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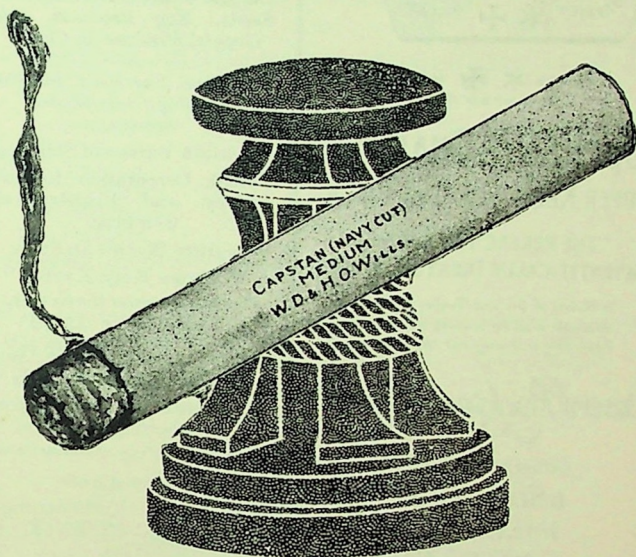
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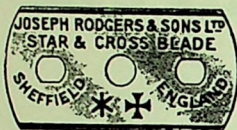


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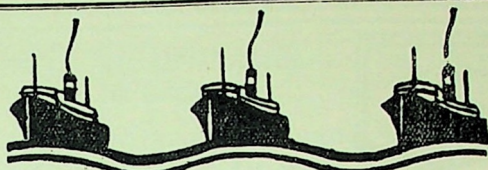
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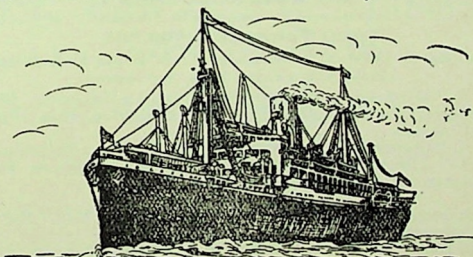
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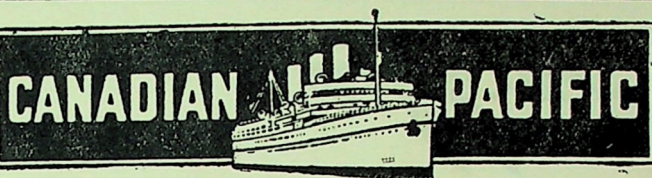
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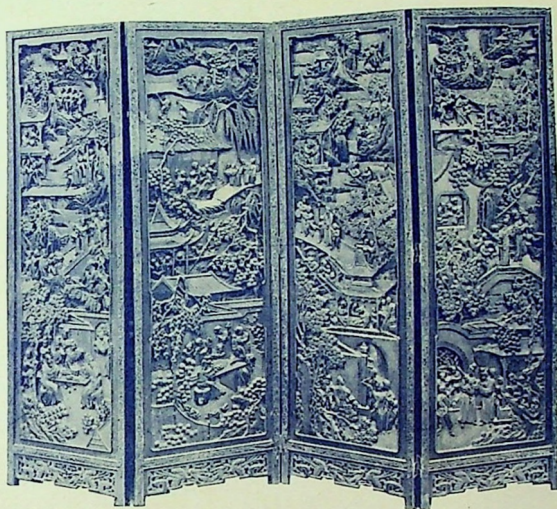
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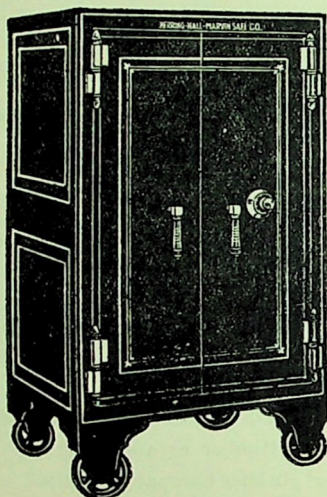
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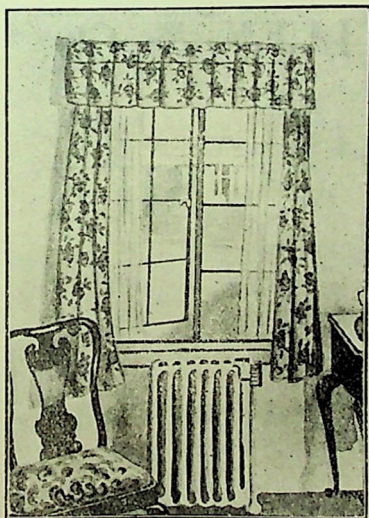
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No. 3

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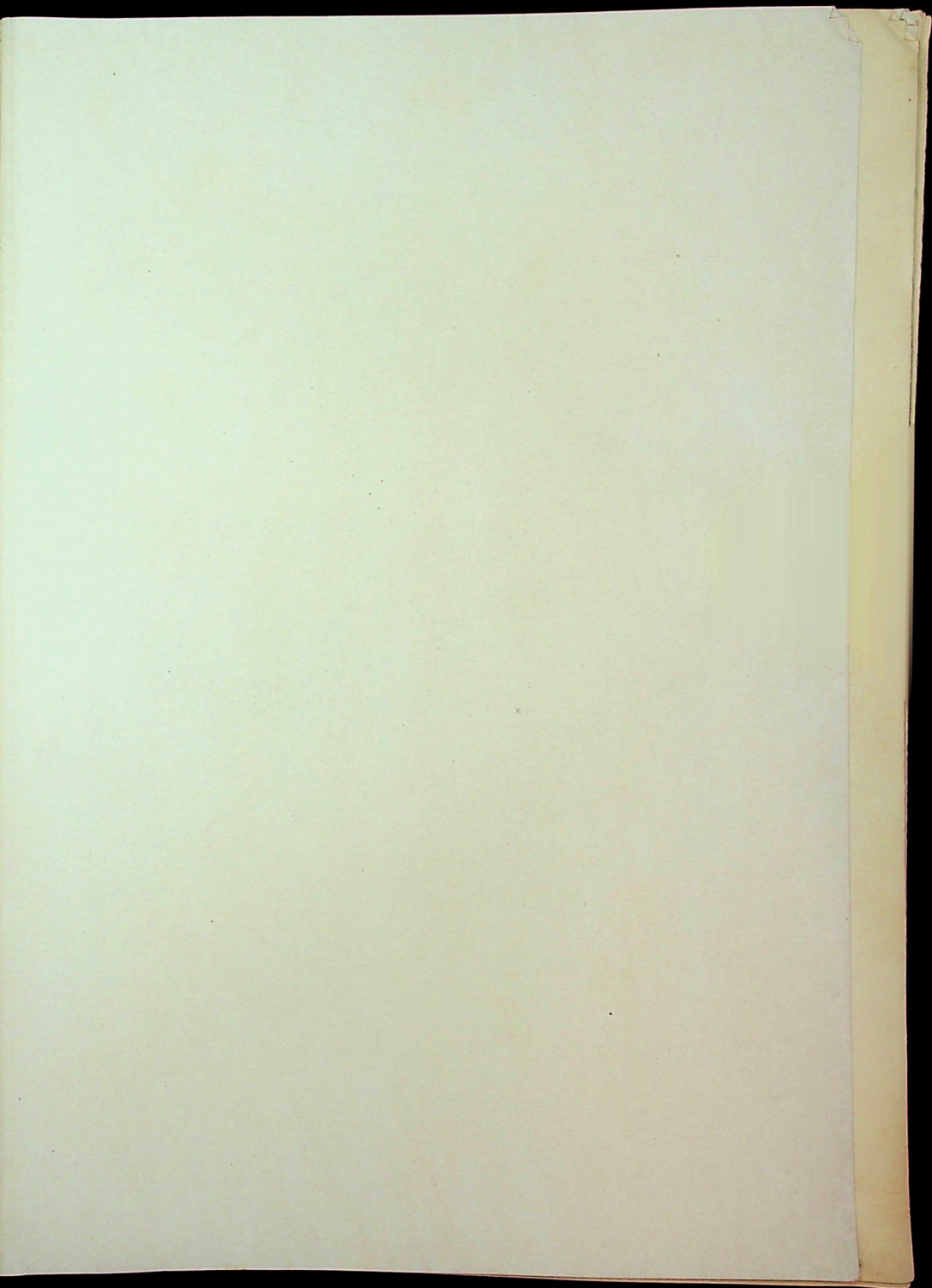
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ANCIENT CHINESE SCULPTURE

