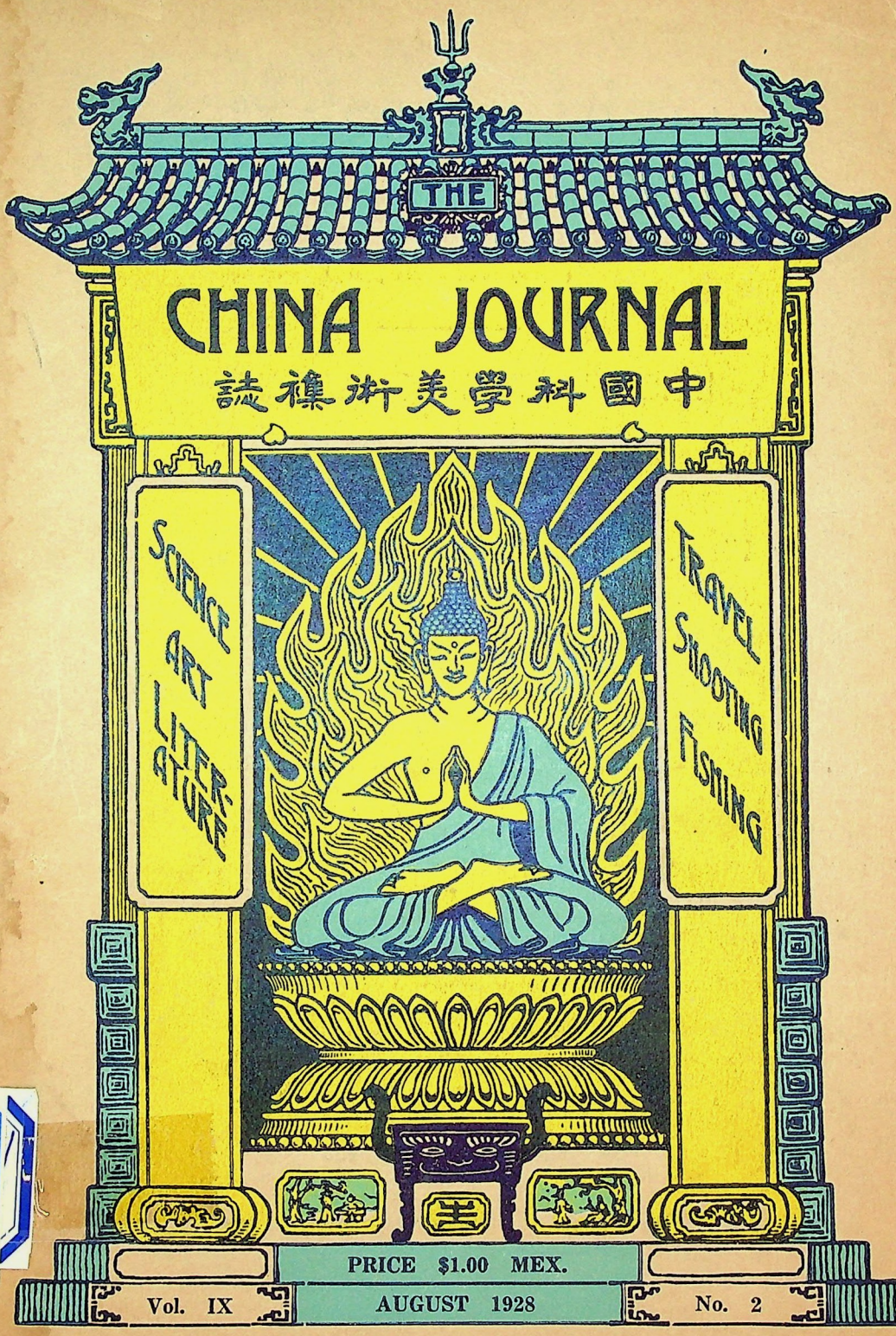
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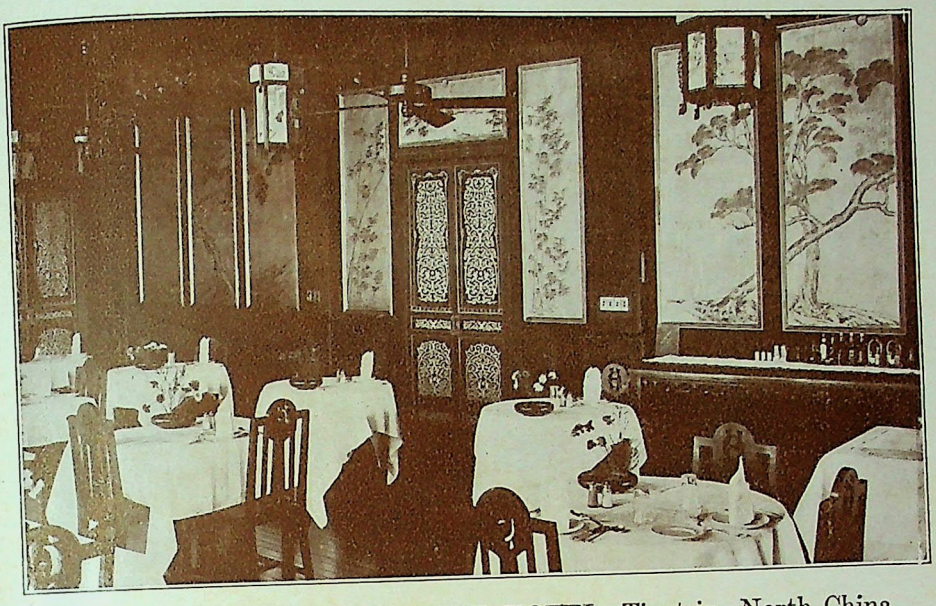

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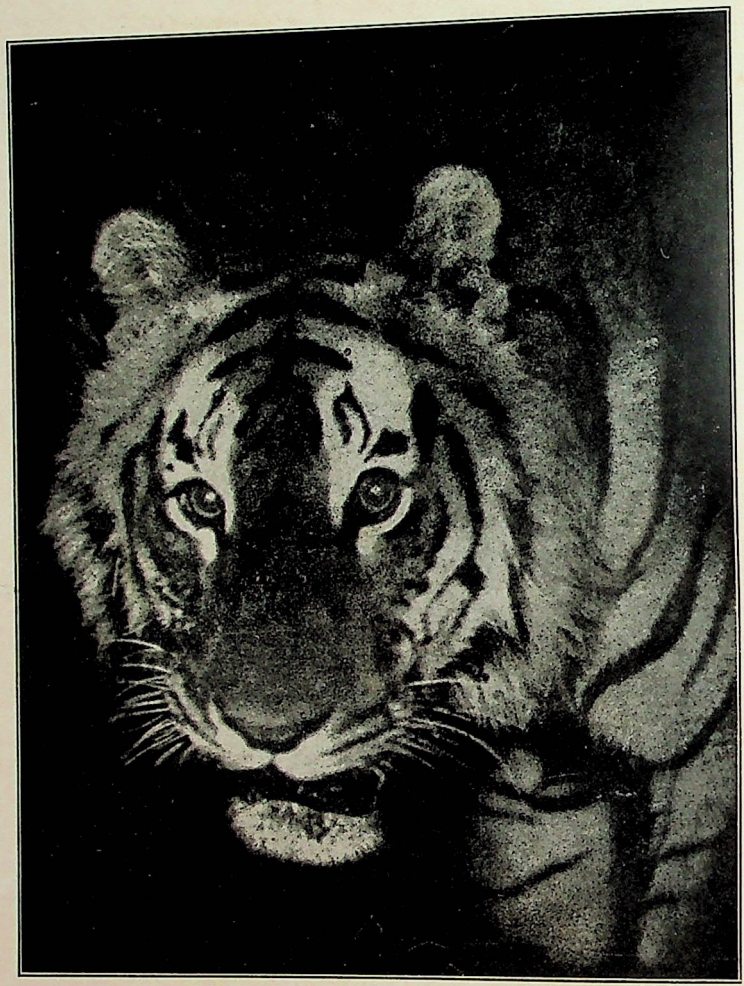

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THE CHINA JOURNAL
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VOL. IX AUGUST 1928 No. 2

MOVING THE CAPITAL

BY

ARTHUR DE C. SOWERBY

The decision of the Nationalist Party in China now, dominant throughout the country, to transfer the seat of government from Peking to Nanking will doubtless be received throughout the world with mixed feelings. To all those travellers who have visited the ancient city in the north, and have been charmed by the sights, life and atmosphere of this old-world capital, the news will come as something of a shock, while we could well imagine that the members of the various foreign legations and other foreign residents in Peking itself will receive it with feelings akin to consternation.

The Chinese, on the other hand, with the exception, perhaps, of the Chihli people, will undoubtedly hail the transference with satisfaction, for Nanking to them is much more the capital of China than Peking has ever been.

Nevertheless, Peking, or Peiping, as it is now styled by decree of the Nationalist Government, in many ways far surpasses Nanking as a capital city. Its numerous magnificent palaces, mighty temples and well laid out parks far out-rank anything that the southern capital has to show ; while the fact that for centuries, all through the period of Manchu dominance, as well as during the latter part of the Ming Dynasty, a period of high culture in many ways and picturesque ceremonial in court and official circles, it has been the seat of government, affording hospitality to the representatives of foreign governments in the Legation Quarter, has created an atmosphere of romance, a sort of glamour, an almost mediaeval remoteness, that has rendered it unique amongst the capitals

of the world. Nanking, on the other hand, while it has had its history, and has seen days of glory, pomp and majesty, has practically nothing to compare with the palaces, temples and even modern government buildings of Peking. Nothing but crumbling ruins now exist, where once stood the palaces of princes, not even picturesque ruins, but mere flat heaps of rubble and crumbling brick.

Compared with that of Peking, even Nanking's history is meagre. It was in the Han Dynasty, at the beginning of the Christian Era, that it first existed as a walled city, becoming the capital of the Principality of Wu in the 2nd Century A. D. From then till the Ming Dynasty it appears to have been a city of no great importance, but under the Emperor Hung Wu, 1368, of the latter dynasty it became the capital of the empire. It did not retain this proud position long, for the Emperor Yung Lo, the third of the Mings, transferred the capital to Peking. When the Manchus conquered China, Nanking in due course fell into their hands, but was not destroyed. Subsequently when the Taiping rebels captured it, they destroyed the Imperial Palace and other similar buildings, as well as the famous Porcelain Pagoda. For a time it was the rebel capital, but those days could hardly be considered glorious. Previous to this, in 1842, it had been captured by the British, after which the Treaty of Nanking was signed.

In more recent times Nanking has seen fighting on several occasions. It was captured by the revolutionists in 1911, while in 1913, when the second revolution broke out, it was the scene of further severe fighting, finally being captured by Chang Chun, the reactionary northern general.

Once more the city came under the fire of foreign guns when the Nationalist army entered it early in 1927 and committed outrages upon foreign property and the persons of foreign residents, some of whom were killed. And now it is to be the capital of Nationalist China.

Peking, on the other hand, has a history as a walled city both older and more filled with incident, and has served as the capital more times and for longer periods than its southern rival.

Under the name Chi (薊) Peking was the capital of the Kingdom of Yen from B.C. 723 to 221, when it was destroyed by the notorious Ch'in Shih Huang-ti, the builder of the Great Wall. In A.D. 70, during the Han Dynasty, it was built again on the old site and called Yen (燕), still its literary name. After the Han Dynasty it was known as Yu Chou (幽州), being destroyed by the Kitans, who attacked China from Manchuria in 986, when they set up the Liao Dynasty. Subsequently they built again on the same spot, and it is interesting to note that they called the new city Nanking, or Southern Capital, to distinguish it from their other capital in Manchuria. Another name given to it by them was Yen Ching, and we have this reflected in the present name for the former Peking University, namely, Yen Ching University.

Under the Chin Dynasty, 1126, another city was built beside the old one, and was called Chung Tu, or Central Capital, but this was destroyed by Ghengis Khan in 1215. Kublai Khan, however, built a new city on the old site and called it Cambulac. Thither he moved his capital from Karakorum. This was at the time of the visit of Marco Polo, who

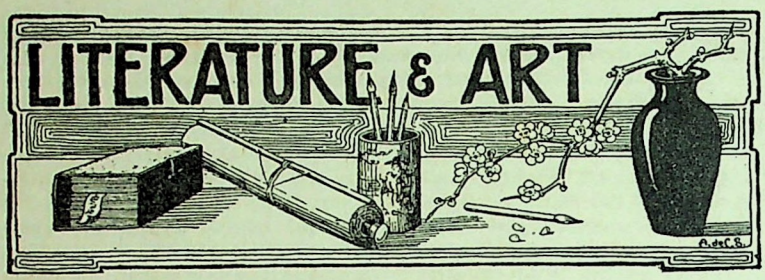
A Beautiful Famille Verte Vase of the Kanghsi Period

always referred to the capital of the Mongol or Yuan Empire as Cambulac. During this dynasty it was also called Ta Tu, the Great Capital.

Under the first Ming emperors, who had their capital in Nanking, Cambulac became a prefectoral city under the name of Pei Ping (北平), incidentally the name now revived by the Nationalist Government, but subsequently, when Yung Lo reestablished it as the capital, it was first called Pei Ching (北京), anglicised to Peking, meaning the Northern Capital. It has remained the capital from that day to this, a period of over four hundred years. And, being the capital during the whole period of European and Chinese contact, it has seen modern history in the making right under its grey walls and gay temple roofs. As everyone knows, it was the scene of a siege of the Legation Quarter and subsequent partial sacking by the foreign allied troops in 1900. Since then events about Peking and in China generally have been too closely watched to need mention here.

It will be seen, then, that Peking, from the point of view of history, tradition and even the quality and number of national buildings and monuments it contains, is immeasurably more suited to be the capital of China than Nanking, but it has some very pronounced drawbacks, and, in justice to the Nationalist Government, we cannot but agree that these seem to outweigh the advantages. Peking has almost always been the capital of an alien Mongol or Tartar conqueror, which is the chief reason for its situation so far north and east, and it may be suggested that it is this position in the extreme north-east of the country, close to attack from Manchuria and Mongolia, that is the chief drawback to its being the capital of Nationalist China. But by the same token Nanking is even more vulnerable from the sea. Nevertheless, Nanking's more central position and the fact that it lies on a great river, broad enough and deep enough to accommodate the largest ocean-going steamers, is of the utmost importance, and probably outweighs the disadvantage of being open to attack from the sea. From this point of view Shanghai would be even more suitable as the capital, holding very much the position to China that London bears towards Great Britain, but doubtless those now at the helm have very good reasons for wanting the capital at Nanking: the political issue is no concern of ours here.

But even so, and with all due sympathy with the ideals and aspirations of the Nationalist leaders, we cannot view the transfer of the capital from Peking to Nanking without a feeling of regret, for when this has been accomplished there will be nothing more to say of the great old city in the north than "Ichabod," the glory has departed.



THE DIAMOND SUTRA

TRANSLATED BY

T. P. HSU

During the reign of Wu Tsung* in the Ming Dynasty there lived in Kunshan† a man named Sung Yu-feng, the descendant of an official family, who dwelt at ease with his wife on a small estate inherited from his ancestors. Yu-feng and his wife were already past forty, and had neither sons nor daughters, a fact which grieved them sorely. Often they would console each other as their talk touched upon their sad destiny.

One day while they were seated in their bedroom a voice calling "Is Mr. Sung at home?" was heard in the hall. Yu-feng knew the voice quite well and came out to welcome his friend Liu Yu-tsai, a boatman who owned a vessel plying on the waters of many provinces.

"What brings you here?" asked Sung.

"I want something I think you can spare," was the reply.

"What is that?"

"Let me tell you! In Soochow there is a temple recently built in which a goddess is worshipped. She will bless those who pray earnestly before her with the birth of a child. As I have none I shall go and try my lot. Now what I am in need of are a bag and a wrapper.‡ Will you lend them to me?"

"Certainly," replied Yu-feng, "and I will go with you, too.

They set out in Liu Yu-tsai's boat after the noon day meal, and half a day's journey brought them to their destination. Entering the temple the next morning, they knelt before the idol and offered prayers. Candles were lighted and incense and paper ingots were burned. Every rite having been performed, the two worshipers parted, one going back to his boat, while the other set out for his home.

---

* 1506-1521.

† Near Soochow.

‡ The bag and wrapper are made of yellow cloth and are used to hold worshipping necessities.

Along the way Yu-feng saw at the roadside a mat shed, under which lay an aged monk whose countenance looked drawn and pale. "This poor fellow is quite ill," thought Sung, and an expression of grave concern crept over his face. Suddenly his attention was diverted by a tap on the shoulder. Turning, he encountered a man who pointed to the invalid saying "Three years ago he came here from Shensi to ask for subscriptions to build a monastery in his native town. He is a faithful Buddhist, for he chants liturgies every day and eats nothing but vegetables. He has been ill many days, and for two weeks he has taken no food. Before he lost the power of speech we told him that it would be far better for him to go to the Supreme Being than suffer in this way, but he shook his head slowly saying, 'I am waiting for someone to help me.' Now he is dying and his lips grow rigid. Will you help him? Perhaps he waits for you to buy a coffin in which to bury him."

"Yes," thought Yu-feng, "I will serve him if I can. To do others good means to do one's self good. Heaven knows my heart and will bless me: yes, I will do it." Turning to his informant, he inquired, "Is there a coffin shop here?"

"Yes, there is one near by; I will take you there," replied the man.

They chose a coffin at the shop, but Sung found he had not enough money to pay the price, which amounted to one silver tael and six mace? To make up the difference he gave the silk gown which he wore. Meanwhile, news of the death of the monk was brought to him. He hurried to the scene, but, distressed at so dismal a sight, departed for his home without waiting for the funeral.

At dusk he reached home. His wife, noting his outer garment was gone, looked at him in amazement. She asked what had happened, but upon hearing the story her surprise abated as she expressed her approval of her husband's conduct. That night, during the first watch as they slept, each had a dream. The wife beheld in her room a *Laohan** clothed in gold; while the husband dreamed he was accosted by the old monk he had seen that day, who said, "You were destined to have no son, and your life would soon have come to an end. Heaven, however, knows that you possess a kind heart and has determined to prolong your life for a decade or so." With that the monk vanished.

Time passed, and Mrs. Sung bore a son. In remembrance of the golden figure perceived in her dream, she gave the boy the name of Kin.† For five years the child brought comfort and happiness to his parents, who believed he was a gift sent them from Heaven. But in the boy's sixth year his father died. His mother lived on till his sixteenth year, when grieving at the diminution of her property as a result of disasters and the lack of proper management, she grew so sorrowful that she contracted a fatal disease and died, leaving her son destitute. After a hard struggle with poverty, he was ultimately recommended as a clerk to a newly appointed magistrate who was travelling on the way to his post at Kiang Shan, Chekiang. The education which the boy had received

* One at the disciples of Buddha.

† "Kin" stands for the Chinese character which means "Gold."

enabled him to write well and to work efficiently and accurately with the abacus. Thus he gained the favour of his master, though not without arousing the jealousy of his comrades.

One day those who harboured a grudge against him said to his master, "Your Lordship has shown much kindness to the novice. You converse with him and eat at the same table with him. It seems inappropriate to treat an employee with such favour when you are in the yamen lest he grow haughty and overbearing. As he is homeless you had better take him as a slave and have him in your power."

The official, was influenced by these crafty words, and tried to force Sung Kin to sign a bond making him a slave, but the latter refused. This so provoked the master that he took away the clothing he had given Sun Kin and abandoned him when they reached Hangchow. Now in a strange land the miserable youth struggled for existence by begging. Not being a professional beggar he could not get as much as he needed. Some days he got a bit of food for his hungry stomach, while other days he got nothing. Privation withered his countenance and took the flesh from his body.

Autumn passed. Came winter bringing with it its bitter cold and storms. The old tottering temple in which Sung Kin had taken up his quarters was no longer a comfortable place in which to lodge. He knew not where to go. During his wanderings after a heavy rain one afternoon, he caught a glimpse of a familiar face and was about to turn away so as to escape notice when the man pressed forward saying, "How came you here, my boy? What has happened to you?"

Bursting into tears, Sung Kin related the story of his abandonment, whereupon the other said, "I, Liu Yu-tsai, will help you for your father's sake. Come with me to my boat."

On the craft Kin met Liu's wife and daughter, a young girl who was, like Kin, a gift from heaven. As he stood trembling from cold and hunger he excited the sympathy of his newly found friends, and they immediately provided him with a warm supper and a wadded jacket.

"Have you no cover for your head?" asked the woman.

"No, but—," Sun Kin hesitated.

