the river above Ichang. It is thought that the people of this culture lived mainly by agriculture, and might have been driven out or exterminated by the Chinese in their advance up the Yangtze.

The collections made were shipped to America from Hankow. The party are on their way to join Mr. Roy Chapman Andrews in Peking, who recently arrived from America, preparatory to starting out for their summer's work in South-west Mongolia.

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FUKIEN SCIENTIFIC EXPEDITION: Mr. G. T. Krainukov, of the Motion Picture Department of the British-American Tobacco Company, who accompanied Mr. F. T. Smith on his expedition to Fukien, under the auspices of The China Society of Science and Arts, to secure motion pictures of the people, country and fauna, as well as specimens of the last, has recently returned to Shanghai with the final reels of pictures taken. He reports having accompanied Mr. Smith as far as Kien-yang, beyond Yen-ping Fu, where, the allotment of film carried by the expedition having been exposed, he left him. It was Mr. Smith's intention to continue in the field for another month or so in order to complete, as far as possible, his collections of zoological specimens, which, owing to adverse circumstances up to that time, had been somewhat neglected, the whole time of the members of the expedition having been devoted to the securing of motion pictures.

Mr. Krainukov further reports that during the whole expedition very bad weather conditions prevailed, while the continual menace of bandits in the interior further hampered the party's activities. Under the circumstances the excellent series of motion pictures secured, comprising scenes of native life, wild animals in their natural haunts, boat travel up and down the dangerous rapids that characterize the Min River, waterfalls and beautiful mountain scenery, are very much to the credit of the members of the expedition.

Some of the pictures taken have already been shown in Shanghai by the British-American Tobacco Company. When the whole series is ready, and Mr. Smith has returned to Shanghai, it is hoped to have a lecture from him before the members of The China Society of Science and Arts, illustrated with the motion pictures.

TRAVELLERS GUIDE FOR CHINA: Mr. Carl Crow has recently issued the fourth edition of his useful little book, entitled "Handbook for China," which serves very well as a guide to the traveller or tourist in this country. In his preface he says, "This book is really a compilation of the work of others to whom I owe a debt of gratitude for their willing and valued assistance. In the work of revising this, the fourth edition, almost every part of the book has been submitted to some one or more authorities, who have checked up doubtful points and brought the information up to date." A list of some twenty-eight names follows, amongst which are some of considerable repute. It is not surprising, then, to find that this handbook contains a fund of information covering, in small compass, almost every thing regarding which the traveller in or visitor to China would want to know. This information has been well arranged and coördinated. It is divided up into chapters, which, however, are not numbered, as follows: General Information: Historical Sketch; Religions in China; The Fauna and Flora of China; Arts and Industries; The Government of China; Shanghai and the Yangtze Valley; Peking and Northern China; Hongkong and South China. A contents table and an index render the information which is crammed into these chapters easily accessible, which it might not otherwise be, since subjects, customs, cities and provinces are dealt with as one comes to them, thus making a readable book, rather than in tabulated form, which would make the book partake of the nature of a school geography.

Particularly interesting are the first few chapters, those on the Arts and Industries of the country and the Fauna and Flora, being unusually exhaustive and informative. The latter is a new feature, added since the third edition, and is by Mr. Arthur de C. Sowerby. Incidentally, it is a pity that the names of the writers and revisers of the other chapters are not given.

In the first chapter, that on General Information, some useful advice is given to would-be travellers in China. An excellent map of the whole of China is supplied, as well as good maps of Shanghai, Soochow, Peking, Tientsin and Hongkong. Smaller maps appear as text figures. The value of the book might have been enhanced by the addition of a series of good illustrations, but this would have further increased the cost and price, namely \$4.00, which, however, is not too high, considering the amount of information the book contains. Altogether we are very pleased with this little book, and have no hesitation in recommending it to all who are in any way interested in China, especially to travellers and newcomers.

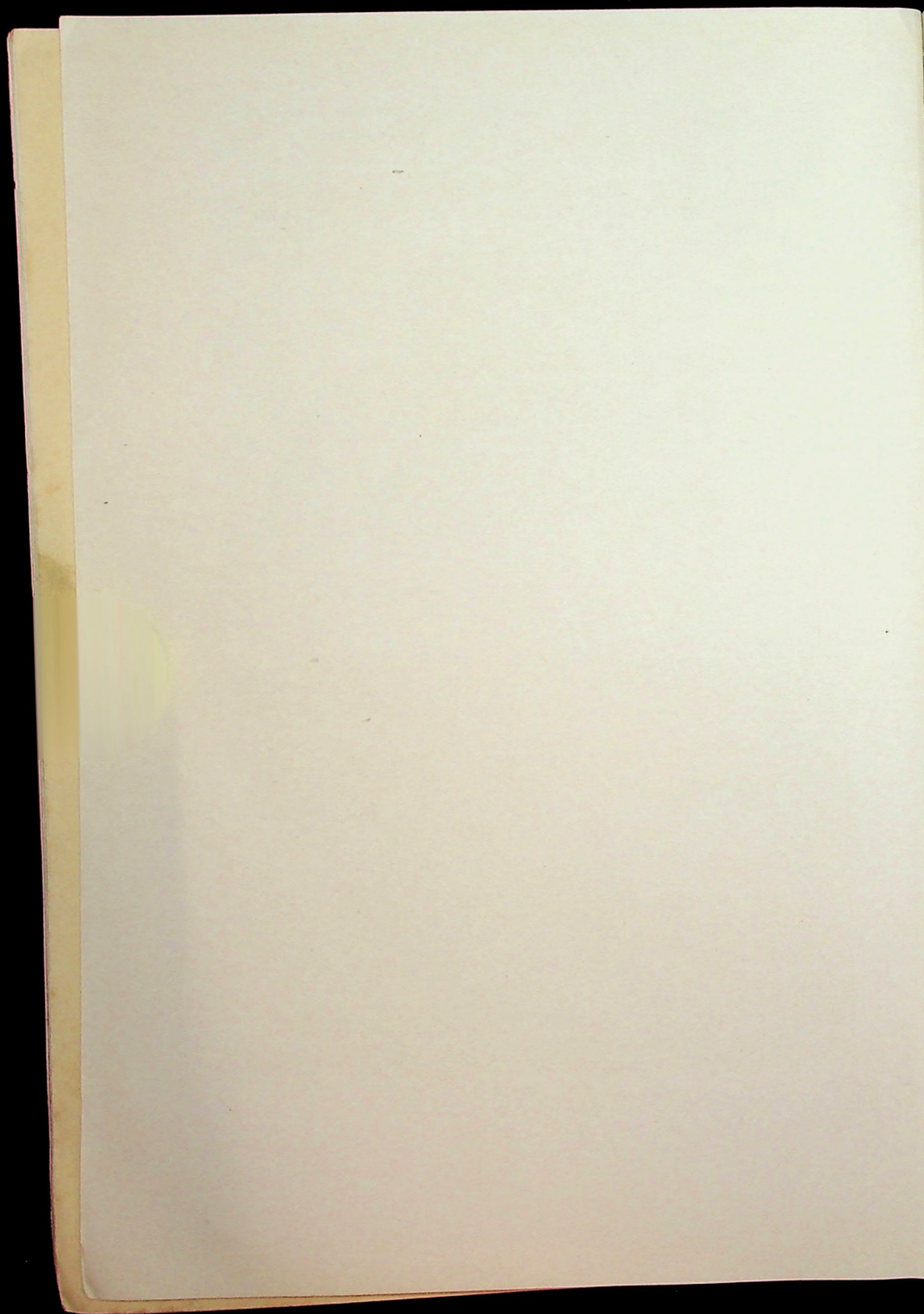


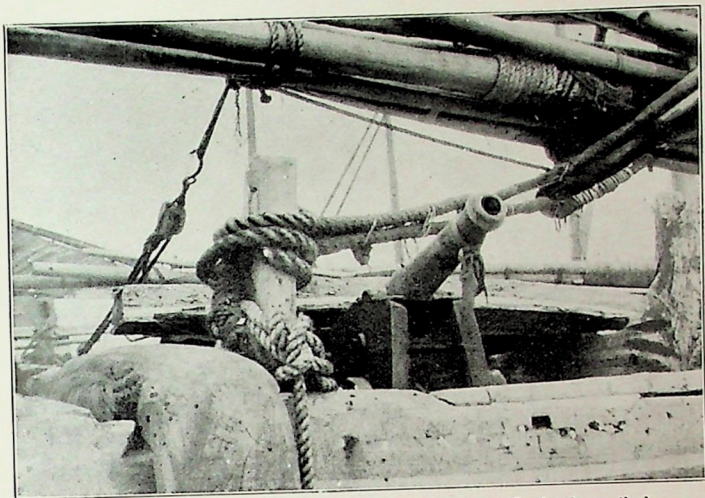
A Beggar Woman.



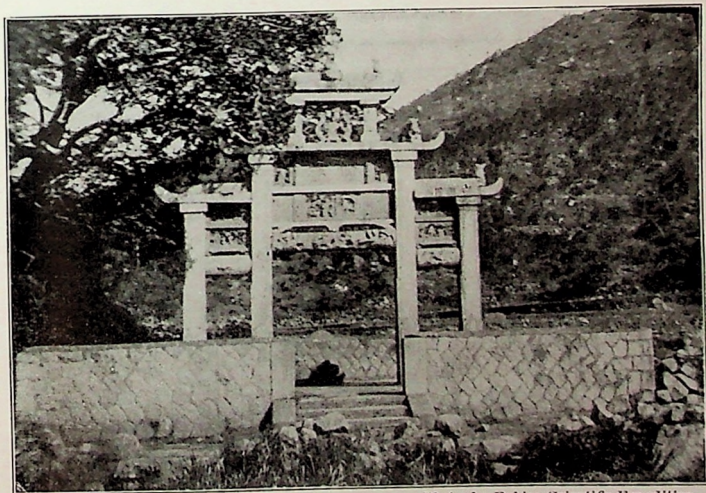
Photos by Fukien Scientific Expedition.

A Junk Beached for Repairs.