(From the Peter J. Bahr Collection).



A Head carved in Black Stone, showing Græco-Buddhist Influence.
T'ang Dynasty.

THE
CHINA JOURNAL
OF
SCIENCE & ARTS

VOL. V

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No. 3

DISCOVERY

BY

ARTHUR DE C. SOWERBY

In the present issue of this Journal we have accounts of the experiences and work of two independent naturalist-explorers, namely Mr. Floyd Tangier Smith and Mr. Harold A. White: the former having returned recently from an expedition into Fukien on behalf of the China Society of Science and Arts, and the latter having recently completed an extensive expedition in Abyssinia and Indo-China in search of big game and other animals for the American Museum of Natural History.

In reading these through, one cannot help asking the questions: what is it all for: what is the significance of scientific exploration: what is to be gained by this going into the wild places of the earth in search of animals, strange and fierce, or plants rare and new: why should civilized men risk their lives and health in the quest behind the ranges?

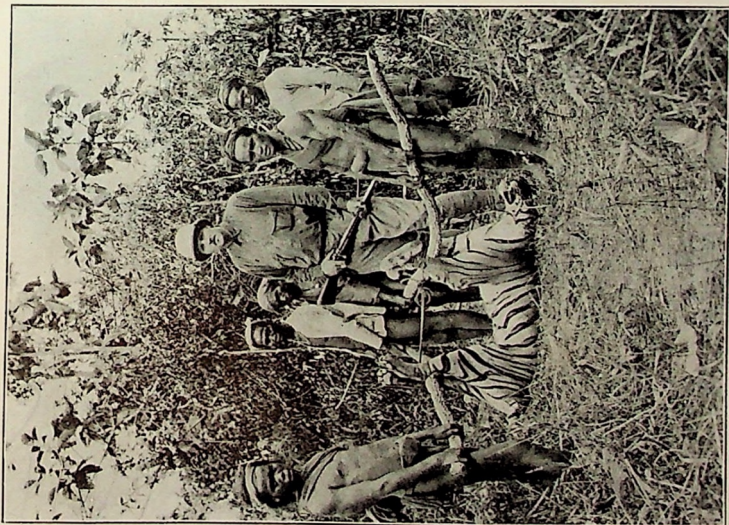
If the answer required is to be in terms of actual material gain or intrinsic profit, it is not so easy to give. The returns to be obtained by a scientific expedition into, say, the heart of Africa, are neither immediate nor obvious, except, of course, to the mind trained to appreciate such things. A few specimens of big game animals, twisted horns and shrivelled skins, a few stuffed birds and discoloured reptiles in bottles and tanks, a few dried sprays of flowers and the withered leaves and branches of trees—what are they, that a man should give his life for them? A few topographical facts, a few photographs of hideous savages, a few scraps of data jotted down in a ragged note book—what is their worth that a man should endure hunger and thirst and fatigue, away from his kind in the dank, fever-ridden jungles of the tropics in order to secure them? Viewed from this angle—nothing! In terms of capital

expenditure and dividends—worse than nothing! And yet year by year men go into the lonely places searching for new forms of animal and plant life, mapping the unknown territories, studying the savage inhabitants, and gathering facts, data, information of all kinds, finally bringing back with them records of all they have done and seen and heard in the form of trophy, film, sketch or the written word.

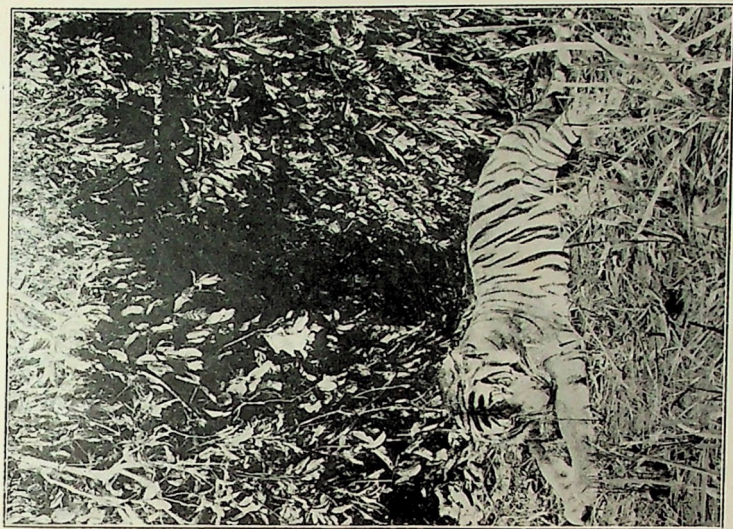
To get at a satisfactory answer to our first questions, we must propound and answer another. Not what men go exploring for, but what makes them go exploring at all? Men who follow this vocation will give a thousand aims and objects of their expeditions; but never a really satisfactory one. They are interested in this or that; they are in search of the other. Their objects are zoological, botanical, geographical, anthropological or archaeological—anything to satisfy the inquisitive world. But deep in their heart of hearts they know—if they ever stop to analyse their own motives—that back of all these motives and objects is something else; something that drives them on; something within them that demands expression: and that something is the Spirit of Discovery!