"We have an old felt hat in the chest. Fetch it, I Chun," she continued.

The girl went for the hat, and, finding there were many holes in it, she patched them before giving it to Kin, saying, "Try it on." He did so, pouring forth his gratitude to the kind giver. That night was the first that he passed in comfort since he had become a beggar.

Time passed and Sung Kin became so useful to the household that he was commissioned to take charge of all their belongings. He did his work so well that he won the admiration of both Liu and his wife. One evening, as they were drinking, Yu-tsai said, "I Chun has reached marriageable age and we should find a husband for her."

"Yes," agreed the wife, "and we are old. We need a helping hand, too. Make your choice and do not put it off any longer."

"You are right; yet there is none who suits us. Not one possesses the same ability and fine character that Sung does."

" Why not let her marry him ? ",

" But he is homeless and poor."

" Nevertheless he has a better ancestry, and, besides, he is the offspring of your deceased friend. Take him and we shall not be dishonoured."

Her advice emboldened Yu-tsai to summon Sung Kin and announce their proposal. Sung Kin hesitated, but, after a conventional parley, he gave his consent. In the silence that followed the old pair watched and saw Sung stealing a glance at their daughter who stood in a corner hiding her blushes.

Without delay Liu went the next morning to the astrologer who fixed a date for the wedding. The ceremony was held in Kunshan, their native place, among their friends and relatives. Many attended the feast given for that occasion, and good cheer abounded. Everyone believed that the young couple were setting forth on the flowery path of a suitable marriage with a fair prospect of felicity.

When nearly a year had elapsed a daughter was born to them, but within twelve months the child died. Sadness fell upon everyone in the family, especially Sung Kin, who contracted a hopeless malady and grew very weak and ill. His father and mother-in-law were greatly disappointed and decided to abandon him and find a new husband for their daughter. A plan was devised which they kept hidden from I Chun. They set sail, declaring that they were to go across the Yangtze River to a place where goods would be shipped. When they came to a mountainous district in which nothing but a dense forest could be seen, they guided the boat toward the shore until it went aground. Sung Kin was then commanded to push the vessel off the bank, but the weight was far beyond his power to move. " You wretch." grumbled Liu, " You cannot do it. Go ashore and find some fuel for us."

Sung Kin went obediently, and, taking an axe with him into the forest, chopped bundles of branches till the little strength left in him was exhausted. Carrying the heavy load he trudged back ; but alas, no boat nor any sign of one was to be seen. He rubbed his eyes, thinking perhaps his ill health had dimmed his vision, and looked in every direction. All he could see was a vast expanse of water. He sank sobbing to the ground, overwhelmed with sorrow and astonishment.

His grief was suddenly interrupted by a voice asking, " Where have you come from ? ". Looking up he saw a grey haired monk standing behind him. " I was left here by my father-in-law," replied he in another agony of tears. " How could that happen ? " demanded the other. Without reserve Sung told his story in detail. When he had finished the old man asked, " Do you hate him ? "

" No. He once rescued me from trouble."

" You are to be pitied. Come with me and rest in my humble home."

The two walked on in the twilight of the evening and soon reached the monk's house, whereupon he infused some tea and prepared supper. At the table he remarked, " As sorrow has impaired your health you should have your mind set in repose. Take this book and read it every day. It will help you a great deal."

Sung Kin found the volume to be the "Diamond Sutra." * He read it through at once, and, strange to say, the dark clouds that had long overshadowed him began to lift and he felt at ease both bodily and mentally. Soon he fell into a sound sleep and did not wake till late the next morning, when he saw, to his unspeakable surprise, that he was on a mound in the forest. Starting up he roamed about in great perplexity. Soon he came to an old and tumbledown temple in which no one was to be seen. A close search revealed eight chests of treasure, and he knew it to be a robber's den. Realizing that assistance was needed to carry away the chests, he ran down to the river where a ship lay at anchor, the crew of which was busily at work repairing the steering gear.

"Save me and my money," he cried. The sailor's ceased their work, and scanned him from head to foot, without uttering a word. "My name is Chien," he continued, "and I was coming north from Kwangtung with my uncle for some merchandise, when he was seized by highwaymen and put to the sword. I knelt before them and begged them to spare the life of a sick man. They did so, and I made away as fast as I could. The thieves carried our eight chests of silver to a temple not far off, and then went out once more. Here is your chance, my friends. Will you be so kind as to help me recover my loss, and I will give you one chest of silver for your pains."

Tempted by the promise of such a bountiful reward, sixteen of the sailors seized cords and poles and set out for the deserted temple, some taking weapons with them. After the chests had been hastily carried to the ship, Sung told the men that he wished to go to Nanking to his relatives. They took him there, and on his arrival he gave them the promised chest of silver.

A few months later Sung bought a magnificent house in which he was the master of a multitude of servants. His fame spread, and Mr. Chien became known all over the city as a wealthy merchant, passing his days in comfort and much happiness.

Meanwhile afflictions had beset his desolate wife ever since his disappearance. At the moment when she realized that Sung Kin was being abandoned she cried "Why do we row on ? Where is he ? "

"Don't speak a word," interrupted her mother, "he is dying and can serve you no more."

"I want him," cried the girl, "I will go back for him."

"Never" ! was the cruel reply.

The dispute grew so heated that I Chun was almost driven to frenzy. She stamped her feet, and, rushing out on the deck, tried to throw herself overboard. Her mother, horror-stricken, sprang after her and caught her by the skirt. When she was brought to the cabin with the help of her father she fell into a swoon. On opening her eyes she moaned, "Where is my husband ? " and her parents soothed her with promises to look for him. The ship was put about, but it took three days to cover the distance they had skimmed over in a few hours with the current in their favour. They made a long, careful search of the shore where they had abandoned Sung Kin, but found no trace of him other than an axe and two bundles of branches. At sight of these I Chun broke out in

a wail of woe. To appease her suffering her mother said "We are to blame, my child. Now we will do our best to secure news of his whereabouts. If we learn nothing of him in three months let us invite the monks to pray for his salvation."

The girl did not answer, but stopped weeping. No more was heard of Sung Kin, and finally he was given up for lost. His wife wore mourning dress and ate only vegetables. For a year she passed long dreary hours in deep melancholy. On several occasions remarriage was proposed to her, but she would say "I have been his and will die for him." Her fidelity to her husband earned her the approbation of her friends; indeed, she was one possessing excellent feminine virtues.

But she was not forgotten by Sung Kin, who thought that she who had shared his troubles should have a share in his good fortune. He set forth to find her, and the first place he visited was Kunshan. Upon inquiry he was told that the family had gone to I Chen in their boat. He hastened there with a stock of goods, and, posing as a draper, made the acquaintance of the proprietor of a large shop. The merchant found Sung Kin a most agreeable person and would have detained him in conversation, but the latter lost no time in making his way to the river bank where he discovered his father-in-law's boat, and saw his wife on board in her mourning clothes. An idea flashed through his mind. Hurrying back to his friend the merchant, Sung Kin confided to him his desire to marry I Chun, and persuaded him to lend his aid in effecting the union. Liu was sent for forthwith. He came, enquiring, "You have something for shipment, Mr. Wong ?"

"No, I want to discuss another matter," responded the merchant. "Sit down and I will tell you. A wealthy merchant by the name of Chien has come here lately on business. He saw your daughter and loved her at first sight and insists on marrying her. He will give you as many betrothal gifts as you desire. Now, think it over and decide for yourself."

"But my daughter is a widow, and she makes attempts on her life whenever remarriage is mentioned."

Silence reigned for a while, and then the visitor rose with a heavy sigh. "You see, I can do nothing about it", and with that he took his leave.

"She is to be honoured," thought Sung, though he assumed a look of disappointment on learning of her faithfulness. To the merchant he said, "I shall go to their boat, if that is possible."

"Of course you may," was the reply. After the arrangements were made his host accompanied him to the boat where they bade each other adieu. His presence disturbed I Chun and set her to musing on the resemblance the brilliant stranger bore to Sung Kin. Then she heard him say to her father, "Will you give me your old felt hat ?"

"Willingly," replied Liu.

I Chun was sent on the errand a second time. Taking the hat in her hand she gazed at it steadfastly, seeing only the figure of her beloved Sung Kin. Overcome by emotion she whispered to her father, "This is Sung Kin."

"Nonsense," he replied, "he has been dead a long time."

The hat was handed to Sung who examined it carefully.

"Why are you looking at ?" questioned Liu curiously.

"The stitches are quite fine. Who mended the tears ?"

"My daughter did that."

"She is a widow ?"

"Yes."

"What took the life of her husband ?"

"Tuberculosis."

"You are wrong ! He has been cured and is well and strong. If you wish to see him call for your daughter and she will introduce him to you."

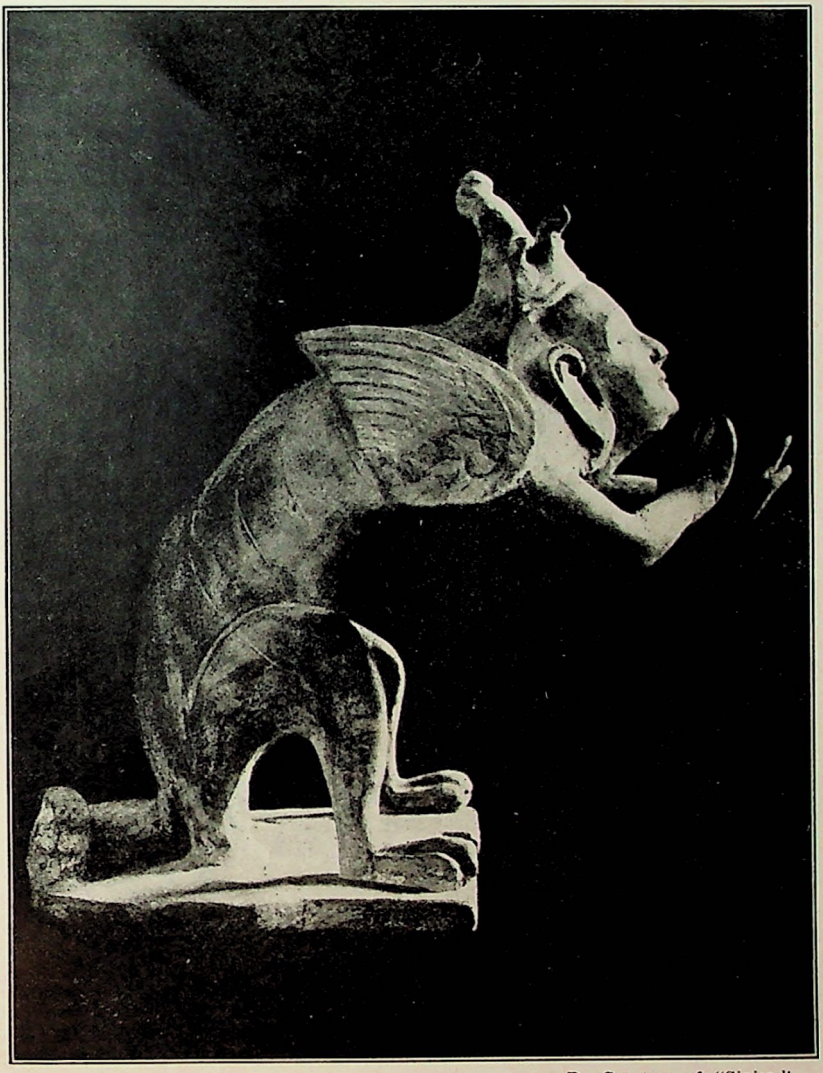
At these words I Chun, stripping off her mourning clothes, ran to him crying "You have a heart of stone. For pity's sake do not speak in that way !"

He patted her tenderly and tried to comfort her, but before he could find words to express his happiness at the reconciliation, he, too, burst into sobs and mingled his tears with hers. When he had recovered his composure he related the tale of his adventures which filled all three with joy and amazement.

"Fortune has smiled on you," said Yu Tsai meekly, "While what we have done....."

"Say no more. Let bygones be bygones," interrupted Sung, and thus in a word he forgave the old people for their cruel treatment of him, so great was his joy at being reunited with I Chun.

Sun Kin took his wife and her parents to Nanking, where the aged couple were stablished in comfort in his magnifficent home and were no longer seen on their boat. Sun and I Chun spent much of their time in chanting the precious Diamond Sutra, which had been the means of restoring him to health and happiness, and in the spring of every year Sung took his family to worship at the grave of his father and mother.



By Courtesy of "Sinica."

A remarkable Piece of Ancient Chinese Pottery, probably of the Tang Dynasty.

NOTES ON THE MINTED COINS OF CHINA

BY

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

The Master said : " A scholar who loves ease does not amount to a scholar." Confucius. Book XIV. §3.

ARTICLE VIII

The Minted Ten-Cash Pieces of Honan Province

Of all the provinces in China that have issued only ten-cash pieces and practically no other copper coins with a total absence of silver pieces, Honan* leads the field, with Shantung closely following. Indeed, if ancient records are to form the basis of our investigations, it would appear that one mint only was at any time existing at K'ai-feng Fu,† the

* 河南 signifies " South (of the) River," *i.e.* south of the Huang Ho (黃河) or Yellow River. Honan is comprised of an extensive fertile plain, and, due to its central position and abundant production, it received at an early period the appellation of Chung Hwa Ti, or the " Central Flowery Land." This name was later on changed to Chung Kuo (中國) or " Middle Country." It is to this origin that the name given to the whole of China by the Chinese is ascribed. The archaic or literary title of Honan is Yü (豫). The area of the province is placed at 67,954 square miles with a population estimated in the Minchengpu census of 1910 at 25,600,000, or 376 inhabitants per square mile ; whilst the Chinese Post Office estimate of 1923 is a population of 30,831,909, or 454 inhabitants per square mile. Honan province has a very small alien element. Formerly, the Jews formed an important colony at K'ai-feng Fu, but Tobar in his " *Inscriptions juives de K'ai-fong-fou* " declares that this community had degenerated to only a few members by 1900. Williams writes : " For its climate, productions, literary reputation, historical associations, and variety of scenery, this province takes a prominent rank. The earliest records of the Black-haired race refer to this region, and the struggles for dominion among feudal and imperial armies occurred in its plains." *The Middle Kingdom.* 1913 p.98.

† 開封府, a walled city the commerce of which has nearly vanished. It lies in 34° 43′ N. by 114° 24′ E. The legendary Fu-hsi (伏羲), first Emperor of China, *circa* 3322 B.C., is reputed to have had his capital in the environs of K'ai-feng Fu in the valley of the Lo Ho (洛河). " Kai-feng Fu, or Pien-liang, the capital, is situated about a league from the southern bank of the Yellow River, whose bed is here elevated above the adjacent country. It was the metropolis from A.D. 960 to 1129, and has often suffered from attacks of armies as well as from inundations. The dikes are mostly on the northern shore, and exhibit the industry and unavailing efforts of the people for scores of leagues." Williams, " *The Middle Kingdom,*" 1913. p.99. According to p.351 of W. E. Geil's " *Eighteen Capitals of China.*" K'ai-feng means " Opening of the Seals," and he adds that this city " is a has-been." This seems to be confirmed by the earlier writings of Duhalde who says, " in the year 1642 this City was besieged by the Rebels, whose Army consisted of upwards of 100,000 Men ; the City had endured a Siege of Six Months. The General of the Army, who was come to succour the City, finding it impracticable to relieve it,

provincial capital. During modern times, when ten cash pieces were struck, the character 汴* (Pien) was used as the provincial mint mark, but all authorities† agree that in medieval days, when only cast coins were made, the ideograph 河 (Ho)‡ was employed. The old mint was first opened in 1647, but similar to most mints that existed in those days, it had its flourishing as well as depressed periods. It ceased work some years after its installation, reopened shortly afterwards and closed again in 1662. It was reopened in 1667 and operated until 1670, subsequently remaining closed for many years. It was again opened in 1729 to be temporarily closed once more in 1731. The modern mint that produced such interesting ten-cash pieces during the reigns of the last two Manchu Emperors, and which had been established in 1901, definitely closed in November, 1914.§

For lack of further particulars and with these few remarks concerning the only mint that existed in Honan, we may now pass on to the description of the ten-cash pieces emanating from that mint.

In the obverses we find that a special characteristic of Honan minted coins is that what has heretofore been classed as the "Manchu in centre" type is now represented as what may be termed "Manchu at sides." The centre bears the Yang-Yin.¶

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ordered the Dikes of the great River *Hoang Ho* to be broke open, in order to overflow the Country. The Inundation was so violent that it drowned the City, and 300,000 Inhabitants perished. *Cai fong* was then three Leagues in Circumference; it has been rebuilt since this misfortune, but is not considerable enough to be placed in the First Rank of the Cities of *China*." *History of China*. London MDCCXLI. p.p. 215-216.

* This ideograph was taken from the first character of the literary designation of the city of K'ai-feng Fu which is 汴梁 (Pien-liang).

† Thus Wylie: "The character 河 Hô, for Hô-nân, a mint having been established at the capital of that province in 1647." *Journal of the Shanghai Literary and Scientific Society*. No. 1 June 1858. p.54. Dr. S. W. Bushell: "the Ho-nan mint, having on the reverse in Manchu *pao ho*, the transcript of 寶 河. *Coins of the Present Dynasty of China*. 1880. p. 204. J. H. Stewart Lockhart, F.R.G.S., M.R.A.S., "河 Ho for Ho-nan province, at the capital of which a mint was established in A.D. 1647." *The Currency of the Farther East*. 1907. p. 73. Père Pacifique Chardin:—"Ho (Ho nan), province du Ho nan dans la capitale de laquelle une fabrique de monnaies fut établie dès 1647." *Monnais d'Extrême Orient*. 1912. p. 59. In his *Recueil de Monnaies de la Chine, etc.*, St. Petersberg 1842, Baron S. de Chaudoir illustrates on p.p. XVII/XIX some Honan cash pieces with the mint mark of 河.

‡ Being, as it were, the first character of the name of the province.

§ Kann. *The Currencies of China*, 2nd Edition p.459.

¶ The Yang-Yin is expressed thus  by the Chinese. "The simplest form of matter would be the dot . . . . . From the dot then all things took their rise; the germ in the centre of the egg from which the world had sprung. But the dot was not sufficient to express the spreading universe he saw on every side . . . . . How could it be made to appear? The answer followed, by the secret of existence: limitation . . . . . The circle was the natural symbol (suggested perhaps by the horizon), beginning and ending in itself simply, and equally confining all within; the circle round the dot expressed sufficiently the first great thought and gave him

Honan Minted Coins. Obverses in Letters; Reverses in Numerals.

A. The "Kuang Hsu Yuen Pao" 寶光緒元 type within a circle of 89 dots. Legend of 河南省造 (Ho Nan Shan Tsoh), translating into "Made in Honan Province" at top, and 當制錢十文 (Tan Chi Ch'ien Shih Wen) or "Equivalent (to) ten cash" at the bottom. Manchurian symbols reading Ho and Pao at sides. Horizontal Yang-Yin in centre.

B. Similar to obverse A, but the top and bottom legends are in smaller characters. 94 dots to the circle.

C. Of the same type in general as the foregoing, but the Manchu characters are larger, the Chinese ideograms more slanting, and the Yang-Yin are placed diagonally with two circles as eyes. Dotted circle of 83 points.

D. Evidently a retouched die of obverse C, the eyes of the Yan-Yin of which, instead of circles, now consist of two dots.

E. Similar in type to A. The centre Yang-Yin line is, however, diagonal, and the circle of pearls are made up of 88 spots.

F. A very poor obverse resembling C, with a pearl ring composed of 90 points. The Yang-Yin also, is different, in this wise, that whereas in obverse C the dividing line passes over the east eye, in the present case that line goes underneath the circle constituting the east eye.

G. Nearly identical to F, but the characters are in a different hand, especially the legend at the north.

H. Very much resembling E, with also 88 spots to the circle, but the line of the Yang-Yin is vertical.

J. Of the type resembling C, but the line of the Yang-Yin of which is somewhat diagonal, with the south end of it curving towards the east. The circle is composed of 88 dots. In some very late strikes some pieces have been minted with the eyes of the Yang-Yin absent.

K. Of the "Tah Ch'ing Tung Pien" series, with the 丙午 (1906) year date. Circle of 91 spots. 戶部 at sides. Mint mark of 汴 (Bien) in centre.

L. Of the type of K, but with great differences in the shape of the characters, especially the Manchu legend. Circle consists of 78 dots.