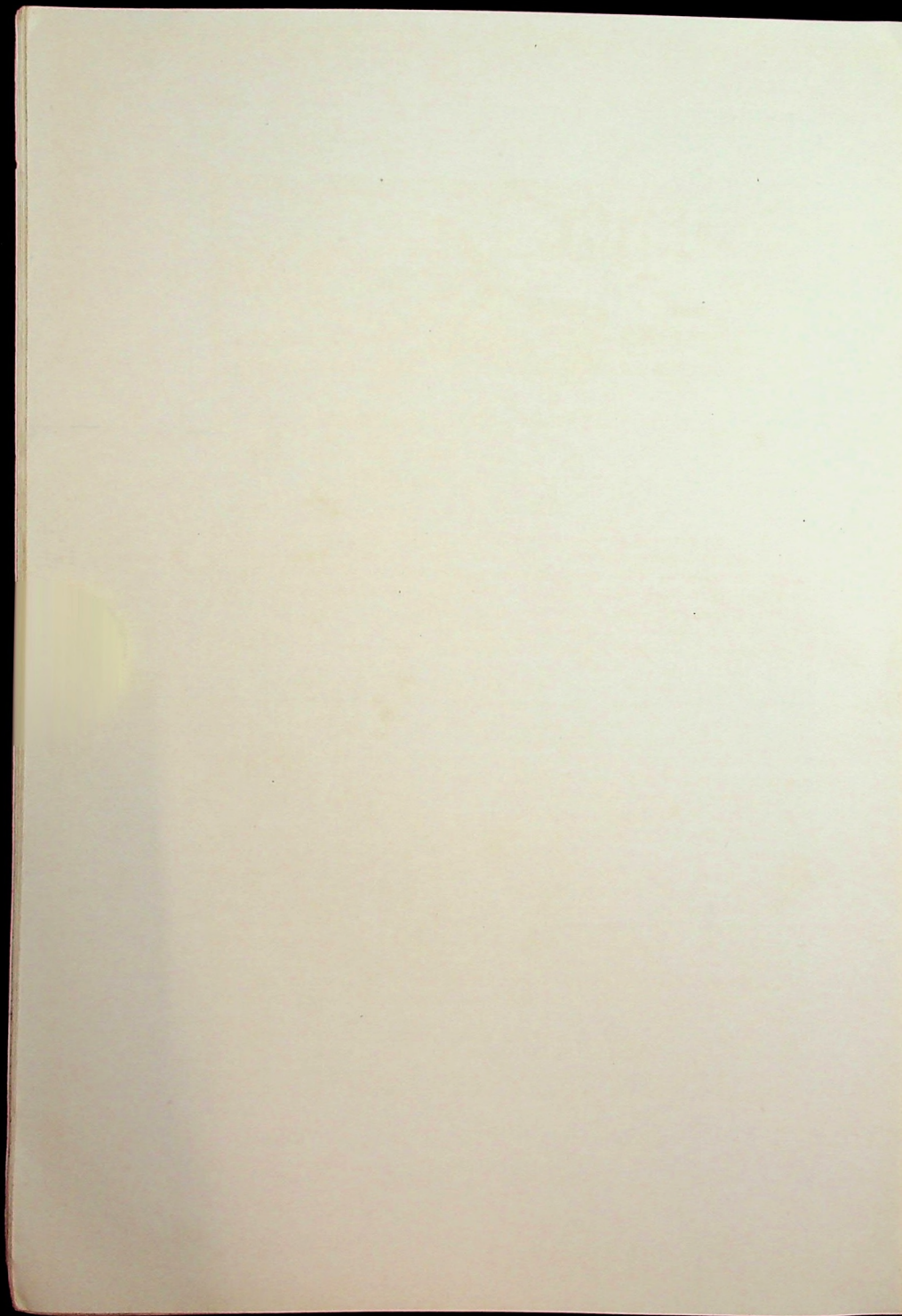


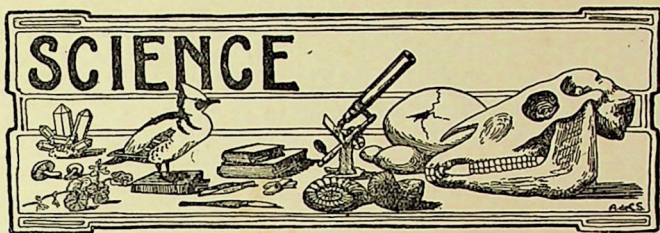
Old muzzle-loading Canon, still in use on Chinese Junks that sail the
Pirate-infested China Seas.



Photos by Fukien Scientific Expedition.

A Beautiful Pai-lou, or Memorial Arch, with which Fukien Abounds.





THE CHINESE TIGER SNAKE

BY

ARTHUR DE C. SOWERBY, F. Z. S.

Few people can view a snake without shuddering, or at least experiencing something of a sense of horror at its sinuous form and writhing coils; but to those who overcome their natural dread of serpents, handed down to them from their ancestors of the dawn of the human race and earlier, a snake may be a very beautiful creature.

In China there are a great many different species of snake, poisonous and harmless, especially from the Yangtze Valley southward. In the north, that is to say, in the provinces that lie along the arid Mongolian border, but few species occur, only two forms being at all plentiful. The bitter cold of winter and the long periods of drought that often mark the summer months are unfavourable to reptilian life generally, and snakes have a hard time of it to survive.

Of the two common snakes of North China, one, the brown snake, known to science as *Elaphe dione* (Pallas), is prevalent in the dryer areas, frequenting the lower hills, the loess country and the sandy plains. Its range extends into Mongolia and thence into Central Asia.

The other is the Chinese tiger snake, *Natrix tigrina lateralis* (Berthold), also generically known as *Tropidonotus*. It is a frequenter of damp places, being seldom found far from streams, along whose banks it finds abundant food in the way of frogs, even at times capturing small fish. Birds, chipmunks, rats and mice, and even grasshoppers also fall a prey to this snake. Its range extends from Manchuria westward to Szechuan, and from the Mongolian border southward to Hongkong. Throughout this wide area it is only found in hilly or mountainous districts, or close to hills where there is plenty of vegetation and moisture. In the north it does not appear to occur at a lower altitude than 2,000 ft. or over 4,000 ft. above sea level. In the south it evidently occurs at lower levels, as is evidenced by specimens being taken at Soochow. The writer has taken specimens in Shansi, Shensi, Kansu and Chihli, while the Rev. D. C. Graham secured a specimen at Suifu in Szechuen. The species is extremely plentiful in the Tai-yuan Fu district of Shansi. It has also been

recorded from Honan, Anhui, Kiangsu, Chekiang, Kiangsi and Fukien, though it is not as common in these provinces as in the north.

This snake is one of the most beautiful forms to be found in China, Belonging to the large family of non-poisonous snakes, *Colubridae*, it bears considerable resemblance in general form to the well known English grass snake, but, in its brilliant colouring and fine markings, it far surpasses that species. The general colour is a bright sap-green, varying in tone from light to dark according to how long an interval has elapsed since last the skin was shed. Just back of the head, on either side, there is a whitish patch. A black band passes from the eye backwards obliquely to the corner of the mouth and black triangular patches occur on the upper labial scales. On either side, from the beginning of the neck down the entire length of the body and gradually fading away on the tail, are patches of black, which give the snake a banded appearance, and, presumably account for its name. Between these black patches are equally large or larger patches of the most intense vermilion, which, like the green, varies in brilliancy according to the age of the skin. The under parts are light green, or yellowish green in some individuals, anteriorly, becoming greyish posteriorly. The brilliant green of the ground colour, with the bars of black and vermilion, forming a remarkable contrast, make this serpent the beautiful creature that it is. The tiger snake attains a length of 5 ft. and more, but the average size of those seen is about 3 ft. The body, especially the middle portion, is slightly keeled on top. There are 7 labial scales, 2-3 oculars, 1-2 temporals, 19 scale-rows, from 144 to 158 ventral scales, and from 54 to 71 sub-caudal scales.

The Chinese tiger snake is a subspecies of the Japanese form, *Natrix tigrina*, from which it differs in having fewer ventral plus sub-caudal scales.

The habits of the tiger snake are very similar to those of the English grass snake. That is to say, it lurks in the vicinity of streams or springs, basking in the sun when occasion serves, and watching for or hunting its prey. The species is a good climber, but does not often ascend trees. Up to the present its nest, if it makes one, or eggs, if it lays any, do not appear to have been discovered, at least the writer can find no record of either, nor has he come across them himself.

Several other species of the genus *Natrix* occur in China, but all in the Yangtze Valley or southward and none in the north. These are *N. annularis* Hallowell, *N. aequipasciata* Barbour, *N. percarinata* (Boulenger), *N. piscator* (Schneider), and *N. nuchalis* (Boulenger). Of these *N. nuchalis* appears to be confined to Central and West-central China, while *N. aequipasciata* has only been recorded from Fukien and Hainan Island. The rest appear to be fairly well distributed from the Yangtze Valley southward.

A CONTRIBUTION TO A LIST OF THE ACULEATE HYMENOPTERA (EXCEPTING ANTS) OF HONGKONG

BY

CEDRIC DOVER, F. E. S.

The following list is based on the collections of Aculeate Hymenoptera made by Messrs. F. W. Terry and R. W. Barney in Hongkong; Mr. Terry's collection is in the British Museum, and I am indebted to Mr. Barney for permitting me to examine the specimens obtained by him, which will, I understand, be sent to the University of Hongkong. A large number of the species recorded here have not previously been recorded from Hongkong. Among the more interesting species listed are *Sphex nigellus* Smith, which is mainly a Queensland form; *Colletes reticulata* Cameron, previously known from Simla; and *Crocisa ceylonica* Friese, originally described from Ceylon and since recorded by Cockerell from Formosa under the name *C. amata* Ckll. The majority of the remaining insects are well known forms with a wide distribution in India and Malaya. It would seem that the Hymenoptera of South China are comprised for the most part by widely distributed oriental species, while the fauna of North China (e.g. Tientsin) is essentially Palaearctic in character.

VESPIDAE

- 1.—*Labus exigua*, Sauss. (= *humbertianus* Sauss). Three exs.
- 2.—*Eumenes petiolata* Fabr. Common.
- 3.—*Eumenes gracilis* var. *esuriens* Fabr. Common.
- 4.—*Eumenes arcuata* Fabr. Two exs.
- 5.—*Eumenes architectus* Sm. Two exs.
- 6.—*Eumenes coarctata* var. *punctata* Sauss. Fairly common.
- 8.—*Eumenes quadrata* var. *obsoleta* nov. Two females exactly like the type form structurally, but differing conspicuously in that there is no yellow marking on the sides and posterior margin of the pronotum, the apex of the petiole and the first abdominal segment. The facial markings are the same as in the type female. Holotype in British Museum.
- 9.—*Pareumenes quadrispinosa* Sauss. Two exs.
- 10.—*Pareumenes depressa* Sauss. Three exs.
- 11.—*Odynerus* (*Rygchium*) *flavomarginatum* Sauss. Two exs.
- 12.—*Odynerus* (*R.*) *haemorrhoidalis* var. *quinquecincta* Fabr. Common.
- 13.—*Odynerus* (*R.*) *flavopunctatum* Smith. One ex.
- 14.—*Odynerus bipustulatus* Sauss. Common.
- 15.—*Odynerus trilobus* Fabr. Fairly common.
- 16.—*Ropalidia hongkongensis* Sauss. One ex.
- 17.—*Ropalidia flavopicta* Sm. One ex.

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- 18.—*Polistes hebraeus* var. *macaensis* Fabr. Common.
- 19.—*Polistes orientalis* Kirby. Fairly common.
- 20.—*Polistes chinensis* Fabr. One ex.
- 21.—*Polistes sagittarius* Sauss. One ex.
- 22.—*Vespa cincta* Fabr. Common.
- 23.—*Vespa cincta* var. *affinis* Fabr. Common.
- 24.—*Vespa bicolor* Fabr. Common.
- 25.—*Vespa nigrithorax* du Buys. Three exs.
- 26.—*Polybia orientalis* Sauss. Common.
- 27.—*Polybia indica* Sauss. Fairly common.

MUTILLIDAE

- 28.—*Mutilla oculata* Fabr. Common.
- 29.—*Mutilla suspiciosa* Sm. One ex.
- 30.—*Odontomutilla urania* Sm. One ex.

SCOLIIDAE

- 31.—*Triscolia rubiginosa* Fabr. Two exs.
- 32.—*Discolia cucullata* Bingh. Three exs.
- 33.—*Discolia laeviceps* Sm. One ex.
- 34.—*Dielis fimbriata* Fabr. Two exs.
- 35.—*Dielis iris* Lep. One ex.
- 36.—*Dielis annulata* Fabr. One ex.