Without this activating force man would never have come into his own as master of the earth on which he lives: without it man would never have come into existence at all, for without it life would never have progressed a step beyond the first protoplasmal ooze or rounded motionless cell. Since life began on this earth it has been imbued with the "Spirit of Discovery." When the first amoeba pushed out his first arms, it was a quest into the unknown. When the first creatures of the mighty ocean wriggled on to the land, it was a voyage of discovery. When the ancestor of all the birds launched into the air in his first wild leap from one branch to another, it was a venture fraught with infinite possibilities. When the first ape-man, or man-ape, forsook the forest and essayed to walk upon his hind legs, he took the first step in the upward trend that was destined to end in the erect bearing and high intellectual attainment of modern man. When Columbus sailed west into the setting sun, he opened the way for the development of the great American nation. From amoeba to man, not one of the world's explorers ever knew what he was going to find; none knew aught but that death might be awaiting him at the next turn. Yet from amoeba to man, since life began, every living organism in his own way and in his own degree has been questing, questing, questing! They knew not what they would find; but because they quested they developed and grew in a million directions, till to-day we see upon the earth an infinite variety of plant and animal, here sunk still in the lowest and most primitive form; there reaching astounding heights of adaptation and specialization; and, right at the top, man, man still questing, still exploring, still experimenting, and ever finding out new truths, ever making new inventions, ever attaining to some further refinement!

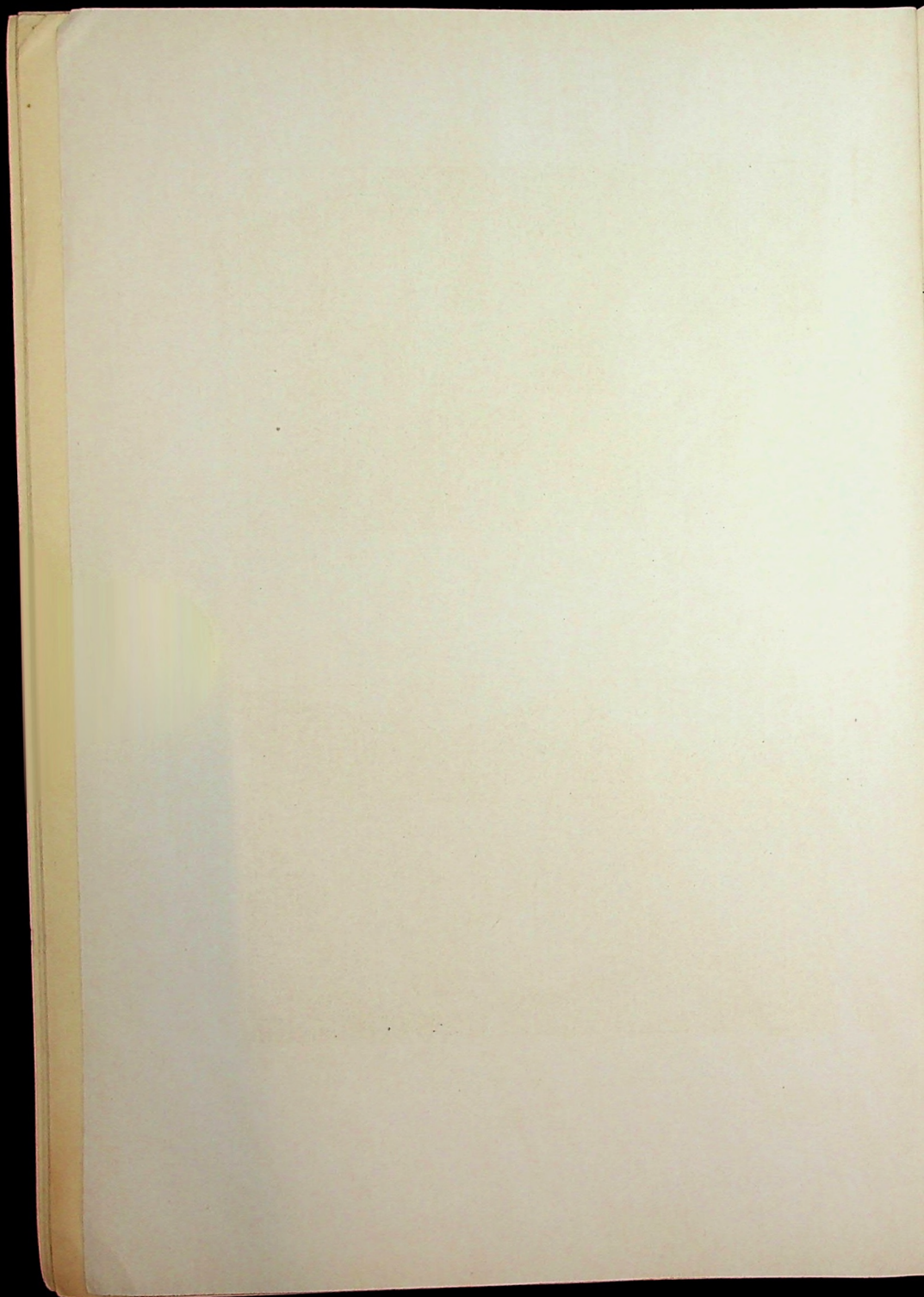
And thus we have our Smith's and White's hazarding everything in the search "behind the ranges;" and who shall say what they shall find!

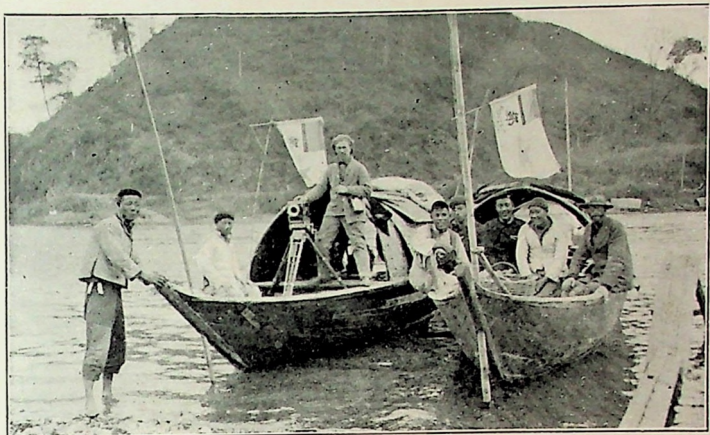


Mr. H. A. White with one of his Tigers shot at
Djerin near Saigon, Indo-China.



A magnificent Tiger shot by Mr. H. A. White
at Djerin.