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tools to work with . . . . . and the new thought struck him that if the central germ must spread, ere it could do so it must lose its unity : without division there could be no life. He altered his symbol : instead of the central spot he now drew two . . . . . And as this spirit came into being by division, he called it *Yin* and *Yang*, the sound which seemed best to him (Fuh hsi) to express alternate drawing in and puffing out the Breath." Cf. Chaloner Alabaster. *The Doctrine of the Chi. The China Review*, Vol. XVIII, pp. 300-302.

M. Of the series mentioned for K, but without 戶部 at sides, these two characters being replaced by the year date of 己酉 (1909). Circle of 91 dots.

N. The same as obverse M, but with the year date of 辛亥 (1911) substituted. Ring also of 91 beads.

O. Issued during the republican régime, the upper characters reading 中華民國. Ornament at sides have a hollow in the centre. 91 beads to the circle. Ears of rice nearly touch one another.

P. Very similar to obverse O, but the middle of the side ornaments are level.

R. Resembling obverse O in most respects, but with the ears of rice much more spaced.

S. With 十文 (Shih Wen) value in the centre, and 河南省造 in the lower field. Characters in slim lines. Circle of 78 beads.

T. Fashioned in the same design as S, but with more heavily set characters and the nerves in the four cordate leaves different.

V. Very similar to the two preceeding varieties. The side ornaments, however, have two lines protruding.

W. In all respects identical with V. The two lines attached to the side ornaments are now distinctly spaced. This coin may be a retouch to denomination V.

The reverses number so far thirteen in all.

1. Large upstanding dragon with the words HO-NAN and TEN CASH in medium letters. Circle of 111 beads.
2. In the same style as 1. Foreign words in small letters. Side ornaments very close to circle, which consists of 110 dots.
3. Smaller upstanding dragon. Three lines to the central ball. 101 dots to the circle. There is a retouch to this piece which consists of an alteration to the lower line of the dragon's jaw; whereas the line in the usual type 3 is concave, in the retouch it is convex.
4. Practically the replica of No. 3. The central ball has five lines attached to it, and the dragon's jaw reveals differences.
5. Upstanding dragon not circumscribed within a beaded ring. Four stars at each side; curved line on the central ball.
6. The same as denomination 5, but without any line on the central ball.
7. "Tai Ch'ing Ti Kuo" series, with Chinese inscription of 光緒年造.
8. Of the same series but with inscription of 宣統年造.

9. Republican period. Two flags crossed—the National and Military banners of the Republic.
10. Somewhat similar to reverse 9, but the S of the word Cash is the wrong way round, thus, CASH.
11. Two National flags only, crossed. The S of the word Cash is also wrongly engraved as explained under No. 10.
12. In the same style as No. 11. The letter S is here correctly inscribed, and the lettering of the words are smaller. Two big tassels between the flag poles.
13. In like manner to No. 12. The two tassels between the flag poles, are, however, much smaller and in a different style.

Before proceeding to allot standard numbers to the varieties noted in the table below, the attention of the reader must be drawn to a palpable error in the last Article VII which appeared in the July, 1927 (Vol VII No. 1), number of *The China Journal*. In the stress of great events which at the time transpired in Shanghai, the numerical sequence of that article was inadvertently begun with No. 251, whereas it should have been, No. 301, and ending with No. 364 instead of No. 314. To avoid a duplication of numbers, the reader is, with apologies, requested to add fifty cyphers to each number describing the Hunan coins in our Article VII.

From the above types the following combinations may be scheduled, viz.

No.	Obverse		Reverse	Size m.m.	Average weight grains	Metal	Comparative rarity.
381	A	with	1	28.50	114.50	Copper	R.
382	A	,,	2	28.50	111.75	,,	R.
383	A	,,	3	28.50	115.50	,,	R.
384	A	,,	4	28.50	112.50	,,	C.
385	B	,,	2	20.00	107.50	,,	R.
386	B	,,	3	28.50	117.75	,,	C.
387	B	,,	4	28.25	114.00	,,	C.
388	B	,,	5	28.25	110.00	,,	R.R.
389	C	,,	3	28.25	112.00	,,	R.R.
390	C	,,	3*	28.50	114.00	,,	R.R.
391	C	,,	4	28.25	109.25	,,	R.
392	C	,,	5	28.50	116.00	,,	C.
393	C	,,	6	28.50	117.25	,,	C.
394	C	,,	8	28.50	114.50	,,	E.R.
395	D	,,	5	28.50	111.25	,,	R.R.
396	E	,,	5	28.25	112.25	,,	S.
397	E	,,	6	28.00	107.75	,,	S.
398	F	,,	6	28.00	112.00	,,	R.R.

* With the mouth in a retouched state.

No.	Obverse		Reverse	Sizo m.m.	Average weight grains	Metal	Comparative rarity.
399	G	with	6	28.00	114.00	Copper	R.R.
400	H	,,	5	28.00	112.25	,,	S.
401	H	,,	6	28.00	110.50	,,	R.
402	J	,,	5	28.25	111.00	,,	R.R.
403	J	,,	6	28.50	111.50	,,	R.
404	K	,,	7	29.00	115.50	,,	C.
405	L	,,	7	28.25	116.00	,,	E.R.
406	M	,,	8	28.75	116.00	,,	C.
407	N	,,	8	28.50	112.50	,,	C.
408	O	,,	9	28.25	110.50	,,	C.
409	P	,,	9	28.00	100.50	,,	C.
410	R	,,	9	28.00	94.00	,,	C.
411	R	,,	10	28.50	102.00	,,	C.
412	R	,,	11	28.25	101.75	,,	C.
413	S	,,	12	27.75	105.00	,,	R.R.
414	T	,,	12	28.00	115.50	,,	S.
415	T	,,	13	28.25	112.00	,,	C.
416	V	,,	12	28.50	118.00	,,	C.
417	V	,,	13	28.25	113.50	,,	S.
418	W	,,	13	28.00	112.00	,,	R.R.
419	5	,,	5	28,75	110.00	,,	E.R.
420	12	,,	12	28.25	104.50	,,	E.R.
421	12	,,	12	28.50	184.00*	,,	V.

Nos 419 and 420 can doubtless be laid to the door of Mint Sport, but No. 421 is most likely a proof piece.

Just about twenty years ago, there existed in Honan province a local regulation prohibiting the exportation and importation of ten-cash coppers to and from neighbouring provinces, but the incentive in human nature to feel the thrill of defeating laws came into play, and much ingenuity was displayed in bogusly impressing the character 豫† (Pien) in the centre of coins minted at other mints. Coins emanating from the Kiangnan, Chekiang, Hunan, Chihli and Hupeh mints are encountered so marked.

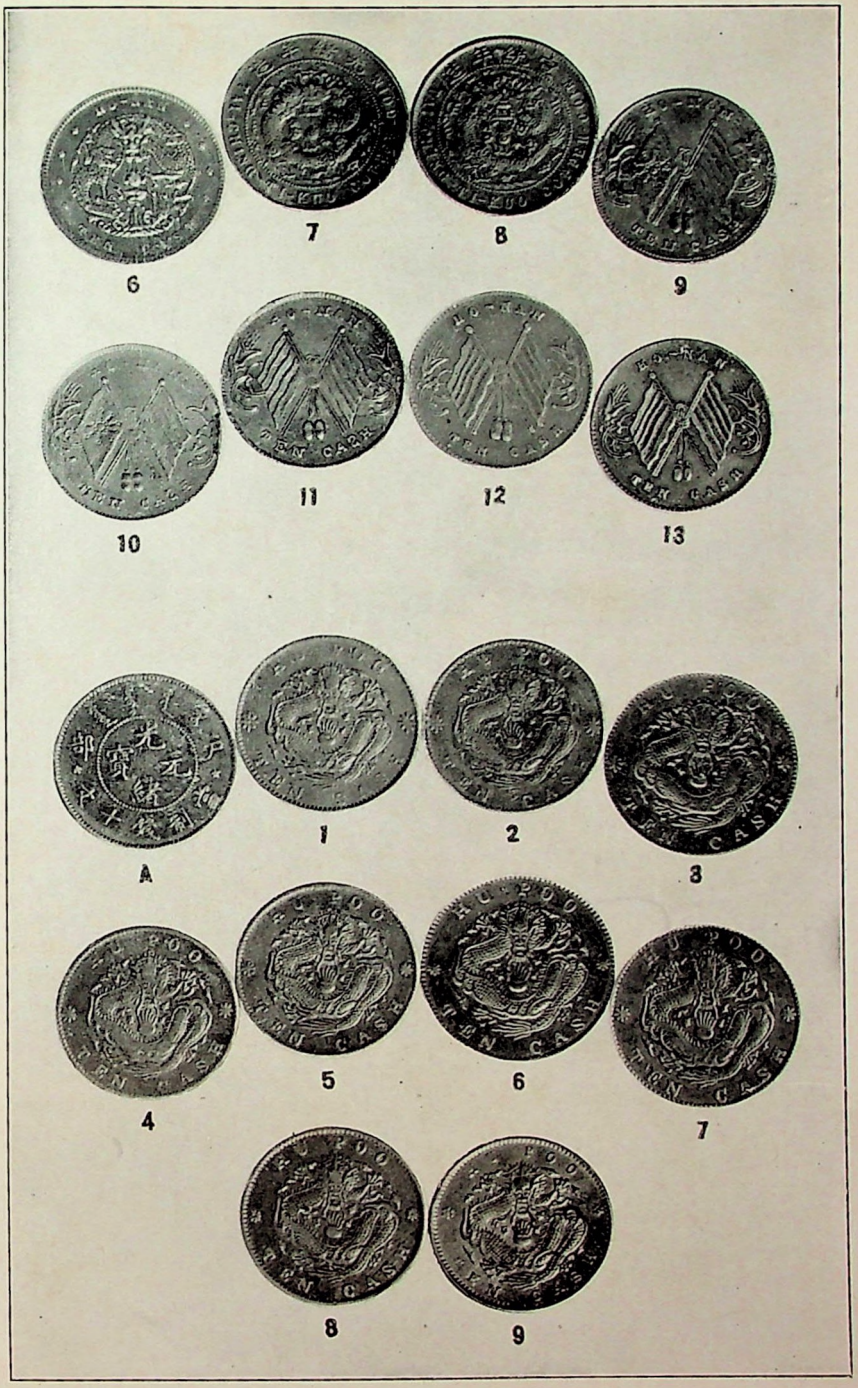
THE HU-POO TEN-CASH PIECES.‡

Coins bearing the inscription of Hupoo do not denote any particular province, but signify that they were issued under the authority of the Board of Revenue at Peking. This Board functioned in the middle

* This piece is much thicker than No. 420, and was doubtless struck as a proof only. Whereas No. 420 is only 1½ m.m. thick, No. 421 is 2½ m.m. in thickness.

† This character is the literary name of the province of Honan.

‡ 戶部, usually translated by earlier writers as "Board of Revenue," but which may also be interpreted to mean "Finance Department."



Numbers 6 to 9 (above), Honan Minted Coins; A and Numbers 1 to 9 (below), Hupoo Minted Coins. A is the Obverse; all the others are Reverses.

ages, much in the same manner that a Central mint should do in our times; issuing regulations, distributing identical dies made from a master die to all subordinate mints, and so on. Cast coins bore the Manchu inscription of  (Pao Ch'iowan) which was the transcript of the Chinese characters 寶泉, and this indicated that they were produced by a mint attached to the Hu Poo or Board of Revenue. In modern minted coins, however, the mint mark adopted was just the plain characters 戶部, and the words "HOO POO." Whilst cast coins were moulded at Peking,* struck ten-cash coins were minted at Tientsin by the Peiyang mint, and twenty-cash pieces were produced in enormous quantities by the Wuchang mint near Hankow bearing the above inscriptions. The old "Pao Ch'iowan" mint at Peking, was not, however, any different from the other mints so far as undisturbed production was concerned, thus we find that coins from this mint were being moulded during 1627, 1628, 1644, 1661, 1722, 1735, 1797, 1821, 1850, 1865 and onward.

There were not many varieties of coins made under the auspices of the Board of Revenue, and our plate can be quickly described.

So far the obverse is concerned, there is only one type which seems to have been constantly used for all the reverses :—

A. 寶光緒元 surrounded by a small ring composed of 86 dots. 戶部 at sides, centre of field bare.

Nine reverses have been traced, but they are all more or less greatly similar in general characteristics.

1. Upstanding dragon on a bare field with HU POO above. Very large oblong asterisk at sides.
2. Same dragon. Medium oblong asterisk at sides.
3. Dragon as foregoing. Smaller oblong asterisk at sides.
4. Again the same dragon. Asterisk at sides somewhat squarely designed.
5. Identical dragon. Round asterisk at sides.
6. Similar dragon as above. The lines of the asterisk at sides consist of thin and clear cut lines.
7. The usual dragon. Round asterisk at sides different to No. 5.
8. Dragon as foregoing but with different ornaments around the centre flame ball. Quite round asterisk at sides composed of short stumpy lines, with a circle in the centre.

* "At the beginning of the Manchu dynasty, two Government mints were opened in Peking, the Pao Chwan (寶泉鑄錢局), operated by the Board of Revenue, and the Pao Yuan (寶源鑄錢局), by the Board of Works. Later, an Imperial Edict was promulgated, authorizing the establishment of mints in different provinces. ***** During the reign of Yung Cheng (1723-1734 A.D.), the Pao Chwan Mint opened four branches, known as the Western, the Eastern, the Northern, and the Southern Mint." *Chinese Economic Bulletin* No. 153. January 26, 1924.

9. Same dragon as No. 8. Asterisk at sides composed of dots only. Smaller lettering of the word HU POO.

As there is only one obverse, only nine combinations in all exist, viz.

No.	Obverse	Reverse	Size m.m.	Average weight grains	Metal	Comparative Rarity
431	A	with 1	28.00	115.00	Copper	R.
432	A	,, 2	88.00	112.00	,,	R.
433	A	,, 3	28.00	113.00	,,	S.
434	A	,, 4	28.25	113.00	,,	R.R.
435	A	,, 5	28.25	114.00	,,	C.
436	A	,, 6	28.25	114.50	,,	C.
437	A	,, 7	28.25	115.00	,,	C.
438	A	,, 8	28.25	111.00	,,	C.
439	A	,, 9	28.00	118.00	,,	C.

(To be continued)

KITH

Oh, I will meet a maniac
A-loping through the snow
On a January star-still night.
I see him smiling through his froth,
His visage all aglow
With a cherry blossom pale pink light.

And he will pass me with a nod,
A sparkle in his eye.
But not a moment after will I hear
From some pedestrian behind
A horror-stricken cry
As the merry hatchet nicks his ear.

—Tom Prideaux

EDITORIAL COMMENTS

PORTRAIT PAINTING

I have recently had the opportunity of seeing two examples of portrait painting which recall the names of well-known men. One was of Wu San-kuei and the other of Ho Shên. Wu San-kuei was one of the chief actors in the great drama during

Wu San-kuei with four Attendants.

which the Ming Dynasty yielded the throne of China to an alien race of invaders. This drama was witnessed by some of the Catholic missionaries, one of whom, Martin Martinius, wrote an account in Latin which was translated into many European languages. The English edition was printed for John Crook, London, in 1654, and was for sale in his shop at the Sign of the Ship in St. Paul's Churchyard. In this book was included a map of the provinces and chief cities which furnished Europe with its knowledge of China for several generations. Less than thirty years later Bishop Palafox wrote his History of the Conquest of China by the Tartars, but his work did not have the wide circulation or influence of that of Martinius. The subject, however, continued to be of interest to later scholars. Bridgman wrote of it in the Chinese Repository, XIX, and E. H. Parker in the China Review, XV and XVI. The recent publication of a part of the official history of the Ch'ing Dynasty has revived my interest in this epoch and has furnished material which was heretofore not available. Although Giles has given in his Chinese Biographical Dictionary a good summary of the lives of these two men, I have thought that a new account, based upon the draft of the Ch'ing Dynasty official History (清史稿), is worthy of recording.

WU SAN-KUEI.

吳三桂

Wu San-kuei was a native of Liaotung (遼東)* and was commander of the defence forces at Shanhaikuan during the last years of the Emperor Ch'ung Chêng of the Ming Dynasty. When the rebel Li Tzŭ-ch'êng (李自成) occupied Peking, he captured Wu's favourite concubine Ch'en Yüan-yüan (陳圓圓). The Emperor Ch'ung Chêng hanged himself on a tree on the Coal Hill. Wu San-kuei asked for the help of the Manchus, who were already on their way down to invade China under the command of Dorgun (多爾袞), otherwise known as Prince Jui (睿親王). Wu's invitation was readily accepted and Li Tzŭ-ch'êng was driven away from Peking. Wu San-kuei regained his concubine, and he was rewarded by the Manchus with the title of P'ing-hsi Prince (平西王) for his co-operation. In the fifth year of Shun Chih, 1648, he was ordered to move his forces from Chinchow (錦州) outside of the Great Wall to Han-chung (漢中) in Shensi, and in 1651 to Ssuchuan. In 1659 he succeeded in capturing for the Manchus the province of Yunnan from the Mings, and as a reward for his merit was made one of the three Feudatory Princes (三藩)—Wu in Yunnan, Shang K'o-hsi (尙可喜) in Kwangtung, and Keng Ching-chung (耿精忠) in Fukien. He maintained this position with much pomp until the twelfth year of K'ang Hsi, 1673, when Shang K'o-hsi of Kwangtung, on account of his advancing years, petitioned that he be allowed to retire and his son Shang Chih-hsing (尙之信) be appointed his successor. The Emperor K'ang Hsi accepted his resignation, but refused to appoint his son, and, much to the chagrin of Shang, ordered the cancellation of the feudatory post in Kwangtung. This order of the Emperor alarmed the other two Feudatory Princes—Wu San-keui and Kêng Ching-chung—and as a means of finding out the plans of the Emperor they also sent in their resignations of their respective feudatory posts in Yunnan and Fukien in the seventh moon of the same year. To their great surprise the Emperor, who had long been planning for the cancellation of the three feudatory posts, which, with the big army under the command of the princes, he considered perilous to the safety of the country, readily accepted the resignations and immediately appointed officials to go to the respective places and arrange for the cancellation of the three feudatory posts. When the news reached Yunnan, Wu San-kuei, in the twelfth moon of the same year, declared independence and adopted the title of Generalissimo (天下都招討兵馬大元帥).† In about a month's time he took possession of the provinces of Yunnan, Kueichow, Ssuchuan, Hunan and Kwangsi. He had the support of Keng Ching-chung of Fukien, who declared independence in 1674, and also of Shang Chih-hsing of Kwangtung, who went over to him in 1676. However, after a

*The Tz'ŭ Yüan (辭源), published by the Commercial Press, says that he was born in Kao Yu (高郵).

†Ta Yüan Shuai was the official title of Chang Tso-lin, adopted by him when he seized the Peking Government.

series of defeats, Keng Ching-chung submitted to the Manchus, and so also did Shang Chih-hsing. This left Wu San-kuei alone in the struggle, but he did not lose his courage. He gathered his scattered troops and proclaimed himself Emperor at Hengchow, Hunan, in the seventh moon of the seventeenth year of K'ang Hsi, 1678, adopting the dynastic name of Chou (周). His fortune soon forsook him and he died the next month,* being succeeded by his grandson Wu Shih-fan (吳世璠). This young man encountered a number of defeats and gradually withdrew until in 1680 he reached Yunnanfu, where he was finally subdued and committed suicide.

The second portrait is that of another miscreant.

HO SHEN.

和 珅

Ho Shên (T. Chih-chai 致齋) was a Manchu and a favourite of the Emperor Ch'ien Lung. He was appointed Minister of the Board of Revenue (戶部尙書) in 1780, Minister of the Board of Civil Office (吏部尙書) in 1784, and Grand Secretary (文華殿大學士) in 1786. He was corrupt and earned for himself a very bad reputation. His official acts were the direct cause of the uprising of the "White Lotus Religion" (白蓮教) in Ssuchuan, Hunan, Hupeh, Honan, Shensi and Kansu, and the long period of disturbance during the last years of Ch'ien Lung and the first of Chia Ch'ing. He paid the supreme penalty for his misdoings, as he was put to death by the Emperor Chia Ch'ing immediately after the death of his father, Ch'ien Lung.

J. C. F.

*According to an account given me by Mr. B. Lenox Simpson, the grave of Wu San-kuei is located a short distance beyond Shanhaikwan outside of the Great Wall. The natives state that within their memory there was in front of the grave a row of stone animals which has now disappeared. This account is given only to record a local tradition which is of doubtful accuracy.

REVIEWS

THE IMAGINATIVE INTERPRETATION OF THE FAR EAST IN MODERN FRENCH LITERATURES, by W. L. Schwartz, PH.D.: Paris, Libraire Ancienne Honoré Champion, 1927.