PSAMMOCHARIDAE

- 37.—*Balazonus orientalis* Cam. One ex.
- 38.—*Balazonus unifasciatus* Sm. One ex.
- 39.—*Tachypompilus analis* Fabr. Two exs.
- 40.—*Pseudagenia blanda* Guer. Two exs.
- 41.—*Cryptochilus bipartitus* Lep. Four exs.
- 42.—*Cyphononyx peregrinus* Sm. Common.
- 43.—*Cyphononyx madraspatanus* Sm. One ex.
- 44.—*Hemipepsis sinensis* Sm. Common.

SPHEGIDAE

- 45.—*Trirhogma caerulea* Westw. Two exs.
- 46.—*Ampulex compressa* Fabr. Common.
- 47.—*Ampulex consimilis* Kohl. Two exs.
- 48.—*Sceliphron madraspatanum* Fabr. Common.
- 49.—*Sceliphron inflexum* Sickm. Common.
- 50.—*Ammophila atripes* Sm. Common.
- 51.—*Ammophila neoxenus* Sm. Two exs.
- 52.—*Sphex umbrosus* Christ. Two exs.
- 53.—*Sphex aurulentus* Fabr. Two exs.
- 54.—*Sphex nigellus* Sm. Two exs.
- 55.—*Notogonia subtesselata* Sm. Common.
- 56.—*Liris anthracina* Kohl. Common.
- 57.—*Liris aurata* Fabr. Common.

A CONTRIBUTION TO A LIST, ETC.

APIDAE

- 58.—*Colletes reticulata* Cam. One ex.
59.—*Nomia iridescens* Sm. Common.
60.—*Nomia quadridentata* Sm. One ex.
61.—*Ceratina hieroglyphica* Sm. Common.
62.—*Xylocopa fenestrata* var. *iridipennis* Lep. Common.
63.—*Xylocopa appendiculata* Sm. One ex.
64.—*Xylocopa phalathorax* Sm. Common.
65.—*Xylocopa philippinensis* Sm. One ex.
66.—*Anthophora zonata* Linn. Common.
67.—*Anthophora himalayensis* Rad. One example differing from all other specimens that I have seen, in that the third and fourth abdominal segments have apical bands of white pubescence. *A. urens* Ckll. from Formosa is very near to this species if not actually a synonym.
68.—*Crocisa smithii* Dalla Torre. Common.
69.—*Crocisa ceylonica* Friese. Common.
70.—*Megachile monticola* Sm. Common.
71.—*Megachile conjuncta* Sm. One ex.
72.—*Megachile fervida* Sm. One ex.
73.—*Apis mellifica indica-peroni* Latr. Common.
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DESCRIPTIONS OF SOME FRESH WATER
SPONGES FROM CHINA

BY

N. GIST GEE and C. F. WU,
(CHINA MEDICAL BOARD, PEKING AND SOOCHOW UNIVERSITY, SOOCHOW.)

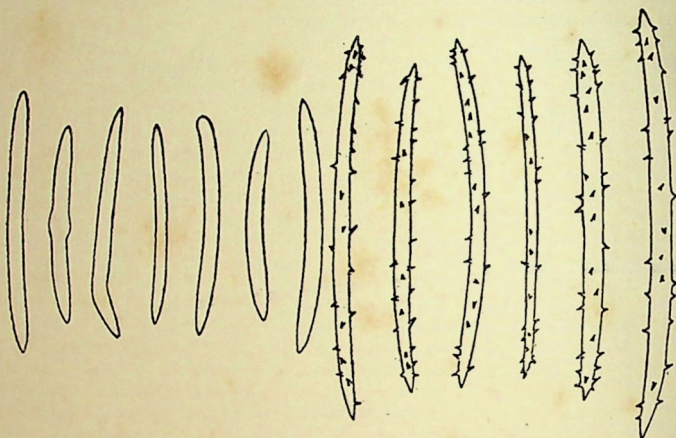
SPONGILLA (EUNAPIUS) GEEI, Annandale.

Habitat.—The material from which this species was described was collected at the north-east water gate (Loen Mung) of the city of Soochow. The sponge was taken from the stones forming the foundation of the water gate and the city wall at that place. At this, as at the other water gates of the city, there is nearly always a slight current in the canal, the water flowing out of the city in this case.

General Appearance.—The specimen from which Dr. Annandale described this species was only a broken fragment about 40 mm. long, yet it seemed to come from a sponge that was massive and of irregular form. His specimen was grayish in colour and dry when collected. We have a nodule-like growth of this sponge about 5 cm. long by 3 cm. thick, the central area being packed almost solidly with a large number of brownish (in alcohol) gemmules. The outer surface is rounded and smooth. This entire mass is brownish in colour, the gemmules being of a darker brown than the sponge.

Skeleton.—The body of the sponge is firm and the skeleton compact, but the horny matter is not abundant. The fibers form a fairly

regular network, the radiating fibers being a bit thicker than the transverse ones, though both are well developed.



a.

b.

Spongilla (Eunapius) geei, Annandale.

a. Gemmule spicules ($\times 780$).

b. Skeleton spicules ($\times 250$)

Skeleton Spicules.—The skeleton spicules are comparatively short and thick, always smooth and somewhat bluntly and abruptly pointed at the ends. They are usually slightly curved but at times may be straight. Often it is possible to see the axial channel near their ends or even throughout their entire length.

Length of spicules	..	..	..	172-215 microns
Diameter of spicules	..	..	..	13-17 ..

Flesh Spicules.—There are no flesh spicules in this species.

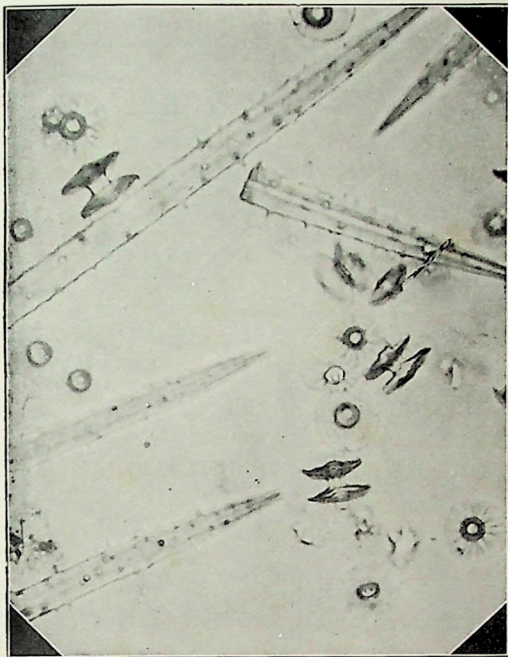
Gemmules.—The gemmules are subspherical, but a little broader than high, they are small and very numerous, and are not grouped, but scattered singly through the substance of the sponge, each closely embraced in the network of the skeleton. The pneumatic layer is thick and uniform, its cells relatively large. There is a single, long, curved foraminal tubule, lying in a crater-like depression in the pneumatic coat. The gemmule spicules are scattered along the inner cells of this coat and also on its external surface: they lie more or less parallel to the surface of the gemmule.

Gemmule	..	..	..	..	476-425 microns
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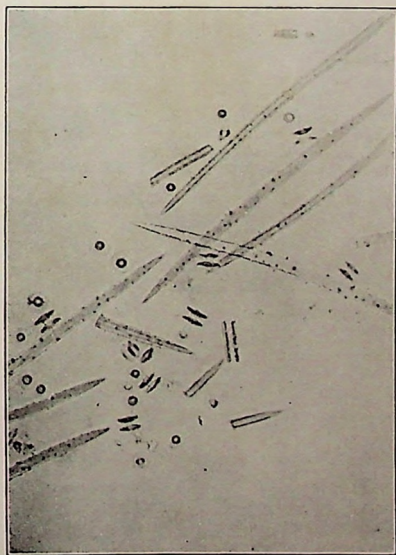
Gemmule Spicules.—The gemmule spicules are not nearly so numerous in this species as in some of the other species. They are small and



a.

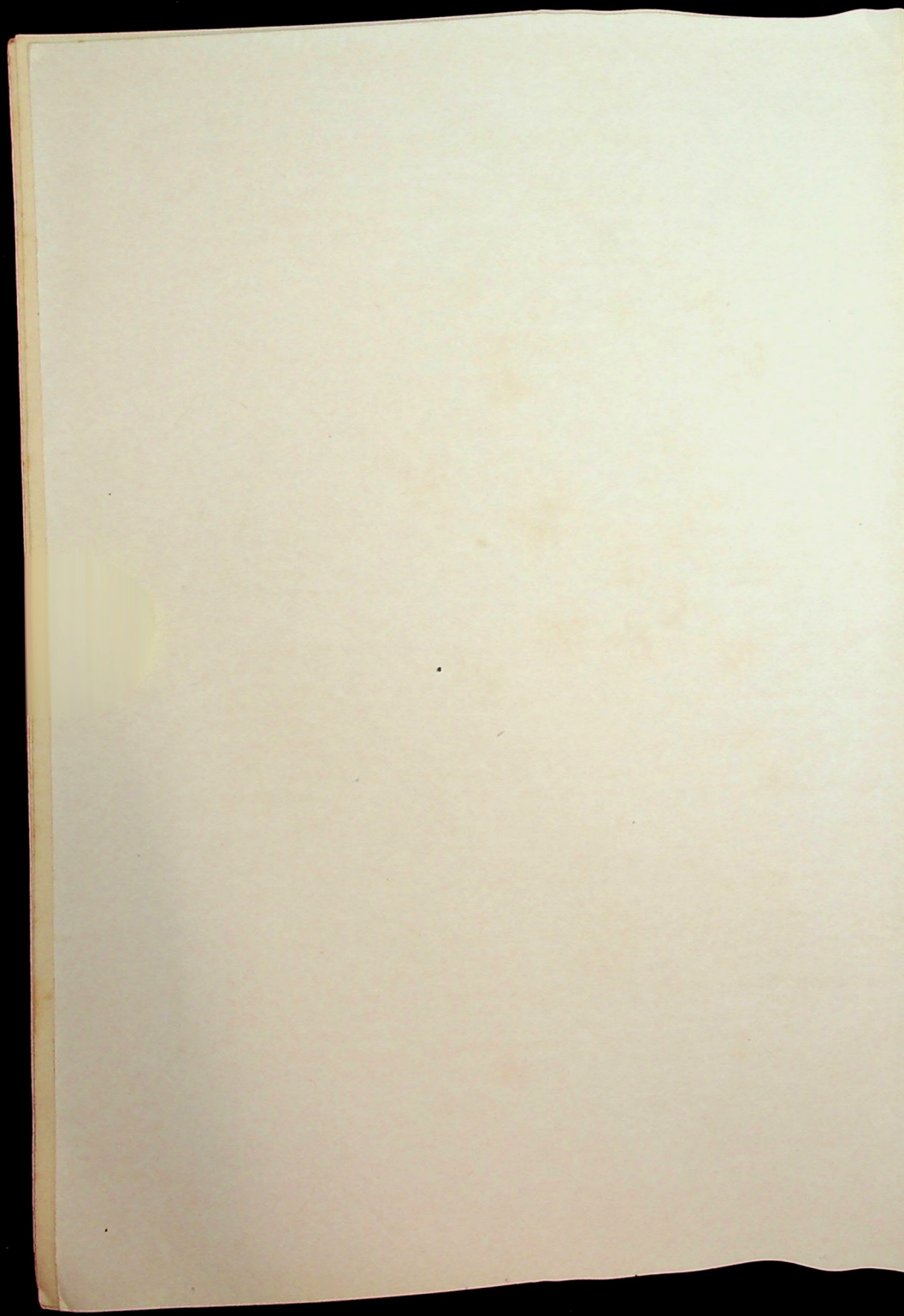


c.



b.