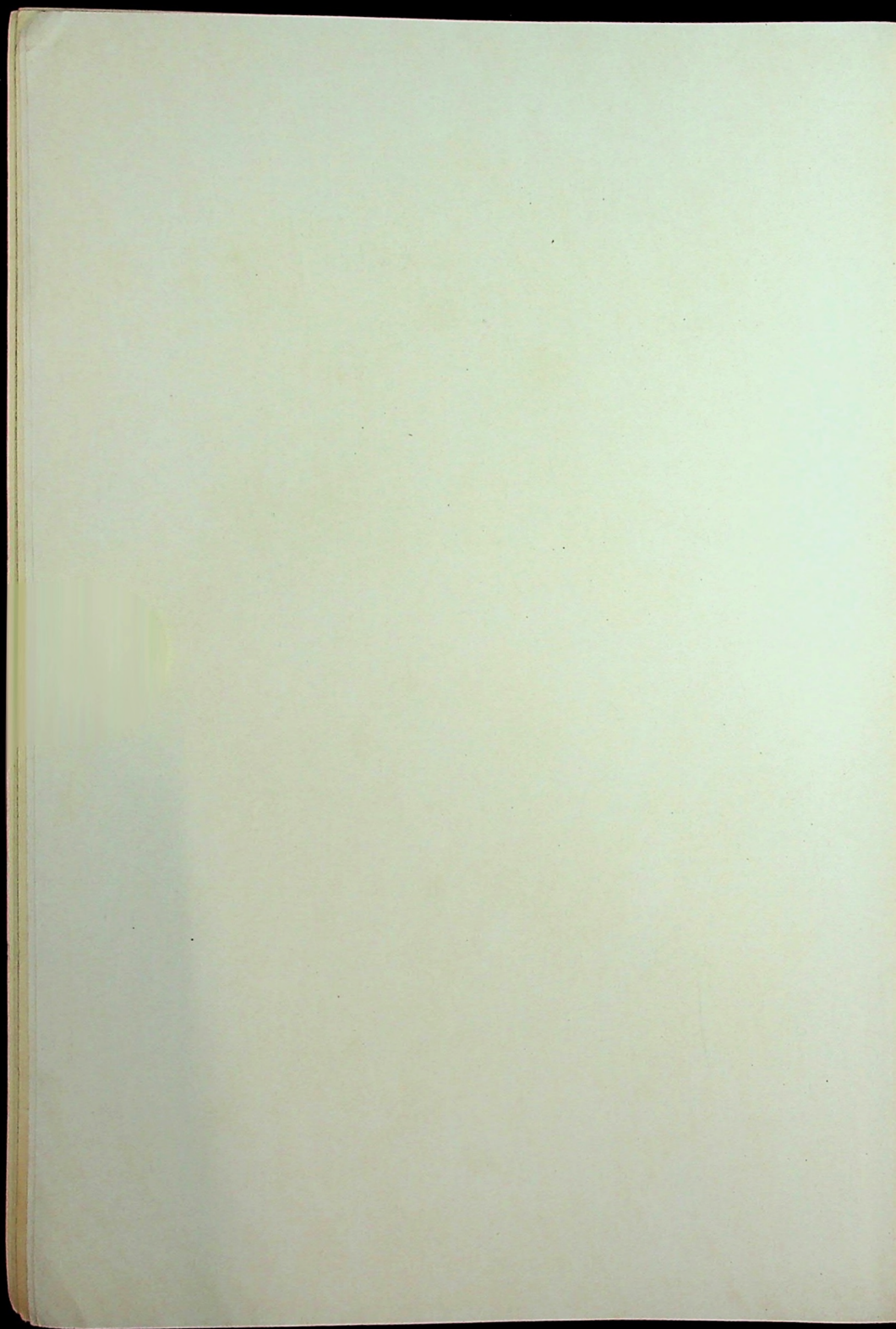


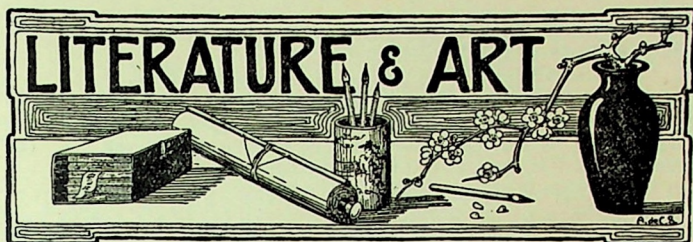
The Members of the Fukien Scientific Expedition in their "Sparrow"
Boats ascending the Min River.



Photos by Fukien Scientific Expedition.

Ascending Rapids on the Min River, Fukien.





THE OLD GUITAR

BY

ELFRIDA HUDSON.

"Dear Mr. Chang, you have been the friend of our family, as long as I can remember, and I want to ask your advice in a great difficulty. My father insists on my going to the Capital to compete for a degree; but how can I leave my parents, who are both over eighty years old, quite unprotected? I really have no ambition myself, neither for fame nor wealth, my only aspiration is to see those I love well and happy."

These words were uttered by a young man, named Tsai Yung, the only son of a merchant in the city of Chin-liu.

"Of course I can understand your difficulties, my dear Tsai Yung," answered Mr. Chang, "still you ought to think of your career. After all it is your highest filial duty to give glory to your family name. This fine spring weather favours your journey, I think you ought to take advantage of it, maybe we will have you back some day—a great official covered with glory."

"Yes, he ought to be on his way to the capital now," said the old merchant Tsai who had just entered accompanied by his wife.

"My dear father, listen to me," said Tsai-yung, "it isn't that I should not like to go, it is because of the uncertainty of everything that I hesitate. Who can tell when I will be able to come back, and you may need me; my heart will never be at rest leaving you under such circumstances."

"Yes, I think old age has driven all the common sense out of your head," said the exasperated Mrs. Tsai, addressing her husband, "I foresee that our fate will be to die of hunger and cold, and what good will glory do us then? Men are so head-less!"

"Peace! Impertinent woman!" interrupted Tsai impatiently. "Be a little more far-sighted. I want no more of your interfering."

"I am afraid my mother is right after all," said Tsai Yung, "I fear my father does not take everything into consideration."

"Your mother is right, of course, and your father is wrong—take everything into consideration—bosh! Ah, I know now what is the

matter: you do not like to leave your young wife—only been married two months, eh?" said the father with a smile.

"Is that where the shoe pinches?" chaffed Mr. Chang.

"Heaven knows that the only thing that detains me is consideration for you. I would feel as if everyone would have the right to point the finger at me for leaving my old parents with no one to lean on. The more I think of it, the harder it is for me to obey your orders."

"Of course it depends on yourself, whether you obey my orders or not," said the old man sternly, "but I should like to know what your interpretation is of the term 'filial piety'?"



Si-cheng, the Lover of Spring.

"You are over eighty and do not know the meaning of the term yourself," interposed Mrs. Tsai angrily. "To lead an old man in leading strings like a babe, that is 'filial piety,' if you want to know."

"My idea of filial piety, my father," said Tsai Yung, "is to watch with tender care the declining years of the parents—to serve and cheer them and supply them with the comforts of life."

"Ah, those are small matters after all, my son," said Tsai, "you will have to consider filial piety in a larger sense—to attain to dignities—to practice virtue and give fame and lustre to your family name for centuries—that is the acme of filial piety."