Dr. Schwartz has made an interesting study of the imaginative interpretations of China and Japan in post-classical French literature. He traces this interpretation through book sources from the beginning of the nineteenth century and takes his point of departure from the Gautiers, though giving full recognition to earlier influences. He passes on to the Goncourt brothers and then to Loti and his successors. The last part of the book discusses recent progress and tendencies.

To me one of the most enlightening parts of Dr. Schwartz's work is his account of Gautier's employment of Ting-Tun-Ling as a teacher for his daughters. It is enlightening, for it shows the poor sources from which good French writers obtained their information concerning China. The Chinese teacher was detected in thieving, but was never discredited thereby as faithful purveyor of correct ideas. How gullible were these writers or how contemptuously they treated their subject by contenting themselves in acquaintance with a Chinese thief. Bret Harte's eucher friend was probably as good a representative of his country as Ting-Tun-Ling. Teacher Ting was more amusing than Ah Sin, but probably no more intelligent. His quaint ways and ungrammatical speech tickled the jaded sensibilities of the French savants, but were of little use in helping them to an understanding of Chinese thought which they were attempting to interpret in imaginative terms. Even Victor Hugo pro-

Ho Shên.

fessed an interest in Chinese art and attempted to make imitations of lacquer panels, but his imagination rose no higher than the creation of Shu Zan, which was an allusion to the name of his cook Susanne. As far as I can estimate it, there has been no imaginative writing in French concerning the Far East which can compare with that concerning Greece or Rome. Chinese culture is treated triflingly, it is a joke, a *rire*. Such a fundamental misunderstanding makes imaginative conceptions either absurd or contemptuous. Loti was the best of the group, but a recent re-reading of his Derniers jours de Pekin, 1902, has convinced me that his extremely superficial observations and his national prejudices disqualified him entirely as an imaginative writer on things Chinese. He did not need the scholarship of Pelliot or Chavannes, but at least he should have been able to tell accurately what he saw with his own eyes, and this he was unable to do.

China deserves to be taken seriously, whether in studies of her historical development, her literature, her art or her social order; and only when so taking her can imaginative writers produce anything worth while. *C'est a rire* when the ideas of a school of writers have their origin in the fairy tales of a thief, Teacher Ting, who in his days of freedom from prison was considered as a curious specimen of biped, half human and half—. If an imaginative writer is justified in basing his conceptions on falsehoods or mistruths, then were these writers right in imagining that they were learning something worth while from Ting. It is more than a cycle of years from Judith Gautier's "Le Livre de Jade" to Pascal Forthuny's "Amants Chinois," but in that length of time the background of the French imaginative writers has not improved. China is still not real to them; it is only weird.

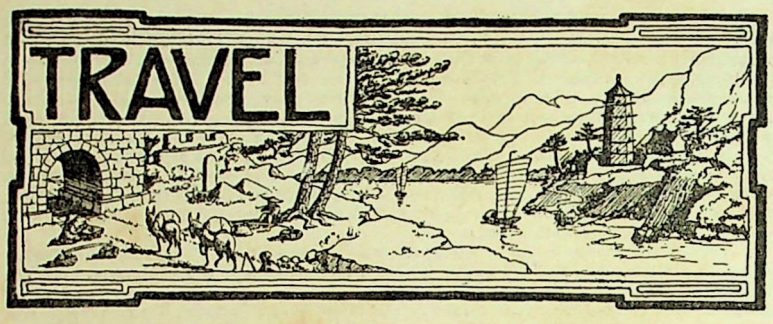
Dr. Schwartz is well qualified for the task which he has performed so well. Born and raised in Japan, he returned to it to become a teacher. His soul must have seen much anguish as he has familiarized himself with the writings on Japan by modern French writers who have taken so little pains to know what is the basis of their imaginings. Mine has in reading what they have said of China. When literary writers are content with such paltry information one cannot wonder that politicians and statesmen show a lack of discretion in their policies. Such writings help to keep the East east and the West west.

J. C. F.

HSUNTZE, THE MOULDER OF ANCIENT CONFUCIANISM, by Homer H. Dubs, PH.D.: Arthur Probsthain, London, 1927.

Hsüntze lived in the latter half of the third century of the Christian Era, being the last of the great thinkers of China's earliest period of creative thought. He was a great defender of the teachings of Confucius, and to his writings was largely due the ultimate dominance of Confucian ideas in Chinese philosophy. Not only did he make a survey of conflicting currents of interpretation within the Confucian school, he also gave an account of the non-Confucian theories and ideas of his time. He practically summarized most of the phases of thought of China's most important period of intellectual attainment. To quote from the Foreword by Dr. Leighton Stuart in Dr. Dubs' useful book on Hsüntze, "The characteristic word in Hsüntze's thinking is 'Nurture.' Nurture is set in opposition to 'Nature.' Nurture stands for the factors in human development that are distinctively man-made; the influences of training, education, social tradition, established authority. In these latter Hsüntze found the basis for human improvement." In other words, Hsüntze believed in environment as opposed to heredity; that in the making of the perfect man the influences brought to bear upon him in life are of greater importance than his inheritance.

In taking the works of Hsüntze for translation and interpretation, the author has performed a singular service for those interested in Chinese literature and philosophy, for, strange to say, considering the high place he holds in the estimation of the Chinese, Hsüntze has been very much neglected by European students. In the desire which is becoming more and more manifest these days on the part of Westerners to understand the Chinese mind, culture and background, this book will prove of the greatest value. The style is easy and unusually lucid for this type of work; indeed, in spite of the somewhat stiff subject it deals with, it is a book that can be picked up and read during hours of leisure and without undue mental strain.



WAITOMO CAVES AND THE NEW ZEALAND GLOW-WORM

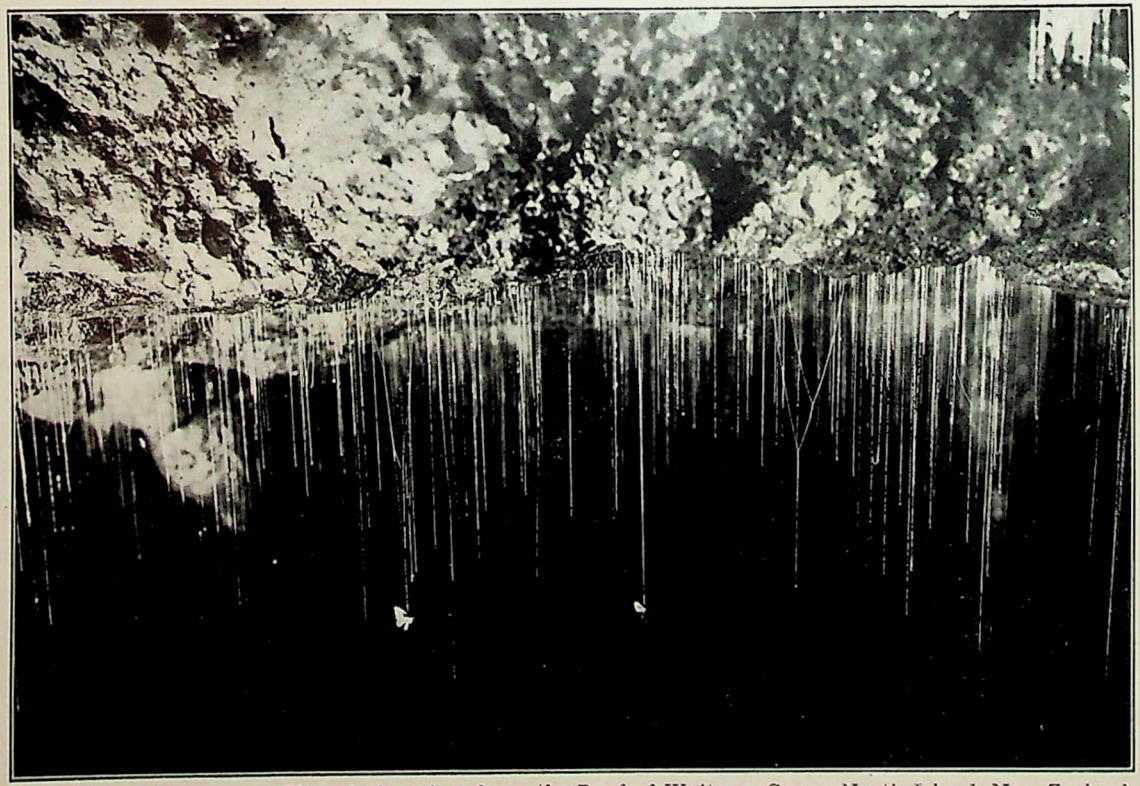
BY

ARTHUR L. ANDERSON

The Caves at Waitomo are now a National Reserve, and a Government Hostel recently doubled in size stands within five minutes' walk of the most interesting, six miles from Hangatiki, a station a hundred and twenty miles from Auckland on the main railway line to Wellington. While in all probability many caves exist in this well-watered undulating limestone district, three only are open to the public, namely, Ruakuri, Aranui, and the unique Waitomo, which gives the district its name.

Ruakuri Cave, some two miles by execrable road from the Hostel, is one of great heights and large distances, and although now dry, shows evidence of having been further eroded by a subterranean river at a lapse of time from the cessation of the first flow sufficient to allow of the deposit of stalagmites of some size, now stained with silt. A bench with alluvial silt some fifteen feet above the general level of the present floor marks the bed of the former stream, and the absence of stalactites argues the shortness, geologically speaking, of the period since the disappearance of the second stream. A waterfall, invisible in a limestone tube, fills the cave with roaring, which, after rainfall, can be heard outside the entrance, while the hollow sound of the floor at the caves' extremity suggests the existence of a lower system.

Aranui Cave, called after the Maori who discovered it only a few years ago, is but a quarter of a mile from Ruakuri, is approached by a path winding through a forest of giant tree-ferns, and became known by the sudden disappearance from the hill-side of two dogs and the wild pig of which they were in chase. Here we have the beautiful and delicate shuttling of stalactites and stalagmites of unbelievable whiteness, the former ranging from the thickness of wire to that of a man's waist, while the latter, lacking slenderness, assume the most fantastic shapes. One



Luminescent Glow-worm Threads hanging from the Roof of Waitomo Caves, North Island, New Zealand.

needs no guide to point to Queen Victoria seated on her throne, no imagination to discover in three figures, fashioned as it were in rocksalt, the priest with uplifted hand blessing the bride and groom. And so on, amid many figures, beautiful, quaint, grotesque, while overhead spreads the lofty dome decorated as never yet a cathedral with a myriad inverted white spires and cunning filagree. Side aisles everywhere afford dazzling views of closely-knit, slender, white columns, betwixt which the passage of a man's body could not but undo the building of fifty thousand years : where the roof bends down and the pendants are small, an upraised palm might crush a score of fairy filaments. Nor is there a weariness of symmetry : any stoppage of the stalactite's central bore affords a change of form. Here a dangling cotton rope, there a string of turnips, foliage and all, a down-pointed spear, a toy balloon suspended by a thread, and through countless ages these have fashioned themselves in the dark, growing downward an inch in fifty to five hundred years. The quicker the drip the slower the growth of the stalactite, with the contrary result to the lowly brother aspiring towards him. And the most beautiful of all is the delicate lace curtain pendant gracefully from the roof, and of so thin a texture that the shape of the lantern's flame shows plainly through.

The entrance to the Waitomo cave is some sixty feet above the inflow of a stream, and the name affords another parallel between the Maori and Hawaiian tongues. (Wai-tomo, water-in-going, Maori ; Wai-kiki, Water-spouting, Hawaiian ; Wahine, girl, Maori ; Machine, Hawaiian ; Moana, big-lake, Maori ; Moana, sea, Hawaiian). And this lures to a digression. It is difficult to understand the contradiction in the legends of these kin races—the Maori is confident that his ancestors came from the Hawaiian Group, and just as certain is the Hawaiian that his islands were colonized from New Zealand. A further straying : the wingless bird, the Kiwi (*Apteryx*), generally supposed to be peculiar to New Zealand, is still to be found on the outlying islands of the Hawaiian Group. Let us return to our caves. After tramping through castle halls and ascending to mediaeval battlements, after gazing at fairy transformation scenes lacking only the colour-pageant of the pantomime, we come to the *piece de resistance* : having exhausted geological wonders, we are to see a marvel of the insect world. No smoking please, and as silent as posible.

Down, down, down the slippery rocky steps, down until a forlorn jetty juts towards ink-black water, holding a boat in its teeth. The painter undone, a gentle push, and we are at once on the bosom of a placid lake with an illimitable firmament overhead studded with a million million stars. Now we can see each other's faces and even read those of our watches, and though from time to time a dark mass, as of storm clouds, obscures the sky, ever as we drift along our heavens shine down on us again with such a galaxy as those of the open air never boasted. Dark pillars on the shore supporting ribbed arches even darker against the starlight emerge from the gloom like palm-trees as we glide, serving to enforce the impression that we are drifting down a tropic river on a starlight night, and fancy fans our cheeks with a midnight breeze.

It is time to introduce *Boletophela luminosa*. This insect, better known as the New Zealand glow-worm, commences life as an egg on the

cavern roof, and, devoid of any food save what his egg-covering may afford, spins and attaches to the cavern roof six to ten threads of a viscid substance like spider's web within a circumference of three inches. A king-thread is then fastened to the roof across the circle and this is gradually thickened to form a transparent tube of the colour of vaseline, in which the worm lies. A brilliant green light on the worm's rearmost extremity then appears (to be dulled or even extinguished should sound-waves agitate the pendant filaments too roughly), and the trap is set and baited. Up from the caves sandbanks like moths to a star, rise countless midges, and from the eternal dark where they were bred seek the light. Upon encountering a thread, the midge makes only a perfunctory attempt to escape before resigning itself to the fate to which it was born, but even that slight vibration is sufficient, and *B. luminosa* reaches out of his hammock. Grasping the thread in his jaws an inch from the roof, by the contraction of the body it is transferred to a pair of legs half way down the body, a new grip taken by the jaws, and the bight dropped by the legs. Thus the end gets shorter and the bight longer until the midge is seized and its juices sucked out. This aerial fishing is repeated at intervals for some four months, during which the threads have been lengthened from four to fourteen inches and increased in number to eighteen or twenty-two, closely studded with droplets of a gummy but brilliantly clear liquid which multiply the light above. By this time the worm is one and a half inches long, rather thicker than the lead of a pencil, of a pale greenish-yellow hue, but so transparent that the contents of the alimentary canal appear as a longitudinal dark line. The point to notice is that there is no vegetable in the cave, and the worm has existed, save as afterwards noted, as a carnivore by its piscatorial proficiency (which sounds Irish), nor has the light been used for any purpose but that of attracting food. The writer has witnessed every process here described. The worm now declines food, hauls up its lines one by one, either consuming them or using them to close the orifices of its tube, which now shrinks and hardens to form a chrysalis, three-quarters of an inch long and dark-brown. After twelve days or a fortnight, the imago splits the back of the frugal covering, and emerges as a fly with one pair of wings, shaped like those of a dragon-fly, which insect it also resembles in the shape of the body, less the elongated tail. The colour is a dark indeterminate brown with three gold bands. Length of mating and egg-producing periods cannot be stated: the flies are rarely ever outside the cave.

Since the temperature of the cave varies but little, all stages of existence are in process at the same time, and while the fly is probably strong enough to escape the fatal fringe of threads pendant half an inch apart over large areas, when approaching the roof for egg-laying it must often happen that a larva feeds on a pupa, so close is the association. Mr. G. V. Hudson, F.E.S., F.N.Z.I., observed a case of this in September 1926, and writes: "It is practically certain that these cannibalistic habits must at times occur."

The fringe of filaments alluded to above under the light of an electric-torch resembles a vast curtain of minute cut-glass beads, but it is necessary

Photo by Williams Studio.

Off Coconut Island in Hilo Harbour, Hawaii.

to keep the ray pointed below the insects, as a bright light causes a stoppage of operations.

An unsolved riddle is this : why does the chrysalis continue to emit light ? The answer may be that the light is caused by the life-processes of the insect, as it is still to be observed in the perfect fly.

While wandering o'er old Earth's wide bounds
Strange sights I've seen a few ;
But glow-worms fishing in the air
To me is something new.

THE HAWAIIAN ISLANDS

Particular interest attaches to the Hawaiian Islands just now because the 150th anniversary of their discovery falls on the fifteenth of this month, and the fact is being celebrated throughout the whole group by the inhabitants. Exactly a century and a half ago on that day Captain James Cook, perhaps the greatest navigator and explorer the Pacific ever knew, set foot on the shores of Kanai at a place now known as Waimea. He had been sent by the British Government to the Pacific to look for that phantom of so many voyages, the " North West Passage," and it was while on this quest that he discovered the Hawaiian group and first landed on Kanai. This, so far as any records go, was the beginning of Hawaiian history. The natives received him with reverence and apparent joy, making offerings to him and prayers.

The following year, when on a return visit, he was killed by a native on landing in Kealakekua Bay in the Island of Hawaii, but his bones were preserved by the priests and worshipped for a long time by the people.

Captain Cook named the group the Sandwich islands after the Earl of Sandwich, but they were later known as the Hawaiian Islands, the original native name taken from the largest island of the group. To-day they are called the Territory of Hawaii, now being an integral part of the United States of America. The early history of these islands, as far as known, shows a continuous series of bitter and cruel wars between the subjects of rival chieftains or kings, but by 1791, only a few years after their discovery, Kamehameha I gained the supremacy, having first secured contol of the islands of Hawaii, Maui, Molokai, Lauai

and Kahoolawe, and then at the battle of Nuuanu, defeating the army of Oahu, forcing its warriors over the famous cliff known as Nuuanu Pali, and capturing and sacrificing the king of that island. In 1810 the king of the remaining islands, Kauai and Niihau, surrendered them to Kamehameha.

During the reigns of his successors American influence steadily increased. Old customs such as the feudal and tabu systems were abolished and the ancient religion abandoned in favour of a limited monarchy and Christianity, respectively, and finally in August, 1898, the sovereignty of Hawaii was formally transferred to the United States. The terms of annexation were not confirmed by Congress till April 10, 1924.

The Territory of Hawaii consists of a chain of islands lying in the North Pacific Ocean between the 19th and 25th parallels of latitude and the 155th and 161st meridians of longitude. The largest, lying in the extreme south-east, is Hawaii itself, while Kauai lies in the extreme north-west, with Niihau a little further to the west and Oahu, Molokai, Lauai, Maui and Kahoolawe between it and Hawaii. Honolulu, the seat of government and the chief city and port, lies on the south side of Oahu.

The islands are mountainous and contain many volcanoes, especially Hawaii. Mauna Loa, or the " Great Mountain," in the southern section of Hawaii, is the largest volcano in the world, having a base of seventy-five miles, and rising to a height of 13,675 feet above sea level.

The crater of Kilauea, another of the famous volcanoes in this island, is the largest active one in the world, and when in eruption presents a scene that attracts visitors from all over the globe.

As may be imagined from their tropical situation and their broken nature, these islands, with their abundant vegetation, present the most beautiful scenery ; while their climate is such as to render the cultivation of such economic plants as sugar cane and pineapples of the greatest importance.

The original indigenous population consisted of Kanakas of Malayo-Polynesian stock, who probably settled in these islands somewhere about the 10th century, having come from Samoa. They are remarkable for their beauty and fine physique, and have always appealed to the romantic side of the white races. To-day the islands harbour a population consisting of people from all parts of the world, including large numbers of Japanese, Chinese, Koreans and Europeans of many nationalities, with a fair sprinkling of negroes.

The islands cover a total area of 6,454 square miles. There is ample inter-island steamer transport, while railways and good motor roads traverse the islands themselves. There is an abundance of fish in the sea about the islands, while every kind of delicious tropical fruit and vegetable can be grown readily in the wide valleys of the land.