- Trochospongilla sol*, Annandale.
- a. Small colonies on a stone (about natural size).
 - b. Skeleton and gemmule spicules ($\times 250$).
 - c. Skeleton and gemmule spicules showing rayed markings on rotules of latter ($\times 700$).



DESCRIPTIONS OF SOME FRESH WATER SPONGES

slender and irregularly spiny. The spines are very short and small. As a rule the spicules are provided with a sharp point at each end.

Length of spicule 76-98 microns

Diameter of spicules 5-7 microns

Type.—Indian Museum, Calcutta, India.

We have a small co-type of this sponge (in alcohol) in our collection.

General Remarks.—Dr. Annandale found this species to resemble *S. nitens*, Carter, from tropical Africa more closely than any other, but the skeleton spicules are considerably smaller and are pointed instead of being rounded at the tips, and the skeleton is less massive.

FURTHER NOTES ON *TROCHOSPONGILLA SOL*, ANNANDALE

BY

N. GIST GEE.

After the copy of Mr. N. Gist Gee's paper on "Fresh Water Sponges" which appeared in the April issue of this Journal had gone to press, we received the following expanded description of Trochospongilla sol, together with the accompanying photographs to be substituted for the description in the paper. As they arrived too late for this, we publish them here.—Ed.

TROCHOSPONGILLA SOL, Annandale

The skeleton spicules of this sponge are spiny, the spines and the spicules themselves both being somewhat larger than those of *T. horrida* var. *ningpoensis*. The skeleton spicules of both of the above named forms are slightly curved and are acutely sharpened at both ends. There seem to be only very small differences in the spicules of the two China forms, and the skeleton spicules of *T. sol* are even closer to those of *T. horrida* than are those of the *T. horrida* var. *ningpoensis*.

The gemmule spicules of *T. sol* have very decided rayed markings on the surface of some of the rotules, while other rotules are almost, if not entirely, free from such markings. With the exception of this one decided difference the gemmule spicules of the three forms, *T. horrida*, *T. sol*, and *T. horrida* var. *ningpoensis*, bear very striking resemblances to each other, having only minor differences in other respects. We raise the question whether after all *T. sol* is not really a variety of *T. horrida*. Possibly a more careful study of a series of specimens of *T. horrida* from a number of widely scattered areas may provide us with some interesting intermediate forms. We hope to make such a study as soon as sufficient materials can be obtained.

Through the courtesy of Major Sewell, Director of the Zoological Survey of India, we have been allowed to examine and photograph this lot of material from which the species was described. We are very grateful for the loan of this type from the Calcutta Museum, Calcutta, India. As previously, Dr. Annandale collected this specimen from the Tai Hu near Soochow.

THE SAN TAK OF FUKIEN PROVINCE

BY

C. R. KELLOGG

Probably no other people of China are of more interest to the anthropologist or historian than the San Tak of Fukien, supposed by many students to be aborigines who originally inhabited the plains of South China before the present day Chinese came south and forced them back into the mountain fastnesses. Whether seen in the crowded streets of Foochow, where their peculiar head-dress makes them so conspicuous, or in their mountain homes, these people have always had a fascination for the writer, which has increased rather than diminished with numerous visits to their dwellings. We shall always retain the happiest memories of days spent with them in their homes, hunting the wild boar in the steep hill-side jungles, or tramping with them through superb scenery.

There are several San Tak villages in the mountains to the north of Foochow City, and these people dwell here in isolation, having little to do with the Chinese about them. To get to their villages, one must leave the main stone road leading from Foochow to the coast and follow trail for three or four miles through some of the finest scenery to be found a winding in this province, famed for its natural beauty. The trail is flanked by venerable camphor trees, and at places affords one the most entrancing views of rushing mountain torrents flinging themselves over precipices to the quieter pools below. Arriving at the villages themselves, one may, by going a short distance, look down from the crests of the mountains, past their steep slopes hidden in impenetrable jungles, to the tiny thread-like streams two thousand feet below.

In passing through these villages one would never suspect them to belong to anyone but Chinese, so similar are they to the villages about. Nor would he detect any differences in the houses and temples, nor the household articles and agricultural implements, which seem to have been adopted bodily from the surrounding Chinese civilization. The people support themselves mainly by agriculture, supplemented by making brooms and by some hunting and fishing. Where running water is available and the land flat enough, rice is grown; while the slopes of the hills are cultivated in sweet potatoes. The sides of the steepest hills do not deter them, and their fields, sometimes scarcely wide enough for one row of plants, often extend in terraces for hundreds of feet on the steepest slopes or occur in small patches wrested from the encroaching jungle. The soil is a reddish clay, apparently not very fertile; but by painstaking cultivation and the liberal use of fertilizer, often carried with great effort up the mountain side, a fairly good crop is wrung from the inhospitable hills.

One of the greatest handicaps to the raising of the sweet potatoes is the large number of wild boar which find shelter in the grass-covered ravines too steep for cultivation. From these hiding places, the pigs sally

THE SAN TAK OF FUKIEN PROVINCE

forth at night to feed on the sweet potatoes, often rooting up for mere sport more than they can possibly devour. In the fall, when the potatoes are large enough to eat, the people must be continually on their guard; and at this time one may hear, all through the long nights, shouting and the beating of gongs to frighten off the pigs.

Many of the women of the villages assist in the support of the family by making brooms to sell in the Foochow markets. The grass from which the brooms are made grows wild on the hills about, the flowers of the grass being taken home and tied into bundles to make the brooms so common in Foochow.

In appearance and size, the men are scarcely to be distinguished from their Chinese neighbours. In nearly all peoples, it is the women who are conservative; and this is true of the San Tak. They are short and squat, with slightly protruding lips and flat noses, resembling very much the pictures of the Igorrotes of the Philippines, and can be distinguished in a moment from the true Chinese. While practically all the men speak the local Chinese dialect also, the women cling to their own: so that when a party of women go down to Foochow with brooms to sell, they are always accompanied by several men who do the interpreting for them. There are a few shops in Foochow where the San Tak do most of their trading, apparently having very little to do with the rest of the city.

The clothing of the men is in every respect similar to that of the Chinese, but the dress of the women is slightly different from that of their Chinese sisters. They wear the same coarse blue clothing, cut in about the same pattern, the most noticeable difference being a narrow edging of red and white on the coat.

The most distinctive feature of all is the head-dress, which is worn by the women only, and is so striking as to command attention wherever seen. An exact description of it, however, is very difficult: to be appreciated, it must be seen. Numerous attempts were made to bribe some worthy matron to allow us to photograph the head-dress; but as all ended in failure, we had finally to content ourselves with sketching one that was very reluctantly brought out for our inspection. (see drawing). The main part seems to consist of a hollow bamboo, covered with pewter or silver, perched upon and extending forward from the middle of the head, and covered with a coarse red cloth folded somewhat like a pyramid. A fringe of red threads hangs down from the forward end of the bamboo and a slender rod extends forward, from whose outer end dangles a red tassel. A chain of bright blue beads, consisting of from four to six strings, hangs down on either side from the central bamboo, passes over the ear, and is fastened in the coils of hair at the back. A large wooden hairpin holds a rectangular piece of red cloth which projects horizontally from the back. When seen at a distance, the blue beads and red cloth on the head and at the back make a most striking picture. In some, the trimming is of pewter; but, in the best ones, silver is used. Although the value is said to be about six dollars a standing offer of ten dollars for a head-dress was never accepted.

The detail shown in the metal work must have some meaning but we were unable to get any information from the San Tak, nor to hazard any satisfactory guesses ourselves. The design on the front of the bamboo might be taken to represent an anchor or to signify the face of a fabulous animal. Perhaps further investigations may be able to clear up this point.

The head-dress is given by the parents to each daughter as she becomes a bride, and is supposed to be worn continuously thereafter. Formerly, a married woman would never have thought of going even to a neighbour's house without the head-dress, but now they seem to be leaving them off in their own villages. The last time we were in their territory we saw a party returning from Foochow in which there were some women without head-dresses, but we hope this is not to be taken as a sign that this distinctive and interesting institution is being discarded.

The ear-rings of the best type worn by the women are usually of silver, but the cheaper ones are made of pewter. They are placed in the ears of the little girls when seven or eight years old.

The marriage customs of the San Tak are the same as those of the Chinese and they also follow the Chinese in their land inheritance customs and system of government by village elders.

The San Tak are looked upon with contempt by the Chinese, and intermarriage between them is very rare, although we know of one young San Tak man, educated in the schools in Foochow and acting as a teacher in the San Tak village, who has a Chinese wife.

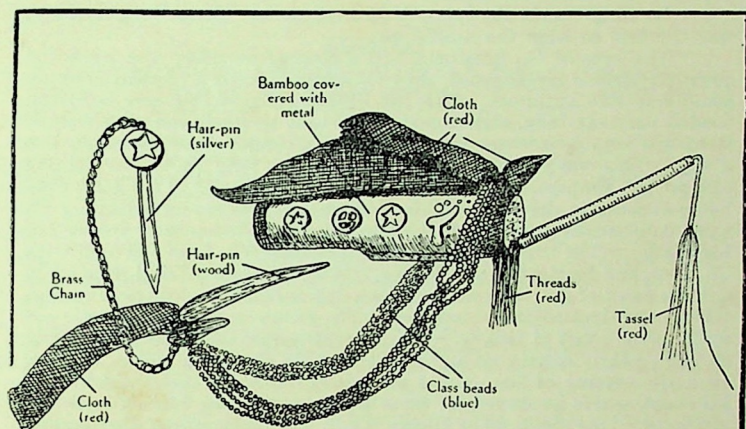
The San Tak have no written language of their own, using the Chinese characters for this purpose. Attempts to work out the etymology of their spoken language were unsuccessful, some of the words resembling the Mandarin and others the local dialect, from which they were probably taken, so nothing definite was determined.

Villages of people very closely allied to the San Tak have been reported from some two hundred miles or more above Foochow on the Min River, others are reported about Amoy, and between Foochow and the coast. Formosa is said to contain 50,000 natives of a similar type, but whether or not these are all the same people remains to be ascertained.

The wide range of the San Tak at the present time testifies to a former wide distribution on the plains until forced into the hills by the Chinese. According to the law for the dispersal of animal and plant life, which states that remnants of a scattered fauna or flora are always to be found at the periphery rather than in the centre of the dispersal, the San Tak must have come from some place outside the province. According to their own legends they are all migrants from Canton, to which place their ancestor, Go Sing Da, came from Nanking.