"You do not fail to use high-flown words to persuade our son to leave us," said Mrs. Tsai. "I will tell you a true incident. There was once an old couple in this city who sent their son away to take his degree; it was not very long after, that they both had to go to the almshouse and there—"

"I would be obliged, madam," interrupted Mr. Chang, "if you would finish your story another time, it might take all day."

"Follow my advice, my son; go at once and prepare for your journey."

"My father, I am going, I will obey you," said Tsai Yung with desperate determination. "May Heaven bless and preserve you!"

"Don't be anxious, young man," said Chang. "There is an old proverb that says: 'With eight hundred mace one buys a cottage; with a thousand a house.' Since my house is spacious and might take in five families, you may leave in peace. If your parents should come to want, I will assist them."

"How can I express my gratitude to you, Mr. Chang?" said Tsai Yung relieved. "I'll leave my parents in your tender care. I hope they will not be so old when I return in my embroidered robes, that they will not know me."

"With one stroke they deprive me of the joy and treasure of my life," said Mrs. Tsai, lifting her eyes to Heaven. "You may return in your embroidered robes, my son, but your poor old mother will never see you."

* * *

With a sad heart Tsai Yung took leave of his parents and of his young wife and started for the capital. The weather was favourable and he proceeded quickly on his journey. When he reached the high road leading to Chang, he fell in with three bachelors of art, named Li, Lu and Chang, who were going there on the same errand as himself. The conversation of the young men naturally began to turn on their studies.

"I am no fatalist," said Li. "I do not think that success and failure depend altogether on fate. Far from it! I even go so far as to believe that a man might raise himself through his own efforts to the highest pinnacles of fame and power. Nevertheless I believe that in the main the events of this world are ordered by Heaven."

"I agree with you there," said Lu. "I have spent all my strength and youth in the pursuit of knowledge; even at nights I have worked by the

light of brilliant fireflies ; I have made a profound study of the Hyau-Kying (the Book of Filial Piety) and Kyo Li ; I have meditated on the Book of Odes, on the Book of Annals, and besides I have studied all the works of Philosophy. In my childhood, however," he continued laughingly, " my teacher lamented that I could not retain one character."

" That sounds as if you had been dreaming it," said Li politely.

" I on my part," said Chang, " have especially emphasized the pronunciation of words and the writing of characters. Whenever I have traced a character, I have been careful to conform myself to the established rules of the Masters. No matter what method of writing I have followed, I have always been careful to copy a pattern. Wang-I, if he were living now, would have chosen me for his Master, and Ngeu-yang himself would have paid me a visit and gone into ecstasies at the sight of a page of my writing."

" What has been your special line Mr. Tsai ? " asked Li.

" I have only been very diligent and tried to use every moment I could for my studies. When sitting down I have been reading, and when walking I have been thinking over what I have read. I have studied fully ten thousand characters and made some laborious researches.

" I think we must bestir ourselves and continue our journey before night surprises us," added Tsai Yung who had been watching the darkening sky.

They mounted their horses and reached the nearest inn before the twilight had faded in the West.

IN CHANG-AN.

The garden at the back of the palace belonging to Lord Niu, the Preceptor to the Imperial family, was in its most beautiful spring dress. Miss Niu's old nurse and her slave girl Si-cheng were walking down its paths in unrestrained enjoyment of the flowers and the fresh spring air.

" Is this really Yuen-kung ? " asked the nurse of a young man who approached them.

" Indeed it is," answered the latter. " What is the matter with you two, looking so frisky, you usually go around pulling long faces ? "

" You do not know what a hard service mine is, Mr. Yuen-kung," said Si-cheng plaintively, " what bitter pills I have to swallow every day of my life. Miss Niu is severity personified, she does not allow me one minute's liberty, and as for laughter and pleasantry, it is something unheard of in the Inner Apartment. There is a reception to-day at the Imperial Palace and I coaxed my lady into granting me half an hour's leave to walk in the garden and enjoy the blooming azaleas. Why shouldn't I be happy for once ? "

" Ah, yes, my dear Yuen-kung," said the old nurse with a sigh ; " it is enough to make a person wearied to death to hear repeatedly : ' That is not proper ! That is not according to ancient custom ! ' When I think of the miserable life I have led, I shudder ; I was hardly able to walk when my parents sold me to the late Lord Niu, and ever since I have been a slave with my hair in a tight twist. I haven't really had a

moment's happiness in all my life. To-day Master has gone to an Imperial audience in the Hall of the Golden Bells, and I have run here by stealth to look at the flowers. I don't see why I should not be merry for once."

"Oh," said Yuen-kung patronizingly, "I understand now the cause of your gaiety. Stolen pleasures, eh?"

"Yes, my dear Yuen-kung," said the old woman, "you do not know how fortunate you are to be in the employment of a man. To serve a woman! I tell you, words cannot express the misery of it."

"Now when we are in for a good time, let us have a game," said Si-cheng. "How would Teu-pe-tsao do?"

"I don't care for that game," said Lord Niu's valet.

"Oh, but that is a fine game!" said the old woman. "Then what do you say to having a swing?"

"Very good," said Yuen-kung, "that is a favourite game in our part of the country."

"There is a swing not far from here," said Si-cheng. "My mistress does not care about that sort of fun, I suppose it will end in it's being taken down, if she hears of our using it."

"Your turn first, Yuen-kung," said the old nurse.

The mischievous Si-cheng pulled the rope a little too rashly and the clumsy valet fell to the ground. Just then the dignified daughter of the Preceptor to the Imperial family advanced towards them. The valet and the nurse caught sight of her and took to their heels, only the unsuspecting Si-cheng remained behind.

"Little rogue!" said Niu-chi, pinching her ear, "you think of nothing but frolic and mischief, do you call this keeping the rules of propriety?"

"Oh, my lady, look at this fine swing;" said Si-cheng with an admiring sigh, "it almost swings of itself."

"Impudent girl!" said Niu-chi, "you asked to go in the garden for a little fresh air. Who has allowed you to go swinging?"

"Be a little indulgent with me, mistress," pleaded Si-cheng. "Victim of melancholy as I am, I have to do what I can for diversion."

"Victim of melancholy! I dare say," laughed Niu-chi "and what is the cause of it, pray?"

"Certainly, mistress, the name of your little slave girl is Si-cheng, which means the 'lover of spring,' and when I see that spring is beginning to leave us, I get very melancholy."

"Nonsense!" said Niu-chi.

"This morning when I opened my window, early as usual, to let in the morning breeze with its delicious fragrance, I noticed the roof of the pavilion was strewn with willow leaves that a malicious wind had carried there. At noon I observed the traces that the drizzling rain had left on the delicate tissue of the pear blossoms; and just this afternoon, I heard the *Wang-li* bird sing, but its notes were plaintive. When the spring begins to wane and lose its charm, sadness comes over me."

"Foolish girl!" said Niu-chi. "The summer replaces the spring; one season succeeds another; there is nothing extraordinary about that

have permitted your nurse and slave girl to walk in the garden. Is that the supervision you exert over your servants? Do you not think that such behaviour may give rise to scandal?"