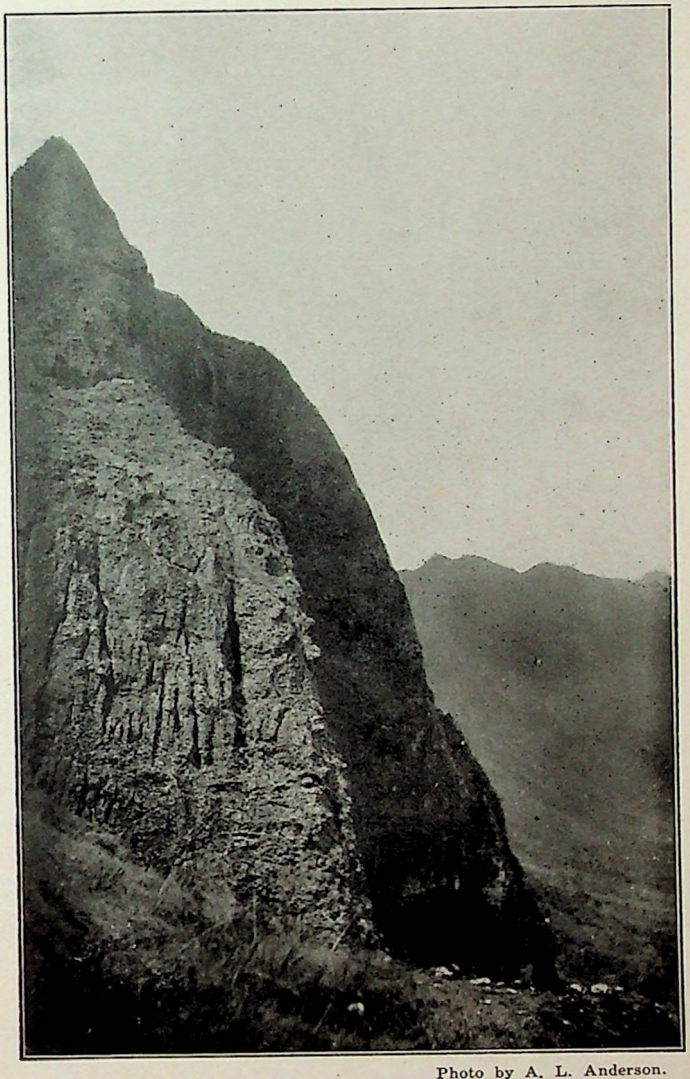
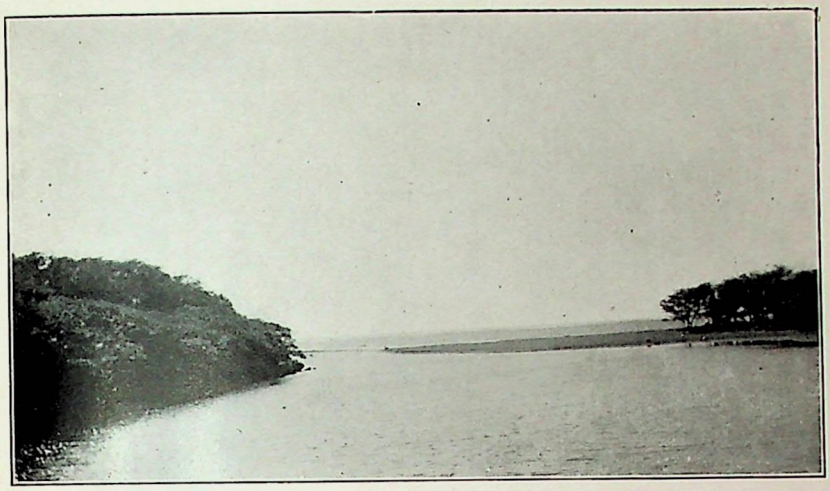


Photo by A. L. Anderson.

The Scene of a Terrible Tragedy in 1795. The Nuuanu Pali, or Big Cliff, in Kanai, over which 7,000 Men of the King of Oahu's Army were thrown by the invading Army of Kanehameha I from the Island of Hawaii.



Where Captain Cook landed on August 15th, 1778 at Waimea on Kanai Island, when he discovered the Hawaiian Group.

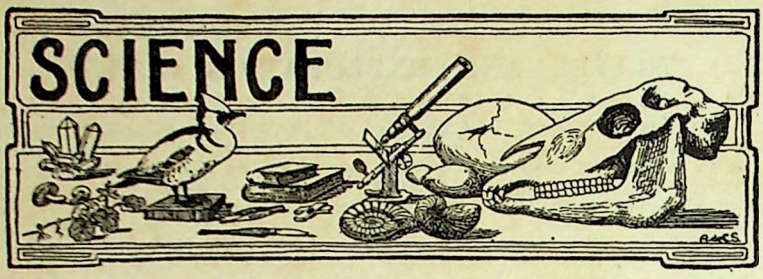
A Broad Arrow cut by Captain Cook in the Rock just opposite to where he landed at Waimea on Kanai in 1778. As will be seen, the Arrow is still perfectly clear.

TRAVEL AND EXPLORATION NOTES

COOK'S LANDING PLACE IN THE HAWAIIAN ISLANDS: While Mr. A. L. Anderson, well-known Shanghai resident, was on a tour through the Pacific during the early part of the present year, he sent the accompanying photographs and following interesting notes for inclusion in this journal. Although received as long ago as last March in a letter from Major G. D'Arcy Anderson, his brother, they have been held over for inclusion in the August issue, because the 15th of the month is the 150th anniversary of the day on which Captain Cook first set foot on the Island of Kanai in the Hawaiian Group. Referring to the photographs Mr. Anderson writes:

> The big cliff (The Pali) is the spot where 7,000 men of the King of Oahu's army were thrown over by the invading army of Kamehameha I from Hawaii in 1795.
>
> The other two are at Waimea on Kanai: one, the sea piece, is where Captain Cook landed on August 15, 1778, and the other is a broad arrow cut by him on a block of lava just opposite where he landed. On the left bank of Waimea River there are the remains of a fort, built of lava blocks, the ground plan in the shape of an eight-pointed star. This was erected by the Russians in 1815.
>
> I saw one bronze gun from it in the Bishop Museum; it was marked "Czar Peter 1807." Looking about for the fort's landing place, I found a large block of lava, just awash, with a cross neatly and deeply incised. Nobody seems to have noticed it before.
>
> Waimea, Hanapepe and Olokele Canyons were stupendous, especially the first, which in colouring and depth rivals the Grand Canyon.

THE THIRD ASIATIC EXPEDITION: According to news received from Dr. Roy Chapman Andrews, leader of the Third Asiatic Expedition of the American Museum of Natural History, some very interesting ruins of an archeological nature have been discovered in Outer Mongolia. The expedition has been very successful, and it is expected to be back in Peking by the end of this month.



GAME FISHING IN HAWAII

BY

W. O. COGSWELL

From an angler's point of view, Hawaii is a veritable paradise, as its waters teem with game fish of large size and great variety. The fish can be landed with rod and reel at any time during the year, added to which the even climate always makes fishing a pleasure, for there are no sudden changes of temperature, no fogs, no disagreeable cold snaps and no intense heat.

The fish of the Hawaiian Islands were first officially recorded as early as 1782 by Broussonet from specimens obtained during Captain Cook's third voyage to the Islands. In 1903, the United States Fish Commission described the 902 species of fish belonging to the region of the Hawaiian Islands, including a large number of the giant mackerals, such as the swordfish, tuna, oceanic bonito and albacore.

In ancient times, the native Hawaiians held a monopoly on fishing in Hawaii, and probably the most peculiar feature of these fisheries from an early period was the well-developed principle of private ownership of the fish found in the open sea and bays within a prescribed distance from shore. In Hawaii to-day are the remains of stone walls built in a semi-circular shape around inland bays, the enclosure of water being known as the royal fish ponds. Hawaiian kings, in ancient times, constructed the walls so as to provide traps for the fish which later bedecked the royal tables.

To-day, game fishing in Hawaii is keenly followed by enthuusiastic anglers. In most cases a chartered launch or sampan takes the fisherman to "good fishing," where the rod and tackle method provides the chief form of amusement. The most sought fish is ulua, but plenty of excitement is in store for those who tackle the tuna, swordfish and albacore. All of these fish are extremely game.

Ulua fishing is not limited to boats, however. The rocks and points on the various islands are often the Meccas for fishermen who go out for

Hawaiian Fishermen beaching their Outrigger Canoes on the Shore near Honolulu.

Photo by Williams Studio.

A Hawaiian Fisherman with a small Dip-net.

a few hours' stay, and hauls are good. Only recently John Enos, an old time resident of Honolulu, and enthusiastic fishermen, succeeded in landing a 108 pound ulua off Makapuu Point with rod and tackle. Enos' catch established a record for rod fishing in the territory.

The world renowned species of game fish—the gaint mackerals—such as the leaping tuna, long-fin tuna and yellow-fin tuna, are caught in Hawaiian waters. The blue and yellow-fin tuna reach a large size, single catches having been made of over three hundred pounds in weight. The tuna is known by the Hawaiian name *Ahi*.

Swordfish also furnish exciting sport for the rod fisherman. Some of the specimens brought into Honolulu and Hilo have weighed over 700 pounds, and have carried swords measuring over five feet. However, landing a large swordfish with rod and reel is rare, as the creature puts up a fierce fight and is dangerous. Swordfish usually travel in pairs and are often found in deep water near the shores. Thy greatly resemble the tarpon for spectacular play after striking, making a succession of leaps into the air after they have taken the bait.

Dolphins are numerous in Hawaiian waters and can be landed with a regulation nine-ounce rod and nine thread line. The dolphin, which is called by the Hawaiians *mahimami*, is remarkable for its vivid and changeable colouring. The colour of the fish in life is a dazzling silver, with yellow, green and brown spots on the ventral parts. After death, only faint indications of the former colouring remain. They are exceptionally fast swimmers, and, after striking, keep to the surface, fighting to the end. The waters around the islands abound with them.

Another fish native to Hawaiian waters is the *Ono*. This is of a steel blue colour and has markings very similar to the swordfish. To quote Major Gooding Field, former honorary secretary of the Hawaii Tuna Club, " It is a cross between the giant mackerals and the swordfish and is particularly abundent in the deep water channels off the island of Molokini and Maui. The Ono is a fierce fighter and its rushes after striking are wonderful, it is not unusual for eight hundred or a thousand feet of line to reel out before the fish can be stopped."

Speaking of the ulau, Major Field says, " There are nine species of ulua in Hawaiian waters. This game fish is exceedingly voracious, and frequent in large numbers the deep waters in the island channels and close in shore off the precipitous rocky ledges. Ulua have been landed weighing over 100 pounds. The fish is the most important food fish of the South Seas, abundant in the markets and unsurpassed as the basis of fish chowder. Pound for pound the ulua is declared by anglers to be the gamest fish in any waters."

Barracuda are found in Hawaiian waters in abundance. Unlike the Florida barracuda, which appears to be a solitary game fish, the Hawaiian barracuda travel in schools. They are vertiable bundles of fight, and can be landed with light tackle.

Black sea bass are abundant, being generally caught from points varying from a half to a mile off-shore. Specimens brought into Honolulu markets by Japanese have weighed over 600 pounds.

Other common Hawaiian fish which are headliners in aquatic entertainment are the milkfish (Hawaiian *awa*), ahaaha and auau, very voracious; the wolu, specimens of which measure four feet and weigh 40 pounds; perch, related to the sea basses; catalufus, a carniverous fish usually found in deep waters; ukikiki, kalikali and opakapaka—all excellent food fish.

MIGRATION NOTES

BY

G. D. WILDER

Yellowhammer New to China and Bonelli's Eagle.*

After one has been watching for birds new to his acquaintance in a region for thirty-three years his discoveries become both rare and thrilling. A recent scrutiny of our "List of Chihli Birds" reveals the fact that during the four years since it was published Mr. H.W. Hubbard and I have added only fourteen birds to the number that we ourselves have observed, bringing it up to three hundred and eighty-five. There are some fifty-six more that have been observed by others in the province and about twenty-five more that ought to be found here some time when the migration conditions are just right to compel their stopping with us in their flight. We may also hope to meet some new straggler from distant parts occasionally.

This is a good opportunity to report such a straggler which appears to be the first record for China. It is the yellowhammer (*Emberiza citrinella*), one of the commonest buntings in England, a subspecies of which is found as far east as the Yenissi River and the Altai Mountains. Our discovery was in this wise. On November 12, 1927, when looking over the cages of newly caught buntings and other local birds always on display at the famous Lung Fu Ssu fair in Peking, the dealers called my attention to a large bunting that they were all unable to name and asked my opinion. Honesty compelled me to admit, at the probable expense of my pocket book, that I could not name it, but I suspected it to be a young bird or a female of some of our common buntings as the ruddy bunting (*Emberiza rutila*) or of the yellow-breasted bunting (*E. aureola*). The dealer replied at once "You say it is a ruddy bunting? It is too large. You say it is a yellow-breasted bunting? It has no

* Tunghsien, Chihli, April 19, 1928.

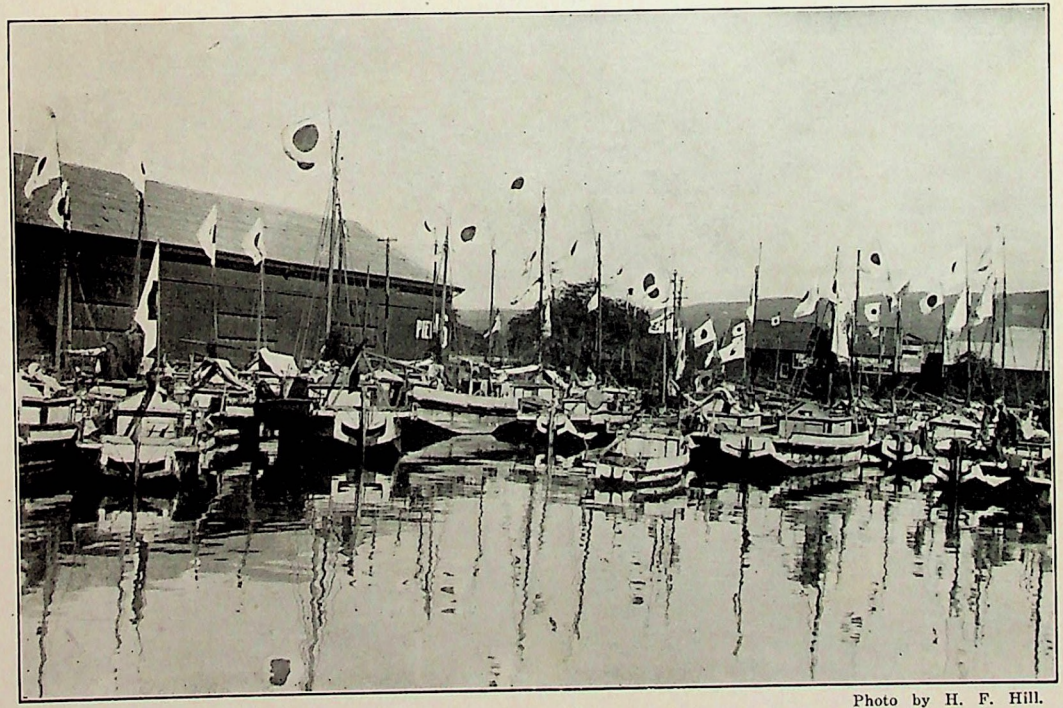


Photo by H. F. Hill.

A Fleet of Japanese Fishermen's *Sanpans* at Anchor in Honolulu Harbour.

prominent white wing bars. You say it is an autumn black-faced bunting ? It has a reddish rump." He was correct as he was keen. He asked only twenty cents and got it at once, as I am usually held up for dollars when it is a new bird. On arrival home that evening, Hartert's keys baffled me. It seemed to run to the yellowhammer, but the wing was far too long, 82 mm. instead of Hartert's 64, and not much yellow on the head. I turned it over to be skinned, with injunctions that the body was to be saved for me to sex it. I was astonished and delighted to find it to be a fully mature adult male, which sent me back to the key with new hope. In the morning light I could see what had escaped notice by lamp light, that the whole head and neck has a yellow cast, and on parting the feathers they are bright yellow at their bases, as though the head would certainly become quite yellow in the spring as the brown and grey edgings of the feathers disappeared. On reference to Dresser and other authorities as to wing length I found it to be given as 3.25 inches or about 84 mm. Evidently Hartert's measure must have been in error as every other feature of the description coincided well with the bird in hand. Having no examples to compare, I cannot state for certain, but the probability is that this is a straggler from Western Siberia, where the form *Emberiza citrinella erythrogenys* Brehm. is found.

Another surprise was found in our Taxidermist Shop in Peking. A fine eagle with peculiar purplish red underparts finely streaked with black was brought in by a hunter last August. Mr. J. Delacour, a distinguished French ornithologist, happening in, told me that it looked most like the Bonelli's eagle with which he was familiar in Europe. Careful comparison with the description in Hartert confirms the name, but Hartert does not state what subspecific name should be given to the Eastern race, though he says that specimens from Southeastern Asia are distinguished by greater wing length, up to 55 cm in the female. It would seem that Hodgson's name given to the bird he found in Nepaul in 1835, might well stand as the name of the subspecies, making it *Hieraaetus fasciatus grandis*, but the authorities not accessible to me may have decided otherwise. In this specimen the sexing was possibly in error. It was said to be a young male, but the wing, 54.6 cm, is that of a large female. The European female wing runs from 49 to 52 cm. This is the first record we have of this bird from this province. It has been recorded, however, from Fukien and Hupeh heretofore.

During the winter that has just passed there have been far larger numbers of bustards and waterfowl in the Peking region than ordinarily. Near rivers that were not entirely closed by ice there were large numbers of bean geese and mergansers, with occasionally other ducks and swans. The bustard has been common for some years after a long period of scarcity.

If the measurement of bills can be relied upon to distinguish *Mergus merganser merganser* and *M. m. orientalis*, Gould, then we have both forms here in winter. Our list named only the former. On December 18, a Chinese friend shot a young male goosander. It had swallowed a fish fifteen inches long and five inches in circumference. The tail of the fish still protruded from the throat beyond the tip of the bill and the head

was in the gizzard where the nose of the fish had already been somewhat disfigured by its action. It was a surprising stretch for the gape to at least two and a half inches in width. The fish must have been kept in that position, being the whole length of the gullet, until it was slowly digested from the head back. The stomach of another contained only a few small fish bones. It is difficult to see how the stomach could dispose of the bones of so large a fish as that mentioned above, especially the strong solid head bones.

It has often been a source of wonder as to how the large flocks of birds the size of geese and bustards could find food enough on these bare plains in winter; and very often their stomachs are empty. But in March a bean goose, picked by rifle shot from a flock feeding in a wet sandy place near the river, was found to have its gullet and stomach packed full of the roots and stems of some marsh plant. These roots had brown, hairy tubers the size of small chestnuts, the meat of which was a yellowish white with a very palatable sweet taste. These were broken up into pieces which were packed in so tight that it seemed as though the gizzard could not possibly grind them up. There were no signs of stones, such as are seen in the stomachs of gallinaceous fowls, either.

For some years there have been no great numbers of the pin-tailed sand grouse, but this year as also last year a few appeared in the sand dunes late in November and then were not met with again all winter.

A rather unusual sight for me was a roost in the trees of a cemetery of long-eared owls on February 18. It was occupied by a flock of about a hundred and fifty of the owls for two months this winter, according to dwellers in the vicinity. My collector shot eight with two shots. The stomachs of most were empty except for some parasitic worms, but one had the remains of a mouse or hamster. The rest seemed to desert the roost after these were shot, for on a later visit none were found. Mr. Hubbard tells me that he has recorded a similar large flock of these owls, *Asio otus otus* (L), in December on the ground at Paotingfu.

These are the most interesting features of the bird life in the vicinity of Tunghsien during the past few months. My field notes of the year before, however, contain a few more records that may be left for another paper.

DESCRIPTION OF A NEW SPECIES OF LEUCTRA AND NOTES ON NEMOURA SINENSIS FROM HANGCHOW

BY

YUANTING T. CHU, M. S.

Recently I have found two more stone-flies from Hangchow, one of which, I think, is *Nemoura sinensis*, originally described by Dr. Wu from Nanking, and the other a new species of the genus *Leuctra*. It will be desirable, at the outset, to give a diagnosis of the two genera of the Family *Nemouridae* known to China.

*A. An oblique crossvein in the apical marginal space beyond the tip of Subcosta ; Wings not rolled around the body when at rest.....Genus *Nemoura* (Fig. 1)

AA. No crossvein beyond the tip of Subcosta ; Wings rolled around the body when at rest.

B. Rs and M of forewing originate from a common point of the radial base.....Genus *Perlomyia* (not yet known to occur in China)

BB. Rs of forewing originates from radius apart from M..... .....Genus *Leuctra* (Fig. 5)

1. LEUCTRA ORIENTALIS sp. nov.

Length to tip of wing : male, 7 mm. ; female, 8-9 1/2 mm. Alar expanse : male, about 12 mm. ; female, 14-16 mm.

General colour blackish ; eyes chocolate. Head wider than prothorax ; hind ocelli about three times as close to eyes as to each other ; prothorax squarish, slightly longer than wide, lighter in colour than the head, with black rugosities, angles rounded ; median longitudinal field about 1/5 the width of pronotum, wings infuscated, with two crossveins beyond M-Cu crossvein ; anal field of hind wing narrow.