In one of the San Tak villages, some thirty miles from Foochow, we found a most interesting scroll, painted by a late San Tak artist, depicting in thirty pictures, each one about two by three feet, various scenes in the legendary history of the people. From this scroll, which they were very loth to open for inspection, and from talking with the people, we have the following story to account for the peculiar head-dress. As all

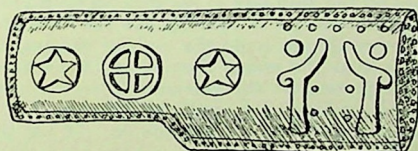
THE SAN TAK OF FUKIEN PROVINCE



HEAD DRESS of the SAN TAK WOMEN

(from a sketch made in their village)

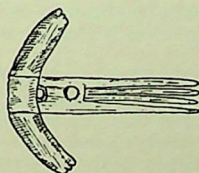
Details below



Side View

End View

DETAILS.



WOODEN HAIR-PIN.



EAR RING.

KELLOTT
1920

narrators disagree somewhat as to details, it is not easy to get an accurate account of the legend.

"Go Sing Da, in the reign of Li Seu, in the Cieng Dong dynasty, was the first to wear the head-dress.

"The wife of Go Sing once had a strange earache; and when the court physicians investigated, they took from her ear a peculiar creature something like an insect. This the Empress placed in a rice bowl and tended very carefully, although it would take no food, and after a while it turned into a creature something like a dragon and something like a dog. This was when Go Ding (same as Go Sing Da?) was fighting against the Emperor Huang to the West. The armies of Go Ding were being constantly defeated, and he put up a proclamation promising his third daughter in marriage to any man who could bring back the head of his enemy. The dragon-dog tore the proclamation from the wall with his teeth and brought it to Go Ding. When the latter asked if he could get the head of his enemy the dragon-dog nodded his head as if to say, 'Yes,' and immediately departed. He swam across the water, and went to the court of Huang, where he represented the armies of Go Ding as being nearly exhausted and unable to hold out much longer. Huang took the coming of the animal as a good omen and welcomed him to his court, where he stayed for three years, ingratiating himself with the Emperor. One night, while Huang lay in a drunken stupor, the dragon-dog bit off his head and carried it back to Go Ding. Go Ding was horrified to think that the animal had fulfilled his promise and won his daughter, so he did all he could to prevent the marriage. Finally, seeing refusal longer impossible, he had to consent, but asked the dragon-dog if he could be changed in to a man. The animal replied that he could be transformed into human shape if placed under a golden vase for forty-nine days. This the Emperor and Empress gladly did, but, becoming over-anxious for his fate, opened the vase on the 48th day to see if he were still alive. They found him changed into a man in everything but the back of his head. It was, of course, impossible to undo the evil, so the marriage was solemnized, but in order that the young man should not feel conspicuous or embarrassed, all present at the ceremonies were asked to wear the peculiar head-dress—the one still worn by the women."

"Three sons and a daughter were born to this couple. Of the three sons, the first one was called Buang, for he was brought to his father on a plate; the second one was called Lang, as he was brought in in a basket; and the third one was called Loi, as they heard it thunder when he was born."

The San Tak in Fukien are descendants of Lang and Loi for the most part, though some trace their lineage back to the daughter.

This legend is as I obtained it from the San Tak themselves, but it differs somewhat from a translation of their legend written by one of their number and translated by Mr. Blakney and his students. It is hoped he will publish his translation later.

SCIENTIFIC NOTES AND REVIEWS

BIOLOGY

AMPHIBIANS AND REPTILES OF CHINA: Students of amphibian and reptilian life in China and the Far East have long been indebted to the work of Dr. Leonhard Stejneger, of the United States National Museum, who published in 1907 his "Herpetology of Japan and Adjacent Territory" (*Bull. U. S. Nat. Mus. No. 58*, 1907). In this he included the amphibians and reptiles of the Russian Coast Province of Siberia, or the Primorsk, as it is also called, Korea, Eastern Manchuria and Eastern China. In 1910 he published another important paper called "The Batrachians and Reptiles of Formosa." (*Proc. U.S. Nat. Mus., Vol. 48*, pp. 91-114, 1910). These two papers have now been supplemented by a third, and, to students of Chinese herpetology, the most important of all, entitled "Chinese Amphibians and Reptiles in the United States National Museum" (*Proc. U.S. Nat. Mus. Vol. 66, Art. 25*, pp. 1-115, 1925). As indicated by the name, this deals with the Chinese herpetological material in the United States National Museum, the larger part of which was not available at the time "The Herpetology of Japan" was written, and which has mainly been collected by Mr. Arthur de C. Sowerby since he joined the Clark Expedition in Kansu as naturalist in 1908-9. Since that date Mr. Sowerby has represented the United States National Museum in China as a field naturalist and has sent collections from all parts of North China, Southern Mongolia, Manchuria, the Lower Yangtze, Chekiang and Fukien. More recently the Rev. D. C. Graham has sent to the United States National Museum good collections of reptiles and amphibians from Szechuan, while Professor C. Ping, of Nanking, has sent specimens from the Lower Yangtze Basin and neighbouring regions. Thus in the last two decades the Chinese material in the institution under discussion has been increased to a very considerable extent, and has enabled Dr. Stejneger to clear up numerous doubtful points in regard to the reptiles and amphibians of that country, as well as to name and describe many new species. The latter have been described from time to time in separate papers. The only new species described in the present paper is *Zaocys oshimai* from Urai, Formosa, which was formerly classified under *Z. dhumnades*. The synonymy of the Chinese amphibians and reptiles mentioned in this paper has been thoroughly revised.

CHINESE FRESH-WATER FISHES: The following letter has been received from Mr. J. D. de La Touche, the well known authority on Chinese birds, who during the whole of his life in China was an ardent student of natural history, and made collections of mammals, reptiles, amphibians, fishes and insects as well as birds. There is very little doubt that the fish mentioned by Père David belonged to the same species as those collected by Caldwell, who, himself, told us that they were taken in the streams high up in the mountains to the back of Yen-ping-fu, which is not far from Kuatun.

The Editor.

Sir,

With reference to your review in *The China Journal of Science and Arts* for November, 1925, of Mr. John T. Nichol's paper on Chinese Fresh-Water Fishes, Père Armand David, in the second volume of his 3me Voyage, page 261, mentions the capture at Kuatun, in N.W. Fohkion, of a "very singular small fish, whose mouth is surrounded by numerous feelers, and whose ventral fins are so shaped as to adhere to polished surfaces in the manner of cupping glasses. What is most extraordinary is that these curious fishes live in the streams above a series of cascades which have been quite unscalable since the mountains have been broken up as they are at present."

It would be interesting to compare specimens of this fish, if any were sent to the Paris Museum, with Mr. Caldwell's *Hemimyzon zebroides*. It is

very probable that they would prove to be the same. It should not be forgotten that Père David, who made extensive collections in every branch of Natural History sent to the Paris Museum collections of fresh water fishes from the various inland districts which he visited.

Yours, etc.,

J. D. La Touche.

Cronroe, Ashford, Co., Wicklow,
Ireland, 20 February, 1926.

TWO NEW BIRDS FROM CHINA: In a recent paper in the *Proceedings of the New Zealand Zoological Club* (Vol. 1X, p. 23, 1924) Outram Bangs separates the beautiful Sultan tit of Fukien from the Himalayan form, *Melanochlora sultanea sultanea* (Hodgson), and the form from the Malay Peninsula, Sumatra, etc., *M. s. flavocristata* (Lafresnaye). To the Fukien form he gives the name *Melanochlora sultanea seorsa*, separating it on the grounds that the shafts of the yellow feathers of the crest are black, instead of yellow as in the other two forms, and the yellow of crest and under parts is paler. It is 'lemon chrome' of Ridgway in the Fukien form, 'empire yellow' in the other two forms. The type is from Yenpingfu, taken in March, 1921, and is in the Museum of Comparative Zoology (No. 88,000).

In Vol. VIII, pp. 41-42, 1923, of the same publication Outram Bangs and Thomas E. Penard describe a new form of white-headed black bulbul under the name *Haringtonia leucocephalus montivagus*. The specimens upon which this new form is based were in a collection made by a Chinese, Ho Ting-sho, in the Yenping Mountains (Jenping Mountains is given as the type locality, but this must be a misprint), and purchased for the Museum of Comparative Zoology by W. F. R. Wulsin, through the generosity of Dr. Thomas Barbour. (Type in the M.C.Z., No. 88,242). The Rev. H. R. Caldwell, who translated the Chinese on the labels, pointed out that these two specimens were different from the common form of white-headed bulbul in that they were larger and had only a narrow white frontal band in each instead of the whole head white. He claimed that they represented a distinct form that was only found at very much higher altitudes than the common form, *H. l. leucocephalus*, and that he was very familiar with the two forms. Considerable weight must be given to the opinions of so able a naturalist and collector as Caldwell, but we feel that in this case judgment should be reserved till larger series of *Haringtonia* from the higher altitudes are available. It must not be lost sight of that the amount of white on the heads of these birds varies very considerably with age, being nil in young though fully grown birds, and covering the whole head and part of the neck in fully mature specimens.

A. DE C. S.

GEOLOGY

THE SURFACE HISTORY OF THE EARTH, by John Joly, Sc.D., F.R.S.,
Oxford University Press, 1925.

"The Surface History dealt with in this book is based directly upon two great recent advances in our knowledge of the earth's crust: the Radioactivity of the Rocks and Isostasy. The nature of both are herein discussed and explained. Both are recognized today by most men of science as facts. These two fundamental elements of the surface constitution of the globe lead naturally to certain great events which at long intervals are recurrent in the history of the earth's surface. Such are: (a) the slow advance of transgressional seas upon the continents; those seas in which sandstones and limestones, etc., so common over all parts of the land surface, have been laid down: (b) the retrogression of those seas; taking place after many millions of years: and then, finally, (c) the rising of the mountain ranges, built mainly of the sediments which were collected in the depths of the former continental waters." This, the first paragraph in the Preface of Dr. Joly's new book, explains in few words what it is about, and before going further we may say that this book may be looked upon as the latest thing on the geology of the

SCIENTIFIC NOTES AND REVIEWS

earth's surface, embodying theories and conclusions that have been accepted, as the author says, "by most men of science as facts."

In the January, 1924, number of this Journal, we published an article by Dr. H. Chatley entitled "The Mechanical Theory of Earthquakes" in which he explained the meaning of Isostasy and discussed it in regard to the occurrence of earthquakes. (See *C.J.S. & A.*, Vol. II, p. 46). More recently Professor George B. Barbour gave us an interesting review entitled "Radioactivity as the Cause of Mountains," in which he dealt with Dr. Joly's work "Radioactivity and the Surface History of the Earth," explaining the action of radioactivity in regard to the formation of mountains.

Readers of this Journal will therefore be familiar with the outline of this subject, and there is no need to say more here than that (1) the theory of *isostasy* maintains that the continental masses are floating in a *magma* of fluid basalt and are composed of somewhat lighter rock than that which lies at the bottoms of the oceans, and (2) the rocks of the earth's crust as well as the basaltic magma underlying them contain radioactive elements, heat from which is alternately accumulated during immense periods of time and then released in tremendous outpourings of molten basalt over vast areas of the ocean bed, when adjustments and redistribution of land and water take place and mountain ranges are formed. Dr. Joly's book goes into close detail regarding these theories, stating why they are held and adducing evidence in their support.