"I am greatly indebted to you, my father, for your excellent instructions and I promise that in the future I will govern the house with more severity."

"Nurse," said Lord Niu, addressing the old woman, "you who have age and experience I should be able to trust, but instead you are worrying my daughter into giving you permission to walk in the garden. How can you justify such conduct?"

"My Lord, it was not really my fault, it was Si-cheng who was so keen on going out," said the old woman.

"Listen to that now! You wanted to go just as much as I did," said Si-cheng.

"Who ever heard of such impudence?" said the indignant Lord Niu. "I will have them both beaten."

"Oh, my father," said Niu-chi, falling on her knees, "I implore you to forgive them this time."

"Rise, my daughter," said Lord Niu, somewhat mollified. "You, nurse, and you, Si-cheng, may retire with your Mistress, but take care not to deviate again from the conduct and rules prescribed by the ancient rites."

* * *

At this time there was great excitement in the old capital of Chang-an. Over five hundred graduates had arrived there to compete for the examinations that were held every third year.

The happy man whose name was placed first on the list of successful candidates would become Shang-yuen and receive the highest honours. The streets near the Examination Halls were crowded with spectators, curious to see the Literati riding by with their followers. All the students gathered in the anti-chamber and were getting ready to march, two by two, into the large Hall. Hearts were beating with excitements of various kinds: fear and hope, despair and joyful anticipation.

Tsai-Yung and his new-found friends were at the end of the long file. Chang, who was standing beside Tsai-Yung, kept frantically repeating lines from different classics: "The Heaven is blue, the earth is yellow; I am afraid I don't remember everything perfectly, I see I will have to rely somewhat on my good fortune. Fate has much to do with it, I am bound to own."

The students being assembled in the spacious Hall the President addressed them:

"Gentlemen: The Sovereign Court of the Li Boo has given me the appointment of Chief Examiner. A new period of three years is to be entered on, and the Son of Heaven has charged me to preside also over the Competitive Examinations.

"It depends on me to judge of the merits of all the Candidates. Now I want to set your hearts at ease, gentlemen; I do not belong to the grim, old school of examiners, who exact much; in fact, my taste is rather leaning towards the more pleasurable and interesting studies; so in this way I may differ from previous examiners.

"At the last examination, for example, the first task was a Dissertation on Literature, the second, an Essay on Morals, and the third, a Discussion on the Art of Governing. I will propose a change to-day. The first task will be the finishing of the last lines of a couplet, the second, the solution of an enigma, and the third, the singing of a song.

"He who shall finish the couplet, solve the enigma, and sing the song shall be elevated to the rank of Shang-yuen; he shall wear the hat decorated with gold flowers and shall sit in the Seat of Honour at the splendid banquet in the Imperial Palace, in company with all literary celebrities. On the other hand, he who fails in these tasks shall have his face besmeared with ink and be ingloriously turned out of the Examination Hall."

The Chief Examiner went into a smaller, adjoining apartment, and two by two the students were ushered in to be examined.

Chang and Tsai Yung went in together.

"I want you to finish the last lines of this stanza," said the President, addressing Tsai Yung. "The subject is taken from Astronomy:

The stars come filing one by one,
As if the Heavens at ball did play—

Make out the parallelism."

"Up like a fire ball rises the sun,
As if the sea played football at break of day."

"That is very good, that is an excellent parallel passage," said the President. Then, turning to Chang, he asked him to finish the following lines:

The ancient classic, The Book of Odes
Contains three hundred verses—

"It is divided in eleven books
And is full of deep instruction."

continued Chang slowly with a pale countenance.

"There is no parallelism at all in those lines," said the Examiner impatiently.

Then he gave Tsai Yung the second task. He asked him to find the names of eight provinces in the four sentences repeated to him. Chang was to guess the names of four kinds of trees from some other sentences. This time also Tsai Yung was successful and Chang failed.*

Tsai Yung was ready for his third task and the Examiner asked him to finish the song he was singing:

"A delightful place is the city Chang-An,
Its sights and pleasures are known far and wide—"

"He who gets his degree, the fortunate man,
Will be feasted by the Examiners' side."

sang Tsai Yung in a clear and ringing voice.

* Untranslatable puns on words.

"Ha, Ha, Ha! Not bad, upon my word!" laughed the Examiner. He began to sing another song for Chang to finish, but the latter was completely muddled and repeated Tsai Yung's verses: "He who gets—"

"Do you not know that it is against the rules of the examinations to copy any compositions of others?" asked the President with a frown.

"Ushers! Besmear his cheeks with ink and turn him out."

"I will go quickly enough myself," said Chang. "I see clearly that Fate is against me; what is the use of fighting one's destiny?"

"Tsai Yung," said the President, "I recognize the superiority of your talents, your erudition is profound, and your merit towers above all others. I will go immediately to the Emperor to report to him the result of the competition. Ushers! Bring the hat and girdle and decorate Tsai the Shang-yuen."

Tsai Yung paid his grateful respects to the President and followed him into the august presence of the Son of Heaven.

* * *

"They say it was a magnificent parade," said Miss Niu's old nurse, who had succeeded in stealing away to gossip with Yuen-kung.

"Yes, we have not seen such a sight for years. The decorations were arranged by the Governor of Ho-nan Fu—"

"Yes, and by the Equerry of the Imperial Stables," continued the old nurse.

"The Shang-yuen's horse attracted all eyes; surely no horse of antiquity could have surpassed it."

"What colour was it?"

"What colour! Imagine a horse decorated in all colours from the sombrest to the gayest—from the grey of the Cassia tree and the brown of the Chestnut to the rich red of the Jujub. All these various shades of colour made the effect of clouds enwrapping him, as if he had descended from celestial regions."

"They say the banquet was something splendid—"

Here Lord Niu's calling his valet away interrupted all further information to be taken to the Inner Apartment.

"Yuen-kung, I have some important business to place in your hands," said Lord Niu to his trusted servant, as he entered. "The Emperor wants to marry my daughter to the Shang-yuen; he says he is a young man of eminent merit and has an agreeable exterior; the Emperor will himself preside at the wedding. I want you to fetch immediately the middlewoman for the principal magistrates of the city and afterwards you will accompany her to the Shang-yuen to propose this marriage to him."

When the servant was gone, a satisfied smile played on the Preceptor's countenance.

"I suppose the Shang-yuen will be beside himself with joy when he learns this piece of news. Who is there next the Emperor," he mused, "who has more authority than I? The splendour of my house transcends that of the most illustrious families in the Empire. My reputation for integrity, disinterestedness and zeal is spread far and wide. Besides all

this, my daughter is beautiful and talented. A brilliant match for a young man!"

When the middlewoman came, he gave her his orders and promised her a good reward.

"This time there will be no failure for me," said the woman elated, "What with your Excellency's high position and the mandate from the 'Holy Man' and the beauty of your excellent daughter; no one could refuse such fortune."