Male : Each of the first nine abdominal segments is composed of two large sclerites, a large dorso-lateral piece and a smaller ventral piece, which are so closely connected by conjunctivae that the whole segment looks evenly chitinized and hence evenly black in colour. Tergite of abdominal segments unmodified, except the tenth which is partly cleft and produced posteriorly on each side into two triangular processes ; supra-anal lobe bent ventrad and ended with a slender recurved hook ; cerci modified into chitinous processes, each with a large terminal and a ventral hook and usually between them a very small tooth ; subanal lobes modified into a long probe with the bases drawn back underneath

* Abridged from " Key to the Genera of Nemouridae," Plecoptera of North America, by J. G. Needham and P. W. Claassen.

the subgenetal plate, where they unite into a long upcurved probe ; ninth sternite produced into a prominent genetal plate, slightly indented at the tip ; ventral lobe very small, as wide as long.

Female: Each of the first seven abdominal segments is composed of four longitudinal sclerites (1 large ventral piece, 1 dorsal piece and 2 smaller lateral pieces) which are fairly widely separated from each other by white areas of nonchitinized cuticula ; hence when viewed dorsally or ventrally there are two white longitudinal bands in the abdomen. The last three segments are irregularly chitinized. Eighth abdominal sternite produced into a large, broadly emarginate subgenetal plate, beset with long hairs, covering most of the ninth sternite which is chitinized in a narrow, down-waving band. Cerci unmodified, more than two times as long as wide.

Our species is closely related to *L. occidentalis* Banks, but differs in greater length of the pronotum and greater width of the median longitudinal field. The size of our form is also considerably larger.

Holotype, male ; Allotype, female ; Co-type, 2 males and 2 females ; Li-An-Z, Hangchow ; March 5, 1928 ; Chu's Plecoptera Collection ; Paratype, many males and females, same date and same locality as type, Hangchow College Collection. Also found in Tei-Tsok, and College Compound of Hangchow College.

2. Nemoura sinensis, Wu.

Nemoura sinensis Wu, " China Journal of Science and Arts," Vol. 5, No. 6, pp. 331-32, 1926.

Our forms agree with Dr. Wu's description in the main, but exhibit additional structural characteristics which should go into record for further references.

Male: Subanal lobes somewhat triangular, horn-shaped, produced backward and upcurved, with a linear series of short spines along the distal ventral surface and forked at the tip (Fig. 4). Cerci large, rather chitinized, with a very small knob-like structure at the tip suggestive of a primitive or rudimentary second segment. Supra-anal process recurved and enlarged, with two lateral processes each of which is provided with a stout recurved spine, and a median process which is provided with a small recurved hook. At the inner margin of each of the subanal lobes is produced a small pointed chitinized process and lying just outside of each of these lobes is another slender pointed process (Fig. 3). The upper portion of the supra-anal process is cleft in the middle and there are two heavily chitinized valves at the sides (Fig. 2) ; when viewed from side, the lower outer margin of each valve projects out and is fringed with hairs at the tip (Fig. 4). The tergite of the 9th segment chitinized into two large, triangular sclerites, the hind margin of each of which is densely covered with short hairs ; the 8th tergite has the same tendency to localize into two triangular pieces (Fig. 2).

Female: The ninth sternite produced into a prominence fitted into the emarginated space of the posterior margin of the two dark coloured genetal valves (Fig. 5).

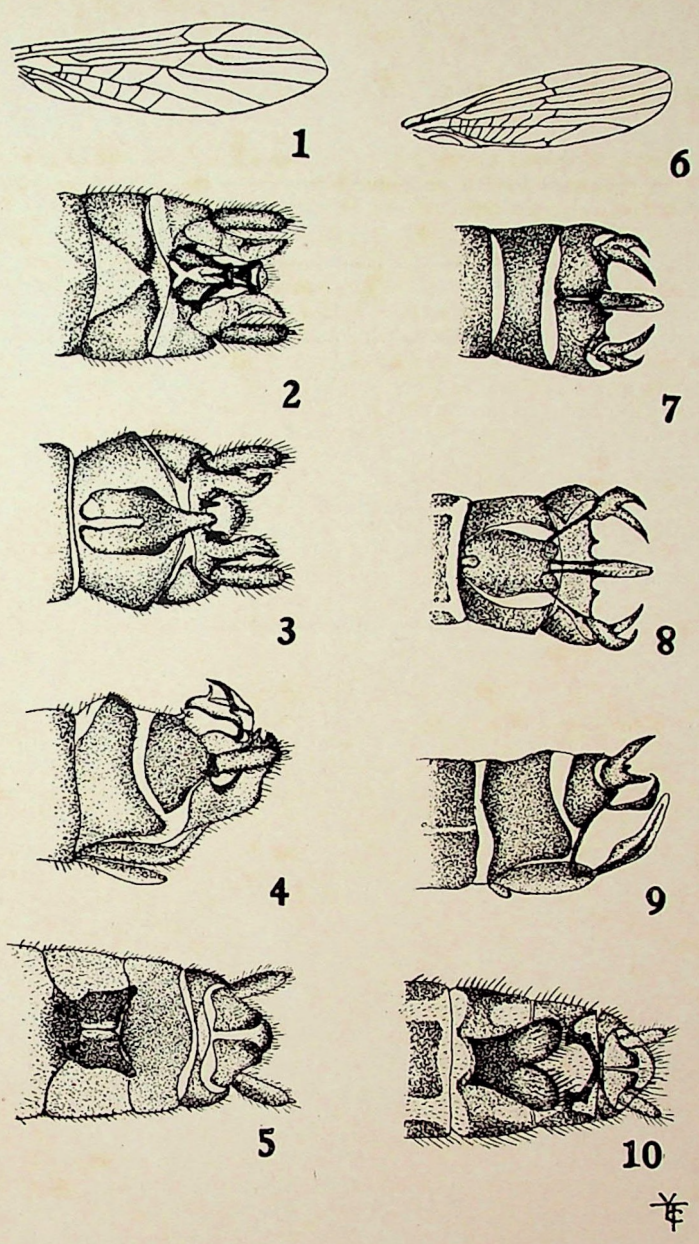


Fig. 1. Forewing of *Nemoura hangchowensis* (note the apical crossvein beyond subcosta)
2. Male Genetalia of *N. sinensis* (Dorsal view)
3. do (ventral view)
4. do (side view)
5. Female Genetalia of *N. sinensis* (ventral view)
6. Forewing of *Leuctra orientalis*
7. Male Genetalia of *L. orientalis* (dorsal view)
8. do (ventral view)
9. do (side view)
10. Female Genetalia of *L. orientalis* (ventral view), 9th sternite slightly extended to show its chitinization

Types : Several males and females. Widely distributed in Hangchow, being found in Fu-Bao, Tei-Tsok, Li-An-Z. March to April

I have examined many specimens and found that the above mentioned characters hold good, and unless the original *N. sinensis* from Nanking also possesses those features, it is justifiable to make our present form a new species or at least a new sub-species.

THE GEOLOGY OF SHANGHAI

BY

GEORGE B. CRESSEY PH. D.

(The Department of Geology, Shanghai College)

(Continued from Page 345)

The History of Shanghai.

The present is the key to the past. From our knowledge of how sediments accumulate to-day it is possible to interpret those which were deposited in former times. The Earth is constantly writing its autobiography, and in the sands beneath Shanghai is buried the history of the Yangtze delta. The cuttings from deep wells enable us to read this record and to reconstruct the changing geography. The story of the Earth is full of variation. At times the land is slowly depressed and the sea creeps in. Deposits are laid down until the shallow sea becomes filled up and the shore line gradually retreats. Then the process is repeated. Constant change is the rule.

The geological record is best read from the bottom upwards ; beginning with the past and working towards the present. In the case of the sands in the Shanghai Waterworks Company well it is not yet possible to assign definite dates, either in years or in terms of the geological time table. The shell fragments are much broken, but it may later be possible to inrerpret them and fix their geological age. Since nature operates with great slowness, the accumulation of the 920 feet of sediments in the Waterworks well probably required several hundred thousand years.

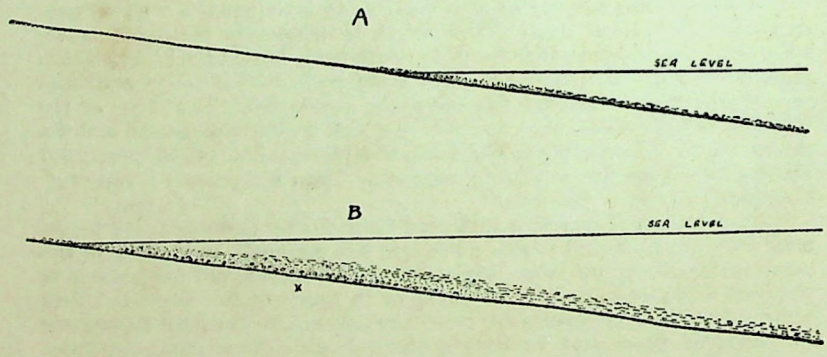
I

Before the deposition of the delta sediments, the region from the Soochow Hills to the Chusan Islands was above sea level for a long period. Continued erosion produced a surface of well advanced maturity. In general the slopes were probably more gentle than those of the present hills for wave erosion has oversteepened these latter. The area beneath which Shanghai now stands was the center of a broad depression, extend-

ing from northeast to southwest. This probably represents an ancient valley, possibly that of the Chien Tang River which now empties into the sea east of Hangchow. The mouth of the Chien Tang is to-day deflected by the great delta of the Yangtze. Quite possibly at one time the river continued northeast from Hangchow and helped to carve out the wide rock valley underneath Shanghai. The ancient Yangtze was probably north of its present location, extending more or less eastward from some point north of the Chinkiang hills.

The Soochow Hills and the Chusan Islands both rise a thousand feet above sea level. The evidence of the Waterworks well points to a depth of nearly a thousand feet to bed rock. This ancient valley thus had a relief of something like 2,000 feet, with local hills of several hundred feet. Half-buried hills project through the delta plain to-day at Quinsan and near Sungkiang. Other hills are completely buried and obscured. Their location is quite unknown, but from the presence of coarse gravels in different wells at shallow depths, some buried hills may extend to within a few hundred feet of the present surface.

On this mature land surface, weathering operated to decay the rocks. Where protected against rapid erosion the surface doubtless became covered with residual soil and boulders. Among the changes produced by atmospheric decay was the alteration of feldspar to kaolin. This change takes place through the action of carbon dioxide and water, and is distinctly a surface phenomena. The bottom of the Waterworks well



A. Normal shore relations with gravel near the beach and sand clay in progressively deeper water.

B. Deposits with an advancing shore line. Due to the sinking of the land the sea is invading. Offshore deposits thus come to overlie gravel. A cross section as at "X" will show a change from coarse to fine materials, reading upwards. With a retreating shore line, conditions are reversed and the finest sediments are below the coarser.

probably reaches almost to this rock surface, and the lowest materials in the boring represent these residual boulders and clay.

II

The next episode was ushered in by a marked subsidence of the land. Whether this took place by down faulting or by warping movements we do not know. For the immediate area of Shanghai it was doubtless rather rapid. As the land was depressed the sea came in. This invading sea worked over the residual material and quickly redeposited it as a basal conglomerate, the lowermost of the long succession of marine sediments which were to follow. This is shown in numbers 38, 37, and 36. If the advance of the sea had been more gradual, wave work would have ground up the soft kaolinized rocks and removed the finer clay products. The presence of porphyry, granite and shale together suggests that the well bottom approaches level land or a depression to which nearby rock exposures may have made their contribution.

III

With continued subsidence, wave erosion began to attack the hillsides and carve sea cliffs. Residual materials on more exposed surfaces were ground up and gravel was formed in large amounts. This in turn was worn down to sand. The sediments from number 35 upwards thus represent the products of wave erosion along a rocky irregular coast line. At times when hills near the well location were being actively eroded, the sediments were coarse. At other times when these hills were protected from erosion by sand bars or when they were islands and thus not in contact with the shore drift along the beach, the sediments were fine.

Depression of the land continued, very slowly as man reckons time but nevertheless more rapidly than sediments were being laid down. As a result the well location came to be in progressively deeper and deeper water and the shore line slowly migrated westward. From number 35 to number 21 the sediments are thus progressively less and less coarse. At no time was there very deep water, and the continuous supply of gravel indicates that there must have been nearby islands from which the rock material was supplied. Since it is nearly 200 feet from the bottom of the well to the top of number 21, hills of this height must exist in the vicinity of the well. Numbers 28 and 25 are silt deposits and thus indicate brief periods when no coarse materials were supplied.

IV

The fourth period in the evolution of Shanghai is characterized by thick deposits of silt. From number 20 to number 12 quiet conditions prevailed, with fairly deep water. With two exceptions only fine grained sediments were laid down. Subsidence had continued so far that all hills in the immediate vicinity were buried. The total thickness of these silt layers is nearly 300 feet, but it is improbable that the water was at any time more than a few tens of feet deep. The recurring presence of sand grains indicates water of such depth that storm waves were just able to

shift sand along the bottom. Subsidence took place simultaneously with deposition.

This silt was probably derived from the Yangtze. The history of the river goes back long before the story of Shanghai begins. As soon as the Shanghai region was well submerged it began to receive its share of Yangtze mud. Only the finer particles carried in suspension reached this area. The accumulation of this 300 feet of silt thus represents an extrmely long time, many times greater than the interval since the sea first invaded the land. These deposits are the bottom-set beds of the delta. At the time of their formation the shore line was many miles inland, possibly along the edge of the mountains from Chinkiang to Hangchow.

This long period of silt accumulation was broken by two intervals of sand and gravel, represented by numbers 18 and 15. These two horizons of 25 and 14 feet respectively present an anomaly. They may indicate intervals of beach or near-shore conditions, but if so coarse sand should be more common in the adjacent horizons. Possibly they occur at times of fairly shallow water and excessive storminess. Under such conditions the mainland might remain tens of miles distant. Storm waves touching the bottom might shift coarse materials from rocky islands several miles distant which during ordinary times would make no contribution to the well region. The possibility that this explanation may be the correct one is further discussed in the section on volcanic activity. Both of these layers contain conspicuous shall fragments.

v

Following the time of silt accumulation came a period of coarse gravel deposits. Quiet water conditions abruptly changed to a beach environment. This transition may have been produced by an uplift of the ocean bottom, or, as is more likely, by the filling up of the shallow sea. This is the second period of pronounced beach conditions, and numbers 11 and 10 consist of 124 feet of gravel. Since all of this was laid down at or near sea level, subsidence must have kept up as before. Gravel accumulates much more rapidly than silt, and the rate of sinking must have been correspondingly more rapid.

All hills in the immediate vicinity of the well area were buried long previously, probably by the time of number 21 and certainly by number 18. The source for the gravel of number 11 and above must therefore have been more distant. In this connection it is important to remember that except for the greater storm waves, practically all movement of sand and gravel takes place on or near the shore. Here the littoral currents and the to-and-fro action of the waves shift material along the beach. If rock cliffs are present along the shore, gravel may be formed and transported for many miles. If, however, there are no rock exposures there can be no gravel. Islands off the shore and hills inland may be located within a few hundred yards of the beach and yet contribute less than a small rocky promentory on the beach ten miles distant.

Mere uplift or the filling in of the shallow sea would not necessarily mean gravel deposits. Only as a supply of coarse material is available

for the along-shore drift will the beach contain gravel or coarse sand. If we assume for convenience that the line of the shore at this time was north and south, rock hills must have been present due north or south of the well location. Let us likewise assume that there was only one hill, and that it was small in size. Since it must touch the beach to contribute gravel, a migration of the shore line to the east or west would quickly eliminate this particular hill as a contributor. Where the Waterworks well shows coarse gravel at certain depths, other nearby wells to the east or west might have the same period characterized by sand. Followed along the trend of the ancient shore lines, wells would be more or less similar, at right angles conditions rapidly change. The very irregular distribution of the sediments beneath Shanghai is thus explained.

VI

Following the second period of beach conditions just described came a long succession of near shore deposits somewhat similar to those which followed the first beach. From number 9 to number 3 there is a general decrease in coarseness. The shoreline was advancing westward and the Shanghai area was again invaded by the sea. Numbers 7 and 5 are silt indicative of quiet water similar to numbers 17 and 16. Between them, however, is a layer of coarse material 58 feet thick which suggests a beach period.

Here as in previous cases the dominant rock fragment is a porphyry, generally a felsite. The nearest rock exposures to-day are the hills west of Sungkiang, which are composed of a rock very similar to that found in the well cuttings. These nine hills are more or less in a line and point toward the well of the Shanghai Waterworks Company on the Rubicon Road. The nearest one is about eleven miles to the southwest, but there may be other hills closer which are now completely buried. These hills were doubtless the source for the porphyry in number 6, and therefore indicate the direction of the shore line at that time.

VII

Deposition finally succeeded in overtaking subsidence and the sea became filled up, causing the sea to retreat eastward. Horizon number 2 represents the third major time of beach conditions. In contrast to the earlier periods its sediments were fine sand rather than gravel. No rock hills were present along the shore line as it then existed, and the waves could only mull over the previously deposited sediments. Although wave work was not able to leave its record in gravel, it nevertheless wrote its autobiography. This beach is characterized by abundant shell fragments and these shells have been rounded and worn by the waves. Their story is just as clear as that of the rock fragments in the deeper sediments. They say, here was the edge of the ocean where the waves did their work.

VIII

The last episode in the development of Shanghai is shown in the uppermost layer of silt and clay. This 16 feet represents the flood plain deposit of the Yangtze ; the subaerial top-set beds of the delta. Marine

conditions at last gave place to a terrestrial environment. The land to-day is but little above sea level, and except for the activity of man in building sea dikes, floods would still add layers of silt much as is the case with the Nile.

The long panorama of the past unfolds a changing record of submergence and deposition. Has sedimentation at last permanently won, or may we expect other times in the future when depression will again gradually set in ? Have we reached the end of the volume, or only of a chapter ? We began our interpretation of Shanghai's history by an examination of present day processes, using the present as a key to the past. Just so, the past prophesies the future. There is no assurance that the same processes operative in the past will not continue into the future. As man reckons time, generations may pass before any pronounced change is evident. As the geologist views the future, however, there seems no reason why subsidence and deposition may not continue until even the highest existing hills are buried. The growth of the Yangtze delta is conditioned upon the contribution of the Yangtze, and its work is far from finished.

Looking still farther into the future, and comparing what has happened so many times elsewhere in similar conditions, this great segment of sediments may be folded and elevated into some great mountain range, only at last to be eroded to construct some future delta. Thus does the story of the Earth unfold.

"The hills are shadows, and they flow
From form to form and nothing stands.
They melt like mists, the solid lands,
Like clouds they shape themselves and go."

TENNYSON

VOLCANIC SCORIA

The most surprising discovery in the study of the sediments from the Shanghai Waterworks Company well is the presence of scoria. Scoria is a product of explosive volcanic activity, where liquid lava is puffed by the expansion of gasses under pressure. As described under the analysis of the well, this material is of two varieties. One is a very fragile frothy substance, shiny black and reaching a maximum size of 5 mm. Fairly complete pieces are common and broken fragments are abundant at certain horizons. In the second type the volume of the rock substance exceeds that of the holes. As a result the pieces are harder and reach a maximum size of 10 mm. It is lusterless, and less abundant than the first variety.

Scoria is formed in only one way. If this is real scoria there must have been a volcano in this area, but no traces remain to-day. The vent or crater may be buried under the delta sands, but in the case of such recent activity as indicated by the well, evidence of its site should be marked by hot springs or similar phenomena. It may, however, lie beneath the ocean or be so deeply buried that any heated waters are dissapated before reaching the surface.

The youngest volcanic rocks in Kiangsu are the basaltic lava flows north of the Yangtze River near Nanking.* These flows are considerably eroded and no craters are preserved. The date of the flows is Oligocene, the fourth period in the geologic time table reading backwards from the present. It does not seem likely that the delta sediments are that old, or that the site of the crater which supplied the well scoria was so distant.

The frothy scoria resembles the material thrown into the air at times of explosive activity. Each piece represents a drop of liquid lava expanded by the enclosed steam, and is thus light in weight. Since it may be thrown to great heights by the eruption of the volcano, it may be drifted about by the wind and fall to Earth some miles distant from the crater. The second type of harder scoria is certainly volcanic. The fragments appear to be derived either from the surface of a lava flow or from coarse volcanic ash. Their presence in the sediments may be due to wave erosion along the shore and hence nothing definite is indicated as to the time of their eruption.