At the end of the book there is an excellent summing up, a reprint of a lecture delivered to the Geological Society of London in 1923. A glossary is also given, which will help the layman reader. The whole book is well written and readable. Some fine illustrations and text-figures enhance its value.

A. DE C. S.

PHYSICS AND CHEMISTRY

DISCOVERY OF ELEMENT NO. 61: In the March issue reference was made to the discovery by Messrs. Noddack and Tacke of elements Nos. 43 and 75, and mention was made of the fact that only No. 61 remained to be found outside the radioactive group. It is now announced that Dr. Hopkins of Illinois has found No. 61 by the same method as that used by Noddack and Tacke, *viz.* X-ray spectrum analysis. He has named this element "Illinium," which can hardly be described as any more suitable for an element than the names "Masurium" and "Rhenium," which have been given to the two already mentioned. The list of the elements is now complete up to No. 92 (Uranium) with the exception of Nos. 85 and 87, which are the halogen and alkali polars of No. 86 ("Niton" or Radium Emanation). It is just possible that these two do not exist at all, as they would be very unstable forms. It is very noteworthy that all these rare forms are odd-numbered, indicating inferior nuclear stability and therefore reduced probability of existence.

HERBERT CHATLEY.

MEDICINE

NEW LIGHT ON *DEMENTIA PRÆCOX*: No medical hypothesis has commanded quite such widespread attention on the part of the profession and laity alike as the endocrine theory. Though lost sight of for a time, following its enunciation years ago by Charles Edward Brown-Séquard, in view of the ridicule and contumely heaped upon its learned protagonist because of his excursion into the realm of rejuvenation, since its revival and extension it has assumed almost the proportions of a cult.

Not the least interesting of its more recent extensions is that to account for certain psychoneuroses and psychoses whose etiology has hitherto been extremely obscure. It would now appear that the dictum of the physician of the old school, "trust in God and keep the bowels open," was not without sound scientific foundation. The problem of auto-intoxication from intestinal sources is one that has commanded the closest study by physicians for nearly a century, and the search for a medium that would completely change the character of the intestinal flora, at

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regular intervals, has gone on apace, effort in this direction being met with anything savouring of success only comparatively recently.

With the considerable light thrown upon the functioning of the ductless glands, in the past few years, this question of auto-intoxication assumes added interest in relation to mental disorders. Paresis has long been attributed to the presence of spirochaete in the blood, akin to and yet differing from the *Treponema pallida* of syphilis. The very tenable hypothesis is now advanced that mental aberration, in which it is not possible to locate any definite parasite in the blood, may be ascribed to toxins, the presence of which are in turn attributable to an adverse intestinal flora. The paranoid form of *Dementia Praecox* is cited as an example.

The hypothesis is based upon the recognition that the balanced functioning of hormones—those mysterious agents which have the power to stimulate the action of a gland and cause it to react upon one relatively far distant—which in turn, is closely bound up with the functioning of the ductless glands themselves, with the implied effect upon metabolism, etc., is essential to normal mentality. The carefully compiled data of numerous observers tends to show that a vast number of paranoiacs come from the ranks of the ill-nourished—this last in the sense of improperly nourished, rather than underfed.

Although it is true that endocrines are to-day held responsible for almost everything that transpires on earth, one is justified in expecting valuable developments from this latest hypothesis.

BLOOD TESTS IN THE DIAGNOSIS OF CANCER : Of almost equal interest to the foregoing, is the application of blood tests in the detection of cancer. Research into this dread disease has, of late, concerned itself with the attempt to isolate a specific micro-organism responsible for the malady, albeit many qualified investigators still cling to the hypothesis of an earlier day, viz., that cancer is the outcome of abortion of function, rather than the invasion of a micro-organism. The two theories are not irreconcilable. In cancer, there would appear always to be present some toxin in the diseased portion itself that is capable of affecting contiguous healthy portions.

Since, again, abortion of function must be ascribed to imperfect metabolism and catabolism, that evidence of its existence should be sought in the blood is in no wise startling. By the latest method, the spectroscope is called into use, it being claimed that pre-cancerous conditions radically alter the normal spectrum of the blood. The method has been evolved by a German scientist under whom Dr. H. M. Mitchell, senior surgeon at the Liverpool Cancer Hospital, has been pursuing his studies. It affords one more substantiation of the theory that chemical and physical processes are closely bound up in the phenomenon of life, and again indicates that, in the endocrine theory, the scientist finds the initial means for justifying his proud boast that one day he will have fathomed the secret of life itself.

R. R. L. F.

THIRD PAN-PACIFIC SCIENCE CONGRESS

The main objects of the Third Pan-Pacific Science Congress, to be held in Tokyo, Wednesday, October 27, 1926, to Tuesday, November 9, 1926, like those of the First Congress held in Honolulu in 1920 or of the Second Congress held in Australia in 1923, are (1) to initiate and promote co-operation in the study of scientific problems relating to the Pacific region, more particularly those affecting the prosperity and well-being of Pacific peoples, and (2) to strengthen the bonds of peace among Pacific peoples by means of promoting a feeling of brotherhood among the scientists and, through them, among the citizens in general of all the Pacific countries.

In consideration of the great importance of these Congresses, both from national and international standpoints, the Imperial Government, upon the recommendation of the National Research Council, made a grant for an appropriation of funds to be used for defraying the expenses of holding the Third Pan-Pacific Science Congress in Japan in 1926, and the Japanese delegates who attended the Second Pan-Pacific Science Congress were authorised by the Imperial Government to invite the Third

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Congress to meet in Japan. This invitation was extended to the Second Pan-Pacific Science Congress by Professor Joji Sakurai at the last General Meeting of Congress held in Sydney on September 3, 1923, and, on the motion of Colonel Sir Gerald Lennox-Conyngham seconded by Dr. T. Wayland Vaughan, the invitation was unanimously accepted.

Further, on the motion of Dr. T. Wayland Vaughan, it was resolved at the same General Meeting:—

"That the National Research Council or equivalent organisation of the country in which the next Pan-Pacific Science Congress is to be held be invited to appoint the President and other executive officers of the Third Pan-Pacific Science Congress and that all the executive duties in connection with that Congress be entrusted to it."

On returning from Australia, those who formed the Japanese delegation learnt with a feeling of much relief that, in spite of the national calamity that had befallen their country on September 1, 1923, there was no occasion for cancelling the invitation already extended to and accepted by the Second Pan-Pacific Science Congress or, even, of materially modifying the hospitality and other arrangements originally planned. The National Research Council then proceeded to appoint a small Organising Committee to form the nucleus of a larger committee to be subsequently appointed, and this small committee met for the first time on March 1, 1924, to consider and prepare a draft scheme of organisation.

The larger Organising Committee, which was appointed in accordance with resolutions passed at the Annual General Meeting of the National Research Council held on April 19, 1924, met on several occasions to discuss in detail the scheme of organisation and then resolved itself into a number of sub-committees, *viz.*; those on Scientific Programs, Excursions, General Program, Publication and Hospitality, besides one on Draft Constitution and By-Laws of the proposed permanent organisation.

The President, the Vice-President, the General Secretaries, the Divisional Secretaries and the General Treasurer, together with the Chairman of the Sub-committees mentioned below, constitute the Executive Committee, in which the responsibility for the conduct of the Third Congress is vested.

A question which presented itself persistently to the organisers of the Third Congress was how to realise solidarity of feeling and action, so that the objects of the Congress might be better promoted, and as a means of attaining the desired end they have decided to provide for Divisional Meetings of a much wider scope than Sectional Meetings. For this purpose different branches of science have been grouped together in two broad divisions of physical and biological sciences, instead of, as hitherto, providing a section for almost every branch or sub-branch of science, and Divisional Meetings will largely take the place of Sectional Meetings, thereby affording opportunities for those engaged in the study of different but allied branches of science to come into frequent contact with one another in discussions upon subjects of more or less common interest, instead of allowing themselves to be scattered, for the greater part, over a large number of comparatively small Sectional Meetings.

Provision for Divisional Meetings also gives a satisfactory solution to the question discussed at the General Meeting of the Second Congress held in Melbourne on August 22, 1923, the question, namely, whether the congress should, in future, include all branches of physical and biological sciences, each forming a separate section. The voting for and against was practically equal, and the Governing Body of the Third Congress was asked to give the matter its serious consideration. Now, the most weighty objection against including all branches of science was that a further increase in the number of sections already too numerous would result, and the ground for this objection has now been removed by grouping together various branches of science in two broad divisions. *All* branches of physical and biological sciences form proper subjects of discussion at the Congress, *provided* that the subject treated of bears upon some Pacific problem.

It must be stated that, as at previous Congresses, Sectional Meetings will also be held at the Third Congress, but more or less in a secondary way, that is to say, these meetings will be held in order to deal with those contributions which either, for want of time, cannot be discussed at one of the Divisional Meetings or, from their scope, render their discussion at a Sectional Meeting more suitable.

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SHOOTING AND FISHING NOTES

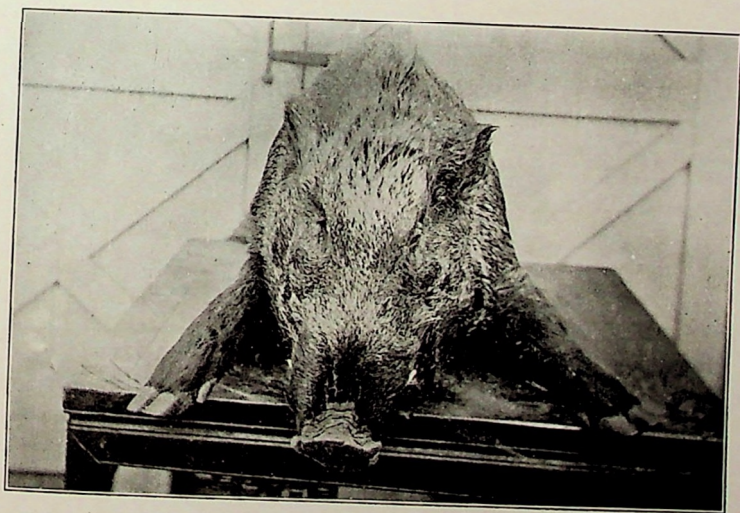
SHOOTING

WILD BOAR SHOOTING IN SHANSI: We have received several reports during the past few months to the effect that the sport of wild boar shooting in Shansi has been very good during the last year or two and some very handsome bags have been made. The record appears to be a bag of seven pigs in one day made by one sportsman in the mountains to the south-west of Fen-chou Fu, in West Shansi.

Lest there should be any misunderstanding on the part of sportsmen in other countries, such as India, where pig-sticking and not pig-shooting is the vogue and the only sportsmanlike method of hunting wild pigs, we must explain that throughout the whole of China, wild pigs are only found in hilly and mountainous country where riding, and therefore pig-sticking, are out of the question; and the only way for the sportsman to get his pig is to shoot it.