"No, you are right, you are right," said Lord Niu. "Do not forget to tell the Shang-yuen, that I do not want him to buy any wedding presents; he can save his money."

"I will follow your Excellency's instructions."

In a short time the middlewoman and Yuen-kung returned.

"Impossible, my Lord," cried the woman. "Refusal upon refusal! He will not hear of it."

"What! What do you say?" asked Lord Niu, taken back.

"I mean to say that the Shang-yuen will not accept your Excellency's proposal."

"Let me explain," said Yuen-kung eagerly. "There are some good reasons for the refusal; the Shang-yuen is married and he has urgent duties to fulfil to his parents which will take him away from the capital as soon as possible. To-morrow morning he is going to ask the Emperor to allow him to return to his native place."

Anger began to disfigure Lord Niu's usually so placid countenance. "Did you not mention to him the Emperor's command?" he asked of the woman. "How could he ignore that?"

"Of course I did, my Lord," she answered. "I spoke of everything,—of your daughter's beauty—of the delicacy of her eyebrows and the freshness of her complexion, but it was like talking to deaf ears; he only ridiculed what I said."

"Ridiculed!" echoed Lord Niu, and the pallor of his face boded no good.

"How can anyone tell such lies?" said Yuen-kung with disgust. "Please listen to me, my Master, the Shang-yuen said he was already married, he was heartily sorry to refuse you. I humbly beseech you to choose another man for your son-in-law."

"No," said Lord Niu vehemently. "One might pardon one's assassin, but suffer a humiliation? Never! What would become of the respect and homage that surrounds me? Return both of you to the Shang-yuen and insist on my marriage proposition, and we will see if he dares to stick to his refusal. I myself will go to the Emperor, and I hope he will refuse the Shang-yuen's petition."

(To be continued)

APPLES AND ADVENTURE

BY

BENJAMIN MARSH

"Lao Tzu said : 'Not going out of the door I have knowledge of the world. Not peeping through the window I perceive heaven's Tao. The more one wanders to a distance the less he knows. Therefore the wise man does not travel, and yet he has knowledge.' This, honoured sir, I am unable to understand."

Tzu Yu composed himself under the ancient apple tree in his garden and answered, saying : "Adventure may be compared to the gathering of apples. There comes a day in autumn when this tree, herself clad in season-old worn green, adorns her children in red and gold as for the marriage feast. Then it is my invariable custom myself to harvest the fruit."

"Standing upon a ladder which is kept for this purpose and for the use of the household in the sweeping and garnishing of the New Year season, I pick the precious treasures one by one, inhaling the while their delicate perfume, and place them in my basket. Then it happens on occasion, sir, that just beyond my grasp is the one perfect apple of the year. To gain that one I reach and strain until I risk the loss of dignity, of soundness of my body, of all my other apples. At last I clutch the prize, the peerless one, and tremblingly recover, only to find a worm-hole on the side that was behind."

"Thus, sir, do I experience the epitome of adventure. Is adventure yielding to the lure of the unattained? I have yielded. Is it seeking in far places for rare treasure? I have sought. Is it risking all for unknown gain? I have risked. Is it all of these and a thrill that knows no other time? I have been thus thrilled. Sir, in my own garden I have known the soul of the world, and I am further convinced of the wisdom of the sage who said : 'There is nothing under heaven greater than the tip of an autumn spikelet. A vast mountain is a small thing. Neither is there any age greater than that of a child cut off in infancy. The universe and I came into being together; and I and everything therein, are One.'"

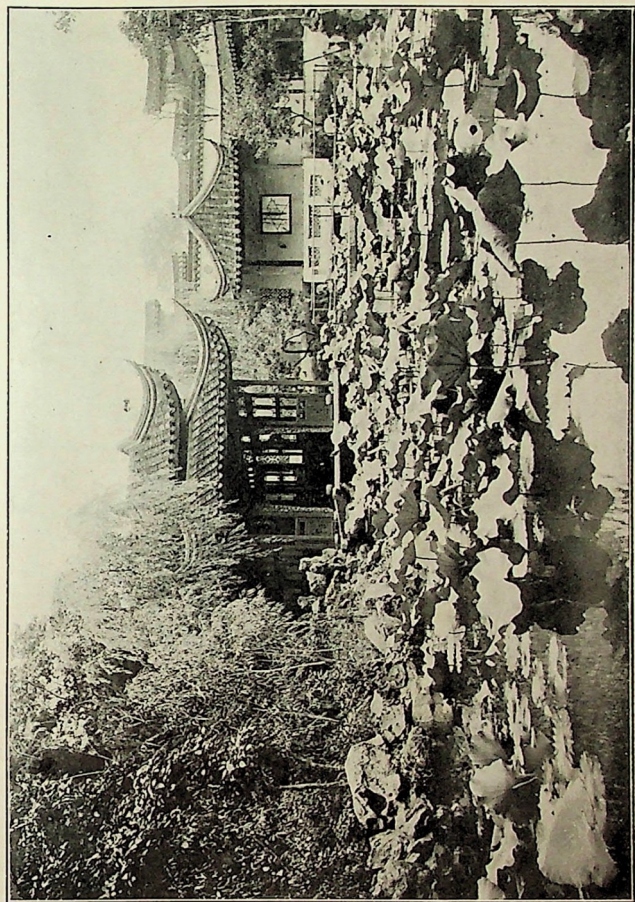
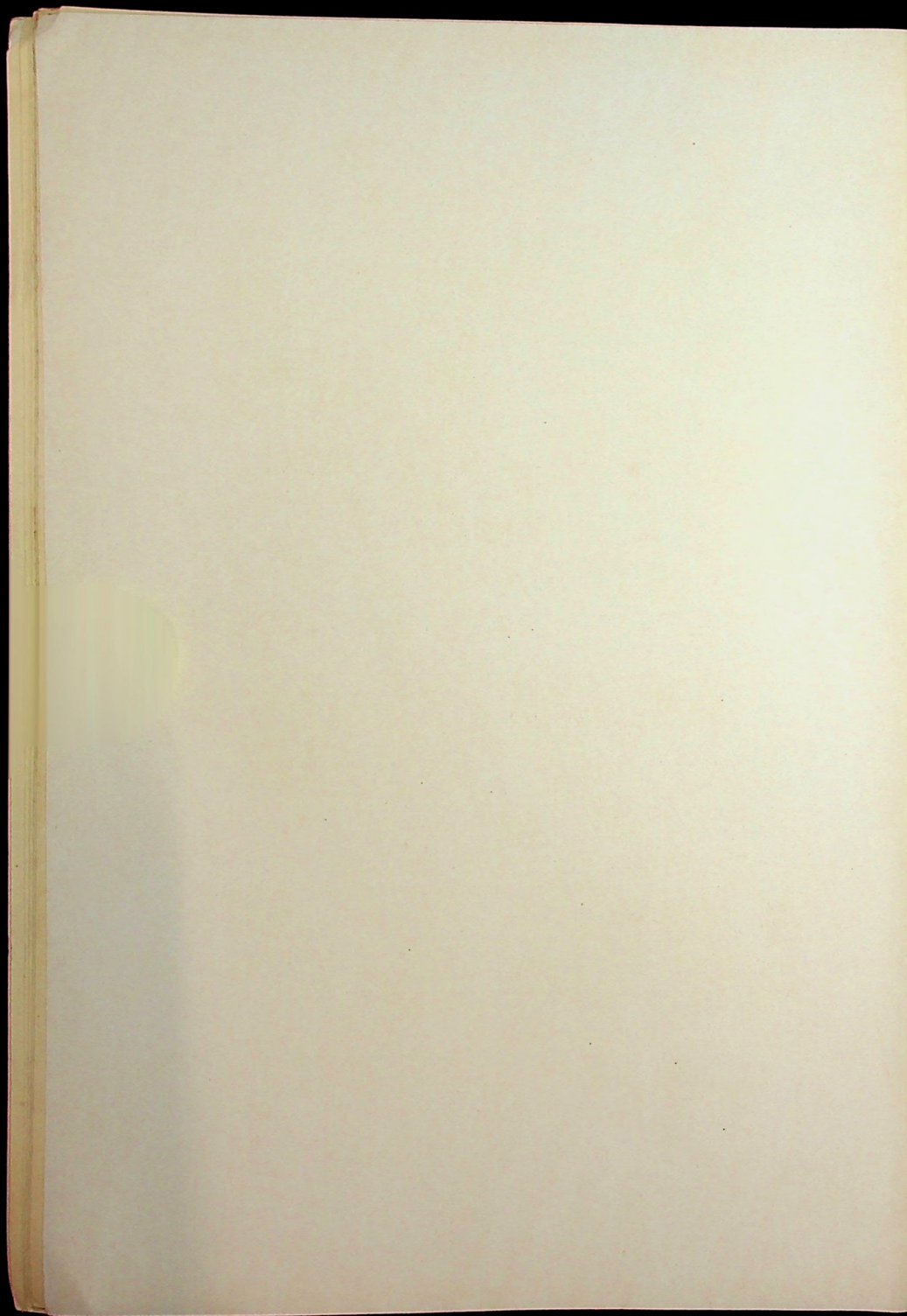