The problem of the coarse sediments in numbers 15 and 18 has already been referred to. It is possible that instead of representing actual shore conditions they were laid down in moderately deep water during times of excessive storminess when large waves were able to shift coarse material along the ocean bottom. Such storminess might conceivably be associated with violent vulcanism and tidal waves.

The evidence thus seems to indicate the presence of a buried volcano within the limits of the delta which has been active within recent geologic time. It may be entirely dead or merely dormant. Such a conclusion is so surprising that no definite decision can be made until deep sands from other wells are available for comparison.

Water Supplies.

The municipal water supply of Shanghai is derived from the Whangpoo River. In addition more than a hundred wells have been put down for private companies and individuals. As already indicated there is no uniformity in the sediments. The sands are not continuous and the character of the water is subject to considerable variation from place to place and at different depths.

The chemical laboratory of the Public Health Department has made analyses of many well waters, and Mr. F. G. C. Walker has summarized sixty of these in his study of the deep well waters.† A few quotations from this article will indicate his findings: "No water has yet been examined which contains less than twice as much dissolved matter as the Shanghai Waterworks water," from the Whangpoo River. "None of the waters can be classed as 'soft.' A few can be termed 'moderately hard,' whilst all others fall into the class of 'hard' and 'very hard' waters. Considering the figures for hardness alone. . . . only a limited

*Geological Survey of China, 1924 "Preliminary Report on the Geology and Mineral Resources of Kiangsu" C. C. Liu and J. C. Chao.

†The Engineering Society of China, vol. XXV, paper No. 7, 1926. "Deep Well Waters in the Shanghai Area" by F. G. C. Walker.

number of the waters could be considered desirable for general use. Not that the others would be termed 'unwholsome,' but that the hardness is greater than desirable in water supplies for general purposes, chiefly on account of its soap destroying properties." "Many of the waters contain very appreciable amounts of iron." "The true deep well waters are organically very pure and it is only where contamination with surface water has occurred that organic impurity is present." "There is no apparent definite general stratification (in relation to types of water) over the area of the Settlement and its vicinity. Consideration of the various tables indicates that a water bearing stratum may be general at a depth round about 300 feet but that the type or quality of the water is not constant."

Water is found in most sands but it is not always usable. In general it rises in the well to within ten or twenty feet of the surface. There are no flowing wells, and artesian wells in the strict sense do not exist in the Yangtze delta. Artesian wells require a continuous stratum of sand between impervious beds continuing from beneath the well to some distant point where they are exposed on the surface at a higher elevation than the mouth of the well. Such conditions are not found here. The sands are discontinuous and since the hills are all of older bed rock there is no provision for the necessary hydrostatic head. The level of the water in the Shanghai wells is probably due to the weight of the overlying sediments. It is interesting to note that studies on coastal plains in other countries show a slight fluctuation in the level of the water in response to changes in tidal and even barometric pressure.

The great contrasts in the character of waters in adjacent horizons indicates that there can be no direct communication and that seepage is very slow. Rainfall sinking into the ground may supply the upper layers, but deep seated waters must be largely original. When the sands were laid down water was trapped in the pore space and has been further locked in by the overlying clays. Many horizons thus show distinctly saline waters. Normal sea water would not be expected for the region has always been under the influence of the Yangtze and has received its contribution of fresh water.

The amount of water which may be secured from deep wells is therefore not unlimited. Wells in thin and local sands may be expected to show a decreasing flow.

Water conditions in the Shanghai Waterworks Company well are as follows :*

278′—343′	(No. 10)	"Showed evidence of a good supply, but our drilling experience proves that the water at this level is not usable."
404′—455′	(No. 13)	"This sand showed a fair supply of water, previous tests from this horizon proves the water to be not fit for use."

*Quotations are from a letter of The China Deep Well Boring Company to the Shanghai Waterworks Company, March 8, 1926.

657′—682′	(No. 18)	" A very poor water producing sand at this level, not sufficient to justify a test, in our opinion."
724′—757′	(No. 21-24)	" We have set the screen casing, which is 34′0″ in length, at between 724′0″" and 757′0," this level showing the most evidence of a free water producing sand which is born out by the quantity now being pumped by air-lift."
813′—837′	(No. 30)	" Very little water indicated in this sand."
855′—bottom	(No. 32 on)	" A little water indicated here."

The great contrasts in composition are indicated in the following analyses in parts per 100,000*

	No. 10	No. 13	Nos. 21–24
Total solids	604.0	66.2	71.0
Hardness, total	171.0	32.0	17.0
,, temporary ..	27.0	30.5	17.0
,, permanent ..	144.0	1.5	0.0
Chlorine	247.0	22.0	14.1
Sodium carbonate ..	—	—	26.2
Iron	Heavy trace	Heavy trace	Trace

Foundation Problems

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I have never known of the natives making silk from the larva of this large Atlas moth. I personally have tried to produce silk gut for my own use from the caterpillar of several of the larger moths found in these parts, but thus far have found but the one that will produce a silk sufficiently strong for fishing purposes. Possibly the large Atlas caterpillar would do this, but it is not used for that purpose. Cocoon similar to that of *Cynthia* but *much larger*.

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number of the waters could be considered desirable for general use. Not that the others would be termed 'unwholsome,' but that the hardness is greater than desirable in water supplies for general purposes, chiefly on account of its soap destroying properties." "Many of the waters contain very appreciable amounts of iron." "The true deep well waters are organically very pure and it is only where contamination with surface water has occurred that organic impurity is present." "There is no apparent definite general stratification (in relation to types of water) over the area of the Settlement and its vicinity. Consideration of the various tables indicates that a water bearing stratum may be general at a depth round about 300 feet but that the type or quality of the water is not constant."

Water is found in most sands but it is not always usable. In general it rises in the well to within ten or twenty feet of the surface. There are no flowing wells, and artesian wells in the strict sense do not exist in the Yangtze delta. Artesian wells require a continuous stratum of sand between impervious beds continuing from beneath the well to some distant point where they are exposed on the surface at a higher elevation than the mouth of the well. Such conditions are not found here. The sands are discontinuous and since the hills are all of older bed rock there is no provision for the necessary hydrostatic head. The level of the water in the Shanghai wells is probably due to the weight of the overlying sediments. It is interesting to note that studies on coastal plains in other countries show a slight fluctuation in the level of the water in response to changes in tidal and even barometric pressure.

The great contrasts in the character of waters in adjacent horizons indicates that there can be no direct communication and that seepage is very slow. Rainfall sinking into the ground may supply the upper layers, but deep seated waters must be largely original. When the sands were laid down water was trapped in the pore space and has been further locked in by the overlying clays. Many horizons thus show distinctly saline waters. Normal sea water would not be expected for the region has always been under the influence of the Yangtze and has received its contribution of fresh water.

The amount of water which may be secured from deep wells is therefore not unlimited. Wells in thin and local sands may be expected to show a decreasing flow.

Water conditions in the Shanghai Waterworks Company well are as follows :*

278'—343'	(No. 10)	"Showed evidence of a good supply, but our drilling experience proves that the water at this level is not usable."
404'—455'	(No. 13)	"This sand showed a fair supply of water, previous tests from this horizon proves the water to be not fit for use."

*Quotations are from a letter of The China Deep Well Boring Company to the Shanghai Waterworks Company, March 8, 1926.

657′—682′	(No. 18)	" A very poor water producing sand at this level, not sufficient to justify a test, in our opinion."
724′—757′	(No. 21-24)	" We have set the screen casing, which is 34′0″ in length, at between 724′0″ and 757′0," this level showing the most evidence of a free water producing sand which is born out by the quantity now being pumped by air-lift."
813′—837′	(No. 30)	" Very little water indicated in this sand."
855′—bottom	(No. 32 on)	" A little water indicated here."

The great contrasts in composition are indicated in the following analyses in parts per 100,000*

	No. 10	No. 13	Nos. 21–24
Total solids	604.0	66.2	71.0
Hardness, total	171.0	32.0	17.0
,, temporary ..	27.0	30.5	17.0
,, permanent ..	144.0	1.5	0.0
Chlorine	247.0	22.0	14.1
Sodium carbonate ..	—	—	26.2
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The Tussore Silk Moth larva is found feeding upon certain of the hard woods in the upper forested areas. This moth is quite common, the characteristic being the exceptionally long strand of strong silk to which the cocoon is suspended. The caterpillar of this species is almost identical with that of the *Telea polyphemus*, common to eastern North America, but not found in China. I have not found the Fukien natives trying to make either silk or gut from the larva of the Tussore Moth.

Philosamia cynthia, or its progenitor, is a very common moth in Fukien, possibly the most common of the larger moths found in these parts. As to what extent the natives have tried to manufacture silk from this cocoon I am unable to say off-hand, but nothing is now being done along that line either for the purpose of producing silk thread or silk gut. I have tried to make gut from this caterpillar, but have only been able to produce a gut unsuited for fishing purposes.

It is possible to confuse the *Cynthia* moth with the *Promethia*, as the general habits and life history are quite similar. There is a difference in the caterpillars, however, especially in the tubercles upon the body, which renders identification very easy. I have not found *Promethia* in these parts. The *Cynthia* moth can easily be identified by the three rows of white spots so prominent upon the abdomen of the insect. This insect was introduced into America in 1861 for the purpose of producing silk, but the thing fizzled out on account of the coarse character of the silk.

For the purpose of manufacturing silk gut for commercial use there is but one caterpillar used, so far as my observation goes, and that is the caterpillar found so abundantly upon the camphor and liquid amber trees. I have never taken the trouble definitely to classify this moth, though doubtless you will readily place it from the wings of the adult female which I inclose here with. The male is much smaller, though of a similar colour. I would be glad if you would write me giving the classification of this insect.*

Were it not for the fact that a very large number of the caterpillars of this moth are parasitized there would not be left a green leaf upon either of the trees which are food plant for the larva. It is common for men to come around villages and make a bid for the caterpillars upon certain trees early in the spring, basing their bid upon the droppings under the trees. There are two crops of these worms harvested each season, or at least there are two crops produced, and it is no uncommon thing to see large trees absolutely bare of leaves, the tree being literally covered with the caterpillars roaming up and down the limbs in search for food.

While this caterpillar attaches its cocoon to the bark of the tree on both the smaller and larger limbs, and on the trunk in great numbers, still many of the worms crawl down the tree and seek a pupation place elsewhere. The professional gut maker watches for the time when the worms head down the tree as a signal for the silk being ripe. It is claimed by these people the worm comes down the tree to drink before beginning to spin, and this is the signal waited for.

The common method employed by the rustic in these parts for the making of the silk, and this is the method I use for making gut for my own use, is to break a hole in the back of the caterpillar into which is put a drop or so of vinegar, (I suppose any acid would do), and then two strands of thread the size of a small grass-stem and a foot or more long are taken out. These two strands represent the entire silk from which the caterpillar makes its large cocoon. One end of the strand is attached to some object securely, and then the person begins to back away slowly working his forefinger and thumb back and forth along the strand of silk. Finally the other end is altached to some object where the silk is allowed to remain for a while in the air. This is all there is to the making of gut as done here. A caterpillar will make two lines of gut from ten to twenty feet in length, the longer the strand the smaller the gut, of course.

The Japanese seem to have adopted a method for making strands of indefinite length from this worm, as lengths from fifty to one hundred yards are sold in sporting goods houses in America, which are known as "Japanese Gut."

I could secure for Col. Logan a bushel of caterpillars half grown now, but this would be useless, as there would be no way to get them to Shanghai, and too, there

*We regret we are unable to do this, not having a specimen in the local museum.—Ed.

are no food plant trees in Shanghai, unless it should be a tree in the parks upon which the larva of the Luna Moth feeds. I have found this caterpillar, or rather the cocoons, in considerable numbers attached to trees of this ash-like family up river.

Pardon me for taking so much of your time on this subject. It happens to be something in which I have been interested and in which I have experimented considerably. If Col. Logan were here for a while we would have a good time together carrying the experiments to some conclusion.

Cordially yours,

HARRY R. CALDWELL.

CICADAS LATE THIS YEAR: Usually making their appearance between July 1 and 4, the cicadas were several days late this year, the first being heard in Shanghai on July 7. This is undoubtedly due to the cool weather we have had, and it is probably more than a mere coincidence that the first really hot day was also July 7. The life history of the cicada is one of intense interest, and the reader who is not familiar with it cannot do better than read what the great French entomologist Fabre has to say on the subject. Incidentally there are few more interesting sights than that of a cicada emerging from its pupal stage. This takes place at night, and can be witnessed in any garden where there are large trees. An electric torch is all that is necessary, the grubs being found crawling up the tree trunks, and the perject insects emerging from them with remarkable rapidity. The marvelous metamorphosis will be a revelation to any who have not witnessed it before.

METEOROLOGY

WATER SPOUTS OBSERVED AT HENLE: On July 8, at three o'clock in the afternoon, a party of houseboaters witnessed the sudden formation of a water spout about ten or fifteen miles away in a north-north-westerly direction. It was a particularly fine one, being perpendicular. Shortly afterwards a second water spout formed quite close to the first one. This assumed an almost horizontal position. Meanwhile the first one slowly lifted and vanished into the clouds. The second one appeared to drift towards a cloud bank, and then suddenly vanished, the whole phenomenon being over by a quarter past three. A very marked cooling of the temperature was noticed, while the air which had been heavy and oppressive freshened up.

There is probably some connection between the formation of these two water spouts and the local tornado which struck the Yangtszepoo district of Shanghai at between noon and 12.30 on the same date, as well as with the severe downpour of rain which took place in Shanghai at about 2.30 to three o'clock on the same afternoon.

The Shanghai tornado, said to be the first in the history of this port, was also of the nature of a waterspout. It did considerable damage, flattening a large cotton warehouse, lifting off roofs of native houses and carrying away garden fences. It was when crossing the Whangpoo that it assumed the form of a water spout.

A. DE C. S.

PHYSICS

ROCKETTING TO THE MOON: There has been in recent years some revival in the interest taken in schemes for travelling into outer space. Rockets were formerly used for military purposes and are still employed for life saving and pyrotechnics. Their velocities and ranges are quite moderate but could conceivably be greatly increased. In 1919 Professor Goddard of Clark University (U.S.A.) published a paper (Smithsonian Miscellaneous Collections, Vol, 71, No. 2) on the subject of long range rockets. Incidentally it may be remarked that the local copy of this paper in the Royal Asiatic Society's library has been consumed by the learned white ants there during a recent banquet. In 1923 a book entitled "Die Raketen zu den Planetenraumen" was published by Herr von Herman Oberth. Messrs. Ziolkovsky, Valier and Opel have done work on the subject and quite recently M. Esnault-Pelterie, a well-known writer on aviation, has given the matter attention.

The facts are comparatively simple. A vertical velocity of 11 kilometres per second would enable a body in a *vacuum* to overcome the earth's gravitation. Incidentally it should be observed that it would still remain subject to the sun's field of force, but this doesn't signify very much until the question of leaving the solar system arises.

The chemical energy of good explosives or of a hydrogen-oxygen mixture is about 5,000 to 7,000 British Thermal Units per pound (or say 3,000 to 4,000 calories per grain), and about *four* times this energy is required to give one pound (or one grain, as the case may be) the required velocity in a vacuum.*

Consequently if a rocket can be designed in which the weight of the explosive *greatly* exceeds the weight of the case and if the latter can be propelled by a series of explosions so as to benefit by the *full* mechanical energy of the propellant, the case can be lifted out of the earth's field of force. Given the right initial direction, the case could be landed on the Moon, Mars or any other planet.

Two very serious difficulties occur. The resistance of the earth's atmosphere during the first few seconds at the specified speed is prodigious. The air resistance to a 75 millimetre shell at 11 kilometres per second is more than ten tons! It would therefore seem necessary to propel the rocket by some other means (by a gun, or by enclosure in a larger rocket) at a comparatively low speed (say 2 kilometres per second)† to such a height in the atmosphere that the air-resistance is relatively negligible before the very high velocity required is imparted to the rocket. A start on a *very* high mountain would be an appreciable help in this respect.

The second difficulty is more serious. The products of combustion cannot easily be induced to leave the rocket with sufficiently high velocities. As long as the velocity of the rocket is less than the critical one, momentum must be given to the rocket. An equal and opposite momentum must simultaneously be given to the backward escaping products of combustion, which means a backward discharge of appreciable mass with considerable velocity. Unless the velocity of discharge is very high the mass discharged per unit of time will be inconveniently large and the explosive will be exhausted before the necessary rocket velocity is reached.

One cannot recommend the vehicle from the point of view of comfort. The acceleration would tend to squash the passengers into pulp. This is the fatal objection to Jules Verne's gun method of lunar travel. If the acceleration of the rocket is reduced to only a few times the gravitational value the explosive tends to be exhausted before the necessary speed is reached. The facilities for the return journey are distinctly lacking and the landing arrangements are unsatisfactory. An easy landing could only be assured by further explosive for which there is no accommodation. Presumably only lunatics would receive passports from the lunar consular authorities!

It may be remarked that any really good method of liberating infra-atomic energy *would* promise a means of attaining the end sought but chemical energy seems barely sufficient.

HERBERT CHATLEY.

MEDICINE

GLAND GRAFTING AND REJUVENATION: In recent accounts in the daily papers Dr. Serge Voronoff is reported to have stated that his well-known operations, wherein he grafts the glands of animals into human patients, thereby greatly improving their general health and physical and mental condition, are nothing either new or revolutionary, but are only an application of principles long ago established and theories widely held. He does not claim that the transplanting of the sexual gland will reawaken sexual desire, so much as improve the vitality of the body cells and result in a physical and psychological change in the patient that is always for the better. The operations are based on the theory that it is the

*It is not absolutely necessary to attain this velocity but the energy required is the same as would correspond to this velocity.

†This rather exceeds the muzzle velocity of the "Big Berthas" that bombarded Paris from Laon.

sexual glands which elaborate a substance which stimulates the vitality of the cells of the body, and that it is the atrophying of these glands that brings on senility. There is no fear of animal instincts being developed in the patient.

A NEW DISINFECTANT: A new and satisfactory disinfectant has recently been placed on the Shnghai market, though it has been sold for a year or so in England. This is Monsol, and we are informed by a local practitioner that it is very good, especially in the case of wounds. It is a powerful germicide, but at the same time does not corrode the flesh. It can also be taken internally, being put up in a special form for this purpose. It is one of the Imperial Chemical Industries, Co., formerly Brunner, Mond & Co.

SHOOTING AND FISHING NOTES

SHOOTING

SNIPE AND WOODCOCK IN AUGUST: It is usually during the first half of August that the return of the spring snipe from their breeding haunts in the far north is heralded by the appearance of a few birds in suitable spots in such places as Pei-tai-Ho and Tsingtao in North China. Sportsmen are always on the lookout for them at this time of year, and may even be lucky enough to bag a few as early as the latter part of July in the most northerly summer resorts.

Woodcock, too, are liable to appear in certain favoured localities in August.

SHORE SHOOTING: Sportsmen who have the opportunity of visiting the sea coast will find that fairly good shore shooting is to be had during the latter part of August. Sandpipers, sand-plovers, turnstones, knots, whimbrels, curlews and godwits begin to appear, usually in small flocks. But to those used to snipe, duck and pheasant shooting this form of sport—if it can be called sport—will hardly appeal.

BEAR IN MANCHURIA: Though the pelt of the Manchurian black bear has not developed yet, the present is a very good time of year to hunt this animal, owing to the fact that it is now that the maize crops are coming on, and Bruin will risk anything to get at the sweet ears. Almost any maize field adjacent to woods of forest where bears are known to occur will be found worth watching, and as soon as it is ascertained that one of these animals is visiting the field, all that is necessary is for the sportsman to choose his spot and wait for his quarry from about sun-down till it is too dark to see. Perfect silence and stillness is required, but if these two conditions are complied with, the hunter will not have to sit out many evenings before he gets his shot. There is something very exciting about this form of sport.

HARES AT HENLI: We have been informed by recent visitors to Henli that hares are very plentiful there, and native hunters were being employed by the local farmers to kill them off. Two hunters, armed with gas-pipe guns, were seen to kill several in a comparatively short time and small area. The hares were hiding up in the swordgrass and scrub on the graves; but, according to the natives, they came out at night and did much damage to the crops.

FISHING

NO FISHING IN SHANGHAI DISTRICT: The opening of the municipal parks to the Chinese and the prohibition of fishing in the various lakes and ponds contained therein has deprived local anglers of their last chance of getting any sport in the immediate vicinity of Shanghai. Many large ponds outside the parks that used to yield large fish have now been filled in for building purposes.