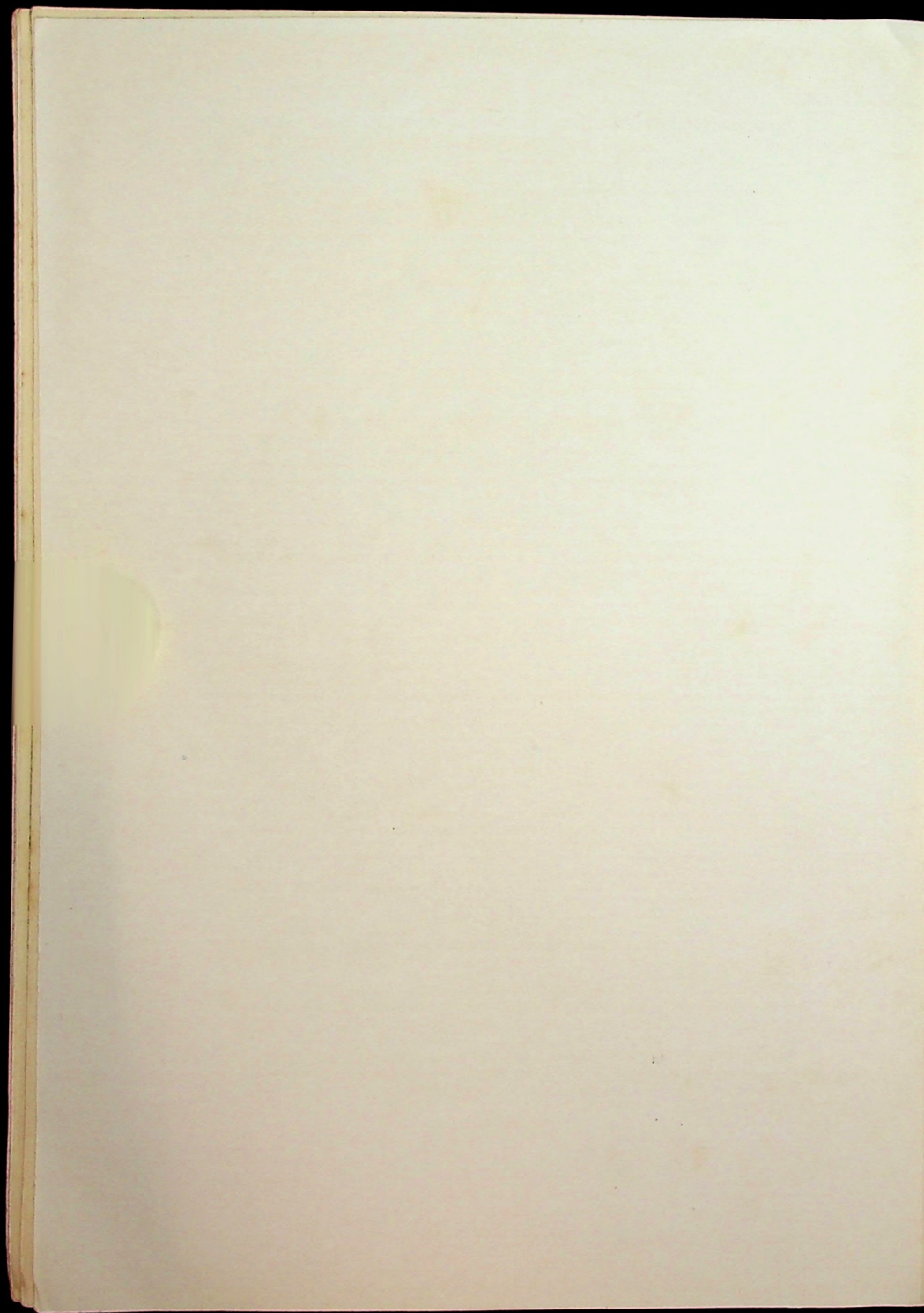


A Magnificent Wild Boar Shot by Professor E. T. Nystrom at Shang-ku-shih,
Fen-chou Fu District, West Shansi.



Photos by E. T. Nystrom.

Front View of the Same Animal as Above.



SHOOTING AND FISHING NOTES

Usually the rifle is the weapon used, the shotgun, though occasionally being used, generally proving ineffective unless used at extremely close quarters. As pigs are notoriously hard to kill, it behoves the sportsman to look well to the matter of choosing a suitable rifle; and we can recommend nothing better than one of the many modern high velocity rifles of about "30 bore" (0. 3-inch calibre) shooting a pointed soft-nosed bullet. In the Shansi mountains, while a sportsman does not as a rule have to fire at more than one hundred and fifty yards range, distances are deceptive owing to the clarity of the atmosphere, and he may find that he is firing at considerably over this range. Thus the flat trajectory of the high velocity bullet is a great advantage. Also the high speed and expanding capacity of the soft-nosed bullet provides the necessary "shocking" power for so vital and powerful an animal as a full-sized wild boar. These animals will carry an extraordinary amount of lead, if pumped into them with a low-velocity rifle, and, not infrequently under such circumstances and even though badly wounded and spilling blood freely, will get clean away.

The country where pigs are numerous in Shansi is that lying to the west of the Fen River, from its source southward the whole length of the province. Here the whole country is mountainous, and, even where not forested, affords sufficient cover in the way of tall dense scrub and brush in and at the heads of ravines for the pigs to lie up in during daylight hours. While there are certain well-known spots where pigs can always be found, it is safe to say that pigs occur almost everywhere in the main ranges. In an area to the south of Ping-ting Chou, on the Chen-Tai Railway, in East Shansi, pigs are also plentiful, but the western part of the province is best.

The sportsman may now go from Tai-yuan Fu by motor-car to within easy distance of the hunting grounds, doing in a few hours what it used to take days to do when we hunted in this region.

Apparently pigs are on the increase, for we hear of their now being plentiful in areas where formerly they were comparatively rare.

In spite of the abundance of pigs in these areas, they are not easy to bring to bag. Considerable endurance and good marksmanship are necessary if the sportsman is to return from the chase triumphant.

One unfamiliar with the country and quarry may easily become discouraged, through lack of success; and we know of several instances where sportsmen from Shanghai and other Treaty Ports have returned empty handed. We have seen many a fine tusker lost through sheer bad shooting.

But the sportsman who is prepared to take sufficient time to allow himself ten days or a fortnight on the hunting grounds (Tai-Yuan Fu can be reached from Tientsin in two days by railway, and the shooting grounds in another day and a half), and is willing to work hard and put up with rough fare and the discomfort of Chinese inns, can confidently count on getting a couple of good heads, not to mention shots at smaller specimens.

Roedeer, pheasants and partridges are abundant in all the mountains of West Shansi, and offer a pleasant diversion from the more serious sport of pig hunting; while, if luck favours the sportsman, he may get a chance at a leopard. The accompanying photographs were given to us by Professor E. T. Nyström of Shansi University, Tai-yuan Fu, who never fails to bag his pig or two each season.

A full grown Shansi boar is a handsome trophy. Scaling up to 350-lbs. in weight, the pigs have better tusks than the average of these secured in the Chinkiang district. The record for Shansi was a pig shot by a Chinese hunter which was estimated to weigh somewhere about 400-lbs. It produced 200 catties, or 260-lbs. of meat, exclusive of bone, hide and entrails, and had a tusk of 10 inches in length and 1½ inches in diameter. The head of this specimen is in the possession of Mr. K. T. McCoy, of Tientsin.

The writer of these notes secured a boar within twelve miles of Tai-yuan Fu, that weighed 333 lbs. and had a tusk of 9½ inches in length and 1½ inch in diameter.

THE FIRST SPRING SNIPE: The first spring snipe reported this year was shot by Mr. H. Brian Bates in the vicinity of Shanghai on April 11th. We believe this is very early. One or two more were seen about the same time, but

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since then they must have moved on as none have been seen lately. The bird secured was a Swinhoe's snipe (*Gallinago megala*).

During the East holidays the same sportsman visited the Ta Hu district, where he found the water in the lake very low and the usual spots where snipe are to be had bone dry. He and his companion managed to make a bag of eighteen couple of winter or common snipe (*G. gallinago raddei*).

The season this year has been extremely dry with the result that snipe shooting has been poor. We have heard of no good bags being made at all this spring. If the weather continues as dry as it has been up to the present, the spring snipe shooting will be poor.

GARGANEY OR SUMMER TEAL: Mr. Bates secured three of these delightful little teal in the Ta Hu district during Easter, all three being shot in paddy fields well away from any open water. These teal, as their name suggests, are migrants from the south, and as a rule, are not to be found in these parts during the winter months, when the common teal and other species are with us in numbers. They breed in the Yangtze Basin and northward. We have secured them on the Min River in Fukien in November and December.

FISHING

FISHING IN ITALY: The following letter has been received from Major Percival Lea Birch, who also sends us the accompanying notes on fishing in China. As the letter may prove of interest to some of our readers, we give it here as well as the notes:

DEAR MR. SOWERBY,

It is very kind of you sending me the China Journal, and I much appreciate it. I enclose you a few notes on fishing, which I hope may be of use. I find the fish market in Florence most interesting. Curiously enough there are always quite a number of small sturgeon, or sterlets on sale. A good many sharks and dog fish are eaten by the poorer classes. Grey mullet are greatly in evidence, as also red mullet, gurnard, "Ragni" or lupi-di-mare, small silvery fish which I could not identify. Then there were sea bream, rays, bass, and sardines. Besides the sea fish I saw several kinds of freshwater fish. Trout from Lake Garda, tench from ponds and lakes in Tuscany, and pike from lake Trasimeno. One day I saw a fresh salmon, but these are rare. I hear there is still some trout fishing to be got in the Serchio above Bagni di Lucca, but trout will not live in this latitude below about 1,200 feet above sea.

We are getting perfectly glorious weather here, and to-day the sun is shining hotly down from a spotless blue sky, while there is no wind at all. It is surprising to find that even in Italy where birds are so persecuted, there is still shooting to be had. A man I know shoots regularly every winter and usually manages to get about 70 partridges, 20 hares, duck, snipe, quail and woodcock every season. One winter he got 120 woodcock. He uses a pointer, and works the wild country among the Apennines.

Yours sincerely,

PERCIVAL LEA BIRCH

31, Viale Milton, Florence, Italy.

8th March, 1926.

SOME NOTES ON FISHING IN CHINA: One of the initial difficulties met with by a man who starts fishing in the East, is to find out what sort of outfit to provide himself with. There are three principal methods of angling in fresh water: fly-fishing, spinning, and bottom fishing. No one rod is really suitable for all these three, though such things as combination rods are advertised, which profess to serve for every kind of fishing.



Photo by E. T. Nystrom.

A Fine Old Tusker Photographed Where He Lay.



Photo by D. Sjolander.

A Wild Boar Shot in West Shansi being carried to camp. Note the length of leg as compared with the domestic pig.



SHOOTING AND FISHING NOTES

If expense is no object, it is best to have a split bamboo rod for fly-fishing, and it is necessary to go to a good maker, in order to make sure of obtaining a first class tool, which will stand great extremes of heat and cold without coming to pieces. I used two split bamboo rods during the two years I was in China, and both are still right enough, except as regards the joints which want a little seeing to. Both are light rods: No. 1 is 9½ feet long and weighs 5½ ozs; No. 2, a couple of inches longer, with a steel centre, and weighing about 6½ ozs. With the latter I have killed fish up to over 7 lbs. without much difficulty. No. 1 is somewhat the pleasanter to use for culters and small rainbow carp, with very fine tackle, but I have done plenty of light fishing with No 2, and, were I not somewhat spoilt by the delightful lightness and delicate casting of No. 1, I should think the other good enough for the finest fishing.