THE KENNEL

THE CARE OF THE DOG IN HOT WEATHER: The intense summer heat of this country is very trying to dogs of all breeds, and the sensible and humane dog-owner does all he can to make his dogs as comfortable as possible during the summer months.

It goes without saying that a dog should never be left in a kennel-run without other shade than that provided by the kennel itself. In summer the kennel is hot and stuffy, and, if not sprayed every few days, so full of mosquitos that the dog gets frantic and sneaks out in the glaring sun rather than submit to the torture of innumerable mosquito bites.

Exercise is necessary at all times of the year, but in summer should take place in the early morning or late afternoon. It is very unwise to send a dog coolie out walking with the dogs during the hot hours of the day. Many and many a time have I seen the poor dogs tied up outside a Chinese hut in the merciless mid-day sun, while the dog coolie was nowhere to be seen.

Heat prostration and heat attacks are very often the results of such exposure. Of these two forms heat prostration is by far the more serious, but not nearly as common as heat attack.

The first symptom of heat prostration is a sudden restlessness and excitement. The dog barks in the most excited way at the smallest things, and will not stay still a moment. After a while he begins panting rapidly, and soon after collapses in a heap, too weak to move. At first the pulse is very rapid, but soon it becomes slower and slower, until it is very slow and weak. Breathing also becomes slow and shallow. At this stage the membranes of the eyes, which to begin with turn a bright red, slowly change colour, until they are quite purple. Sometimes the dog loses consciousness. Unless detected in the earliest stages, heat prostration is nearly always fatal.

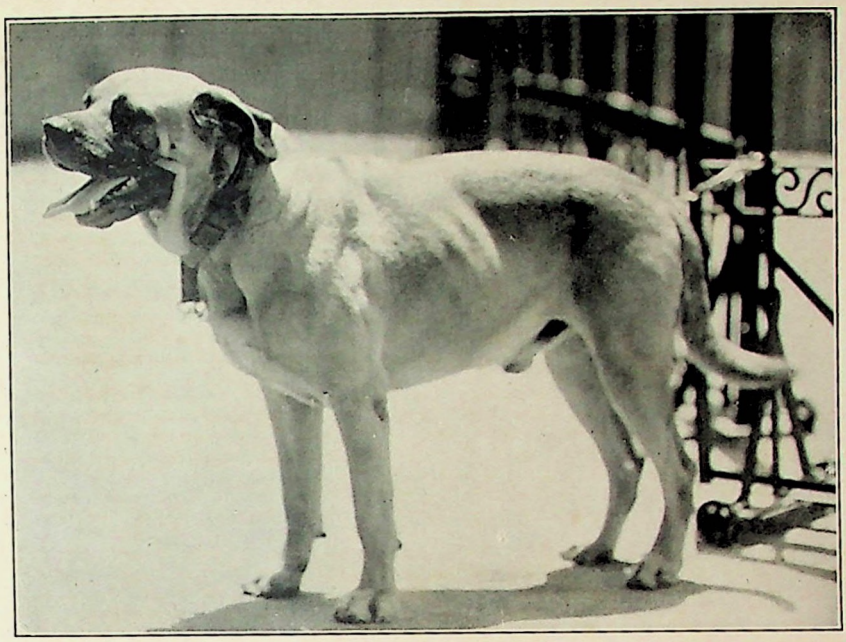
Treatment : Bathe the dog's head and neck, especially the place where the neck joins the skull, with cold water, and do not stop until the dog is out of danger. An enema of salt and water should be given at once. Also a purgative, preferably milk of magnesia. Every ten to fifteen minutes make the dog swallow about 50 drops of aromatic spirits of ammonia in water (small dogs only ten drops). If a veterinary is not at hand to administer hypodermics of strychnine, atropine or the like, use very strong black coffee given in a spoon about every half hour. If the dog pulls through, his diet for at least a fortnight after the prostration should consist of nothing but milk, beef tea and puppy biscuits.

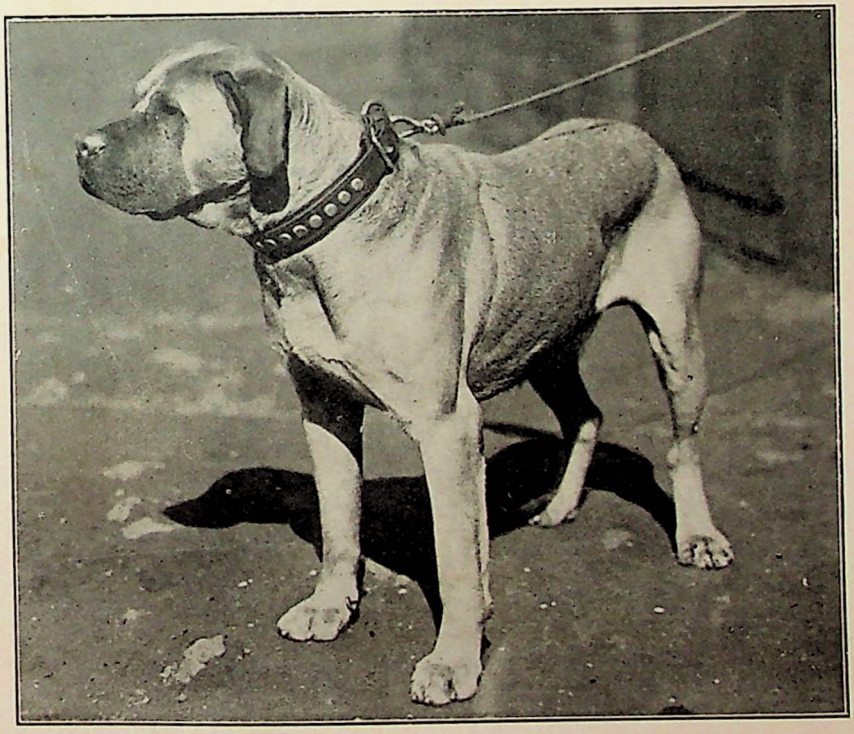
Heat attacks are quite common, and are very often mistaken for rabies. It is, however, quite easy to tell the difference, for whereas rabies is always preceded by symptoms of some kind, listlessness, shyness, seeking out dark corners to hide, or the like, heat attacks are very sudden ; but a much more apparent difference, and one which not only the owner can be sure of, is that while the dog suffering from heat attack froths freely at the mouth, the rabid dog's mouth is quite free from froth, the saliva hanging down in long tough strings.

The dog suffering a heat attack all at once begins running about in an aimless way, swaying from side to side and bumping against everything. The eyes become wild and staring, and froth and saliva show around the mouth. The animal then falls down in the grip of one violent convulsion after an other : the legs finally begin to jerk spasmodically, then stiffen, and a little after the whole body gets stiff and rigid and breathing seems to cease. After about a minute or two the dog draws a very long, deep breath, gets up unsteadily, then starts running and running, generally looking back over his shoulder now and then, as if to see whether someone should be pursuing him. After a few hours the dog is normal again, but very tired. The following couple of days he should be kept quiet and fed on a light diet.

As heat attacks are generally not dangerous, it is unnecessary for the amateur to do anything ; a purgative should, however, always be given as soon as the dog is normal again.

To prevent heat prostration and heat attacks, and to cool the dog off and make him more comfortable on very hot days, spray him over with a garden hose till he is thoroughly wet.





Two fine Bull-Mastifs. The upper is "Ponderus," the pedigreed Son of Farcroft Fidelity, shown in the lower picture, the unbeaten, retired Grand Champion of the Breed, and Farcroft Chrystal, also a Prize Winner. "Ponderus" was imported into Shanghai by Dr. Edgar. The Breed was recognized in 1924, and is now firmly established.

Besides these two direct results of the hot climate, the dog-owner in China has to contend with another less serious but much more common nuisance, summer eczema. Most imported dogs get a touch of this the first summer here, but some are much more susceptible than others. A dog's diet has a great deal to do with his susceptibility to summer skin complaints. The summer diet should be lighter than the winter diet, and should be quite free from starchy matter ; it should contain more salt and more roughage than the winter diet. Salt makes the dog thirsty and it is good for him to drink a lot— he should, of course, at all times have access to fresh cool water—while roughage stimulates the digestion and makes for healthy elimination of waste matter. Bran is a good roughage, also carrot leaves, spinach, cabbage or turnip leaves, boiled or raw, chopped fine and mixed thoroughly with the more palatable food.

In bad cases of eczema it is best to remove the hair from around the inflamed places. Wash with warm water and lysol in the proportion of one part lysol to 150 parts water, dry off with clean rag or cotton, apply healing ointment. This should be done twice a day. A good healing ointment consists of one dram coal tar liquor, one dram compound tincture of benzoin and one dram of zinc oxide, with a base of lanoline up to one ounce.

Every morning give the dog a dose of Eno's or Epsom salts, or still better a cake of fresh yeast.

Fleas are sometimes very troublesome during the summer months. Fortunately, in hot weather, they have a habit of clustering together on the dog's stomach where the hair is thin, which makes it easy to remove a large number at a time with very little trouble. Just soak a rag in lysol and water, one part of lysol to eighty parts of water, and wipe the dog's stomach with it.

Ticks are also one of the minor nuisances of summer time. Before removing a tick, always pour a good dose of oil, gasoline, brandy or the like over it, then pull it out very gently. If pulled out with one pull, the head will generallly stay in, which will cause irritation and soreness.

ELSE DUNCAN
Hoffnungsheim Kennels.

THE GREYHOUNDS IN SHANGHAI: The extreme interest aroused by the starting of greyhound racing in Shanghai was reflected in bidding for Sir Victor Sassoon's and other dogs that were put up for auction on July 1. Of the seven dogs belonging to Sir Victor, four had been purchased outright, while the other three were leased. The highest price was paid for "Veiled Secret," the fine hurdler, who fetched $800, although only a leased dog. "Violin String" and "Very Sweet" fetched $625 and $600 respectively. The total sum realized on the sale of this set of dogs was $3,540, which meant that a sum of $2,180 went to St. Dunstan's Home for the Blind, as Sir Victor had put his dogs up on the understanding that anything they fetched over their initial cost should go to charity, and this was the charity chosen.

Of the other dogs sold, "Orange Pippin" fetched the highest price, namely, $850, bought outright. The three pups, "Glen Lamont," "Glen Ogle" and "Glen Roberts," which were born on the way out from England on December 12, 1927, fetched $325, $225 and $210 respectively. They were the offspring of "Clear Jet" out of "Diana Mary," being nice-looking animals. The seven pups born last April, though still young, fetched prices ranging from $30 to $90. They were by "White Park," a very fine hurdler, out of "Katinka." A pair of very young puppies by "Doodah," out of "Shalimar," realized $75. A surprise was experienced when a number of dogs that had been warned off the Luna Park course, either as confirmed fighters or for other defects, nearly all sold, fetching prices of from $15 to $35 for the dogs, while as much as $50 was paid for the only bitch thus offered.

After the sale two fine-looking dogs that had recently been imported from Australia were exhibited, and names of subscribers for more were taken, the proposal being to import a lot more of the animals. These Australians are large, powerful dogs, and will certainly imporve the times on Shanghai courses. They will be imported on the "Subscription Griffin" principle.

The record time for the Luna Park Course was lowered since last reported upon in this journal, from 30.70 seconds to 30.57, the latter time being done by Romford on June 30.

BULL-MASTIFS IN SHANGHAI: Those who are seeking a good breed of watch-dog to guard their persons or property during these times of armed robberies and kidnapping could not do better than turn their attention to certain very handsome dogs which were inported from England a little while ago by Dr. Edgar, the well-known veterinary surgeon. These are a pair of bull-mastifs from Mr. S. Moseley's Kennel, called "Ponderus" (the dog) and "Farcroft Fancy" (the bitch), which were to be seen at the China Kennel Club's annual show last May. The dog, "Ponderus," is the offspring of "Farcroft Fidelity," the retired, unbeaten Grand Champion, out of "Farcroft Chrystal," a fine prize-winning bitch, and both bred by Mr. Moseley, who is President of the National Bull-Mastif Police Dog Club, and one of the foremost breeders in England. The bitch, "Farcroft Fancy," is also by "Farcroft Fidelity" out of "Farcroft Silo." Her present litter of four pups were the offspring of "Farcroft Formative." The breed was recognized in 1924, the dogs being used mainly for police work as guardians of persons and property. They are also kept by gamekeepers who have to deal with dangerous poachers. They are large dogs, intelligent, and are said to be the most savage (to strangers) breed of dogs known. They are well-known for pinning and holding a man without inflicting wounds. We predict a future for these handsome and useful animals in Shanghai.

THE GARDEN

INSECTICIDES: August being a month when one of the chief duties of the horticulturist is to prosecute with vigour the war against insect pests, a few notes on the more useful insecticides may not be out of place.

Perhaps the one most needed is a destroyer of aphids, scale insects and other forms which suck the juices of plant-stems. For these the old and tried nicotine and soap wash is one of the best remedies. The ingredients are as follows:

Nicotine (96 per cent purity)	1½ to 2½ ounces.
Soft soap	4 ounces.
Soft water	20 gallons.

The soap should be dissolved in the water and the nicotine poured in and the liquid well stirred. Then apply to the infected plant by means of a fine sprayer. This may be used on caterpillars as well, but it should not be used on vegetables the leaves of which are to be eaten within four or five weeks. For this reason it is not available for exterminating the caterpillars of the cabbage butterfly which are always such a nuisance.

A non-poisonous spray that may be used with good effect is paraffin jelly, which is made by simmering in a closed cauldron a mixture of 5 gallons of paraffin oil, 8 lbs. of soft soap and 10 gallons of soft water. When cool this forms a jelly which may be used in the proportion of 10 lbs. to 40 gallons of water, and applied as a spray.

To destroy leaf-eating insects such as caterpillars and beetles what is known as Arsenate of Lead solution may be used. The ingredients are 2 ounces of commercial Arsenate of Soda, 7 ounces of Acitate of Lead and 10 gallons of water. The chemicals should be dissolved in the water and the solution applied as a fine spray.

PRAYING MANTIS A BENEFICIAL INSECT: That the praying mantis is a beneficial insect and one to be encouraged in the garden has been very forcibly demonstrated to us recently. A friend found a mantis egg-capsule in his garden and took it into his house for observation. A day or so later he observed the young mantises coming out, so he placed the capsule on a rose bush in his garden which was heavily infested with aphids. Shortly he noticed that the young mantises

were attacking the aphids, and in the course of a day or two they entirely freed the rose bush of the pest.

The praying mantis is a voracious insect, feeding on other, soft-bodied insects, including caterpillars, moths, butterflies, grasshoppers and even other members of its own species. It should on no account be destroyed when found in a garden, but rather encouraged.

OTHER BENEFICIAL INSECTS: Other beneficial insects are various groups of wasps and flies which are parasitic on the grubs of other insects; and the gardener should learn to recognize these and treat them as honoured guests. The majority of them are so small, however, as to escape notice, and these are the most valuable; but some are conspicuous enough. Amongst these are the ichneuman wasps. One important form has a very long ovipositor with which it bores through the bark and wood of trees and pierces the bodies of the larvae of such insects as the goat-moth, the saw-fly or the longicorn beetles, depositing its eggs within the tissues. When these hatch out they devour their host. Usually the mother wasp is unable to withdraw her ovipositor, and dies a miserable death where she is. Another species of wasp makes little pot-like mud receptacles within which it imprisons live caterpillars, and then lays an egg or two. The live caterpillars serve as food to the wasp's larvae when they hatch out. A rather large wasp may frequently be seen carrying off a fat caterpillar two or three times his own weight. Here, too, the fate of the caterpillar is to be incarcerated within a mud prison to serve in due course as the living food of the wasp's larvae.

Dragonflies devour an enormous number of flies and mosquitoes, and so should be encouraged in every way.

Centipedes, though not strictly speaking insects, and unpleasant enough companions for the house, are, nevertheless, great destroyers of all kinds of noxious insects. Even so it is not easy to bring oneself to allow such creatures the freedom of one's garden.

AUGUST NOTES

AUTUMN SOWING: August is very much like July, only more so, if we may use the phrase. It is now very hot and damp. Vegetation grows rank and certain flowers run riot. But now is the time to begin preparing for next winter and spring. In order to get early winter or spring crops, autumn sowing is necessary, and in many cases this may begin in August. The seeds of such flowering plants as campanula, pansies, primula, wallflower and forget-me-not may be sown, as well as those of many other annuals; also certain vegetable seeds may now be sown.

SOCIETIES AND INSTITUTIONS

ANNUAL GENERAL MEETING OF THE ROYAL ASIATIC SOCIETY: At the annual general meeting of the North-China Branch of the Royal Asiatic Society held on June 28, the President, Sir Sydney Barton, stated that the Society's affairs had been so fully discussed at a recent special general meeting that there was little further to be said upon the subject. The committee appointed at that meeting to consider the question of raising funds for a new building had been working upon the problem.

The Librarian reported that 3,204 people had used the library during the year; 543 volumes had been drawn out by members; and 61 new books had been received and four purchased.

According to the Hon. Secretary's report 42 new members had been elected, thirteen members had resigned, and six had been lost to the Society by death. It was recorded at the meeting that Mrs. Ayscough, who had served on the council of the Society for many years as Librarian, had been given a doctor's degree by Arcadia University, Nova Scotia.

The following officers were elected for the ensuing year : President, Sir Sidney Barton ; Vice-Presidents, Mr. Isaac Mason and the Rev. Evan Morgan ; Curator of Museum and Editor of the Journal, Mr. Arthur de C. Sowerby ; Librarian, Mrs. E. C. Enders ; Honorary Treasurer, Mr. B. C. M. Johnston ; Honorary Secretary, Mr. R. D. Abraham ; Councillors, Mr. C. Kliene, Dr. C. Noel Davis, Mr. Ch. Grosbois, Dr. Hu Shih, Mr. G. L. Wilson, Dr. H. Chatley and Mr. J. R. Jones.

EDUCATIONAL NOTES AND INTELLIGENCE

SHANGHAI COLLEGE COMMENCEMENT EXERCISES : On June 23, the Shanghai College held its sixteenth annual opening exercises. An address on "A Graduate's Philosophy of Life" was delivered by Dr. S. K. Wei, Commissioner of Education for Greater Shanghai. There were fifty-five graduates for the year, forty-five of whom received the B.A. degree and ten the B. Sc. Seven students of the Lutheran College, Hunan, who had studied at the Shanghai College during the temporary closing of the former, received degrees.

This is the first commencement held under Dr. H. C. E. Liu, the new Chinese President of Shanghai College, and there was a record number of entrants for next session.

HANGCHOW CHRISTIAN COLLEGE TO BE CLOSED : As a result of the trustees in America representing the Northern and Southern Boards of the Presbyterian Church being unable to see their way to concede to the terms under which it may operate, set down by the Nationalist Ministry of Education, the Hangchow Christian College will be closed. The trustees, it is reported, feel that they cannot agree to the demand that attendance in religious education and at religious services must be voluntary, not compulsory. This is one of the requirements governing schools primarily supported by Church constituencies in Western lands, and it is diametrically opposed to one of the chief conditions required of students entering such Christian institutions, namely, that attendance at classes in religious instruction and at religious services is compulsory.

PUBLICATIONS RECEIVED

BOOKS :

The Survival of the Unfittest, by Charles W. Armstrong : The C. W. Daniel Company, London.

The China Architects and Builders Compendium, 1928 : North-China Daily News & Herald, Ltd., Shanghai.

July Supplement, North-China Desk Hong List, 1928 : North-China Daily News & Herald, Ltd., Shanghai.

PERIODICALS :

American Journal of Science—Chinese Economic Journal—Chinese Economic Bulletin—Discovery—Modern Review—World's Work—Philippine Journal of Science—Biological Bulletin of the Marine Biological Laboratory, Woods Hole, Mass.—The Far Eastern Review—Extrême Asie—Bolletino del Laboratorio de Zoologia Generale Agracia—Man—Mid-Pacific Magazine—Game and Gun—The Journal of the Society of Chemical Industry, Japan—The Chinese Recorder—Japan—The Annals and Magazine of Natural History—The New Zealand Journal of Science and Technology—The Salmon and Trout Magazine—Natural History—Lignan Science Journal—The Straits Budget—Nature Magazine—Shipping & Engineering—The Chinese Student's Monthly—Universal Review—Bulletin of the Pan-Pacific Union—Japan Overseas Travel Magazine—Skandinavien-Island—World Unity—The Naturalist—Bulletin of the Geological Society of China—The Chinese Students' Monthly—Chung Hua—Journal of the Bombay Natural History Society.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