As regards lines there is nothing to equal those of English manufacture: plaited silk, oil dressed, and tapered at both ends. The line should always be wound on to a drier, at the end of a day's fishing; it will then last a long time.

The reel should be of the contracted type with large drum, in order to get quick winding. The proper weight to suit a 9½ foot rod is about 6 ounces, and fly reels are usually made of an aluminium alloy, in order to keep down the weight.

As regards gut, the best plan is to buy supplies of four different thicknesses, and make up one's own three yard tapered casts. Finest natural gut (undrawn), and three thicknesses of drawn gut, 2X, 3X, and 4X, suffice for most fly work. When very small flies are used, and the water is low and clear, it is best to have two lengths of 4X next the tail fly.

All flies should be eyed. Flies tied to gut are utterly out of place in a tropical country, for the gut usually goes long before the fly is worn out, and moreover there is always the temptation to go on using the fly after the gut has become unsafe. With eyed flies if the gut looks suspicious, it is easy to break off and re-knot.

For culters, hackles on 0, 00, and double 000 hooks, are necessary as these little fish are constantly missed if larger flies are used. When rainbow carp are the venue, I still think it best to stick to very small flies, for culters are also nearly always associated with other fly takers. The little 000 doubles have wonderful hooking power, and are equally suited to a little culter, or a ½ lb. carp, I have used these tiny doubles with great success for sea-trout at home during low water conditions, and find they hold even these tender mouthed active game fish extraordinarily well.

The bottom rod can be quite a cheap affair. I have a 9s. 6d. roach rod, which I bought in York a number of years ago. The butt is of ash, the middle blue mahoe, and the top greenheart. It has upright bridge rings, and only weighs about 8 ozs. Such a rod, though unsuited to monsters, is yet strong enough for fish of 4 or 5 lbs. Something of the kind, 10 or 11 feet long, and a bit stronger would serve well for bottom fishing in China. For bottom fishing plaited silk undressed lines are eminently suitable: they can be purchased of any desired thickness and strength, and are very moderate in price. They can be readily dressed with red deer fat, or one of the numerous line greasing preparations. It is an improvement to have fly and bottom rods fitted with agate top and butt rings.

For spinning a bamboo pike rod, about 11 feet long, with porcelain rings serves admirably. This can also be used for sea fishing by having an extra and shorter top fitted, so as to obtain greater stiffness.

If one has never used a Nottingham reel for spinning, it is better to fit oneself with something not so difficult to learn. I strongly recommend the Malloch, which makes spinning simple enough for even the veriest tyro. A valued metal reel and line should not be used for sea work. It is best to have a large wooden Nottingham with optional check for salt water fishing. I kept a small rod in my cabin during my voyage back from Shanghai, and had several opportunities of using it. In Singapore Harbour I hooked and played out a large fish, which proved too weighty for the line, and my tackle broke during the process of lifting the fish up the side of the ship. I caught fish both in Colombo Harbour, and at Sabang,

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but could do no good at all in the Suez Canal, though I believe it is full of bream. Bait is the difficulty on board ship, and I had to use raw meat, which many kinds of sea fish do not much care about.

PERCIVAL LEA BIRCH

LOCAL FISHING: The time is now ripe for local anglers to start activities; and for the sake of newcomers to China, or new readers of this Journal, who have not followed our fishing notes heretofore, it may be stated that good fly-fishing for knife-fish and culters may be had in ponds in and round Shanghai. For those who can afford to take a trip to Hangchow, very good fly-fishing may be had in the streams that enter West Lake for rainbow carp and culters. Of these the former is an extremely sporting fish, partaking very much of the characteristics, from an angler's point of view, of the trout. It is a sturdy fish and fights well.

Other fish to be had are various species of carp, such as the common carp, the so-called golden carp (wild form), ide and chub; all of which may be taken with paste. The serpenthead or murrel may also be taken with live prawn, spinner or even fly for bait.

A. de C. S.

SOCIETIES AND INSTITUTIONS

THE CHINA SOCIETY OF SCIENCE AND ARTS

SPRING ART EXHIBITION

The third annual Spring Art Exhibition of this Society was held during the last week in April, being opened at 11 o'clock of the morning of Saturday, April 24th, by Mr. Stirling Fessenden, Chairman of the Shanghai Municipal Council. The exhibition was held in the ground floor rooms of the old British Post Office on Peking Road, the building having been kindly lent to the Society for the purpose.

Altogether some 58 artists participated in the exhibition, while 368 pictures were shown and ten pieces of sculpture. Owing to the disturbed state of the country no work from Peking or Tientsin artists was received.

The exhibition this year was held with the assistance of the Art Departments of the American Women's Club and British Women's Association, the members of which are amongst the most enthusiastic supporters of the plastic arts in Shanghai. Following are the names of the committee responsible for the running of the exhibition, to which must be added the name of Mr. Arthur de C. Sowerby, President of the China Society of Science and Arts, and Miss N. L. Horan, the Honorary Secretary.

Mrs. M. F. Swan, Hon. Sec., Clarice S. Moise (Mrs. Arthur de C. Sowerby) Hon. Treas., Mrs. E. A. P. Wood, Mrs. R. J. Roberts, Mrs. R. C. Robertson, Mrs. S. P. Clement, Mrs. E. N. Squires, Mr. L. A. Harrap, Mrs. H. E. Gibson and Mr. P. P. Stoopin.

Mr. D. H. Porterfield, Mr. W. Buchan and Mr. R. Rowntree greatly assisted in hanging the pictures, and Mrs. H. Burkhardt and Miss Buchan in looking after the exhibition and sales during opening hours.

A full report dealing with the work of individual artists will appear, together with reproductions of some of the exhibits, in the June issue.

QUEST SOCIETY

THE RUBAIYAT OF OMAR KHAYYAM

At the first meeting for April of the Society, Professor P. Shastri delivered a lecture on the famous Rubaiyat. The lecturer's thesis was that the translation of Edward Fitzgerald misinterpreted altogether the philosophy of Persia's renowned

SOCIETIES AND INSTITUTIONS

tent maker. He contended that, so far from conveying a spirit of Epicureanism and a general policy of *laissez faire* respecting belief in the hereafter, Omar's verses breathed a spirit of deep religion and hope of a future existence.

Professor Shastri reviewed the tendency of Persian philosophy of the several schools contemporary with Omar, pointing out that these were based upon the very highest ethics, and that, consequently, the Rubaiyat in question could not possibly have been intended to read as Fitzgerald had translated it. The lecturer, on the other hand, made no reference to the biographies of Omar, as outlined by several authorities who agree in the main, which recount that, although Omar began life as a keen student of mathematics, in which he excelled, even going so far as a revision of the calendar, this very thing brought him into conflict with the religious authorities by whom he was subsequently mercilessly persecuted. Following upon this, he sought to drown his chagrin at the reception of his scientific efforts in a life of dissipation which prompted the sentiments attributed to him by Fitzgerald.

Mr. A. J. Hughes presided at this meeting, and was congratulated upon his recovery from his long and serious illness by several of the members, to whose felicitations he replied in a neat speech.

THE ALPHABET

Dr. Herbert Chatley addressed the Society on Monday, April 19, choosing for his subject The Alphabet. Mr. De Jonge presided over the meeting.

Dr. Chatley demonstrated the intimate connexion between the Hebrew, the Greek and other ancient alphabets and traced most interestingly the changes that have been effected in these, as evidenced in the present day Roman alphabet, which, the lecturer pointed out, was used by all peoples save the Chinese and the Japanese.

Stressing the premise that the art of writing was one of the primary evidences of civilization, Dr. Chatley dealt with ancient forms of written language and then passed on to the illustration of the basic differences and similarities between the alphabets mentioned. He gave prominence to the lack of an alphabet, as we understand it, in the Chinese language, although the Japanese possess an elementary one.

A most interesting discussion followed the lecture, in which a number of questions were asked, which Dr. Chatley answered so elaborately as to make the discussion assume the proportions of a supplementary lecture.

EDUCATIONAL NOTES AND INTELLIGENCE

FUH TAN UNIVERSITY

Some reference to the munificence of a donor, who had equipped this institution with a new building for the advancement of biological sciences, was made in our March issue. It is of further interest to note that the teaching of biology in this University is the outcome of deliberations for changing the original plan, which was concerned with the development of psychology rather than the biological sciences as a whole.

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In view of the growing importance of biology as a factor in scientific study in China, and in the belief that insufficient attention was being paid to this subject in other institutions, the project was set on foot to secure funds for equipment that would enable the progenitors of the plan to bring about its complete fulfillment.

In complete sympathy with their desire, Mr. Kuo Foo-ting most generously supplied the needed capital, and the institution to-day boasts laboratories second in equipment to none. In addition to physical plant, there is an exceptionally strong faculty chosen especially to train specialists in biology, to train teachers in the biological sciences for the colleges and middle schools of China, to supply social workers with sufficient biological knowledge which is greatly needed in social reform. The need of supplying biological information for the general public and to provide library and laboratory facilities for post-graduate work is also included in the plan.

CHINESE STUDENTS IN AMERICA

According to statistics given out at Washington, 1,462 students entered the United States during the past year for the purpose of pursuing their studies in institutions of higher learning. This does not include those from Canada, South America, Cuba, Porto Rico, Hawaii, and the Philippines.

Of these, China represents very nearly twenty-five per cent., and it would appear that the interest of the Chinese in American educational methods is in no wise abating.

PUBLICATIONS RECEIVED

Extreme Asia—Discovery—The Philippine Journal of Science—The French Colonial Digest—The Chinese Economic Bulletin—The New Zealand Journal of Science and Technology—La Revue Economique—Natural History—The China Weekly Review—Asia—The Asiatic Motor—Chinese Social and Political Science Review—The Bulletin of the Geological Society of China—The China Medical Journal—The American Journal of Science—Psyche—The Lingnaam Agricultural Review—The New Orient—The Annals and Magazine of Natural History—Man—The Modern Review—Health—Ginling College Magazine—Chinese Students Monthly—The New Mandarin—Mid-Pacific Magazine—Far Eastern Review.



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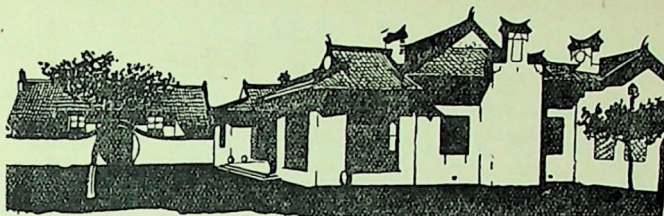
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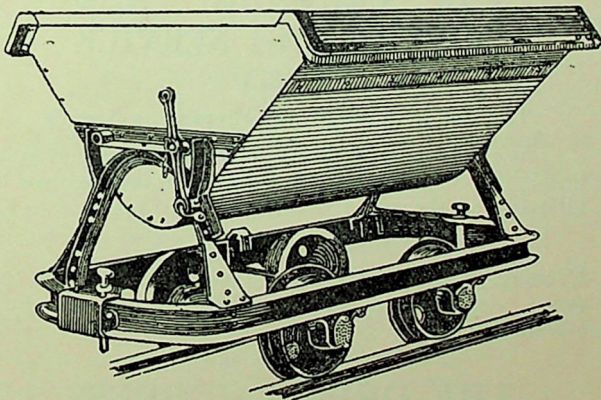
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