Photo by D. Mennie.

The Lotus Pond and Pavilions in a famous Garden in Soochow.



NOTES ON THE MINTED COINS OF CHINA

BY

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

"If the thing be kept simple, we shall seldom lose our way." Confucius. Book IV. § 23.

ARTICLE III.

THE TEN-CASH COPPER PIECES OF ANHUI.

It is not quite certain since what period the province of An-hui* has had its mint at Anking,† that is, in the style of the old mints of China in which only cast coins were moulded. Still, one authority dubiously gives the date of the original Anking mint as 1723-1735,‡ but, where struck coins by modern machinery are concerned, this mint may be classified as one of the old ones in China. However, due to its antiquated machinery, it was dismantled in 1899§ so as to be re-modelled, and supplied with modern equipment to enable it to produce minted coins. It re-opened in 1902.¶

As the present article is concerned with ten-cash copper pieces only, no mention of the silver coins, nor of the gold and silver medallions || minted at the Anking mint will be made. Apart from the fact that

* In Chinese 安徽. It has an area of 54,826 square miles. It is sometimes written: An-hwei, Ngan-hoei, Gan-hwuy, and even 'Anwhay.' The name is derived from the first characters of the two chief prefectures in the province: An-ch'ing (安徽) and Hui-chow (徽州). The literary name of An-hui is 皖 (Huan). Père Henri Havret, S. J., in *La Province du Ngan-Hoei* (1893), p.74, says: "L'institution du Ngan-Hoei comme province distincte du Kiang-suo est de date assez récente. Ces deux provinces formaient autrefois la province unique du 江南 Kiang-nan. En 1662, un gouverneur fut créé à Ngan-king avec juridiction sur le territoire occidental du Kiang-nan, et en 1723 un décret impérial constitua Nan-king comme centre de la vice-royauté des Deux Kiang, à laquelle le Ngan-hoei ressortit avec le Kiang-sou et le Kiang-si."

† Also occasionally written An-ch'ing, or Ngan-king; it lies in lat. 30° 32' N. and long 117° 05' E., with a population estimated at about 40,000.

‡ Dr. S. W. Bushell, in his article, *Coins of the present Dynasty of China*, ignores the Anking mint in his "Table of Mints," but Wylie in *Coins of the Ta Ts'ing or Present Dynasty of China* states that: "A mint was opened in the capital of that province in 1731." p.66.

§ Maritime Customs Decennial Reports, 1902-11, p.382.

¶ The provincial mint at Anking has had a checkered and disreputable career. After its re-opening in 1902, it was again closed in June 1907, re-opened for only a short while in 1909, closed again in 1910, to once again re-start operations in December, 1919. It became notoriously illreputed during the summer of 1924, when, it produced 8th year Yuan-Shih-k'ai dollars in a greatly debased fineness.

|| For notes on the medallions struck by this mint, the reader may refer to my article entitled: "The Nyi Tsye-Ch'ung Medallions of Anhui" which appeared in the February, 1922 (Vol. IV., No. 1) number of the *New China Review*.

this province begins with the letter A, thus giving it the privileged position of the lead in the list of provinces, I have also always had a predilection for the copper coins of Anhui*: presumably this sympathy may be due to the large field for research which it offers, coupled with the fact that many specimens are of comparative rarity; and yet this mint has not been orthodox in its methods, at least in recent years, and has entertained no scruples to demoralize the ten-cash copper market by a plethoric over-production of republican coins which may only be termed appalling.†

Our plate reveals thirty two obverses, but these are not all; some have been either re-engraved or retouched sufficiently as to lead to the inference that a separate die or dies were in existence, still, although undoubtedly no fresh dies were made, the meticulous and fastidious numismatist will hardly be contented to ignore such retouches.‡

OVERSE A.—This was presumably the first coin minted, together with the next piece. The seven Chinese characters: 每元當制錢十文 (Mei Yuen Dan Chi Chen Shih Wen) appear as the inscription at the bottom of the coin, whilst in the centre the four characters read: 光緒元 (Kuang Hsü Yuen Pao).§

OVERSE B.—Generally the same as A, but with a difference in the Manchu characters in the middle of the coin. To these two obverses there are three sub-varieties, making five varieties in all: the differences lie in the shaping and spacing of the two Manchu characters in the centre.

OVERSE C.—The characters 光 and 當 at the bottom are heavier; the two Manchu characters are longer; and between them there is a small ring in relief. Beaded circle consists of 96 dots.

OVERSE D.—Manchu characters altered, and all the Chinese ideographs are in a different hand, especially the character 寶. Circle of 101 spots.

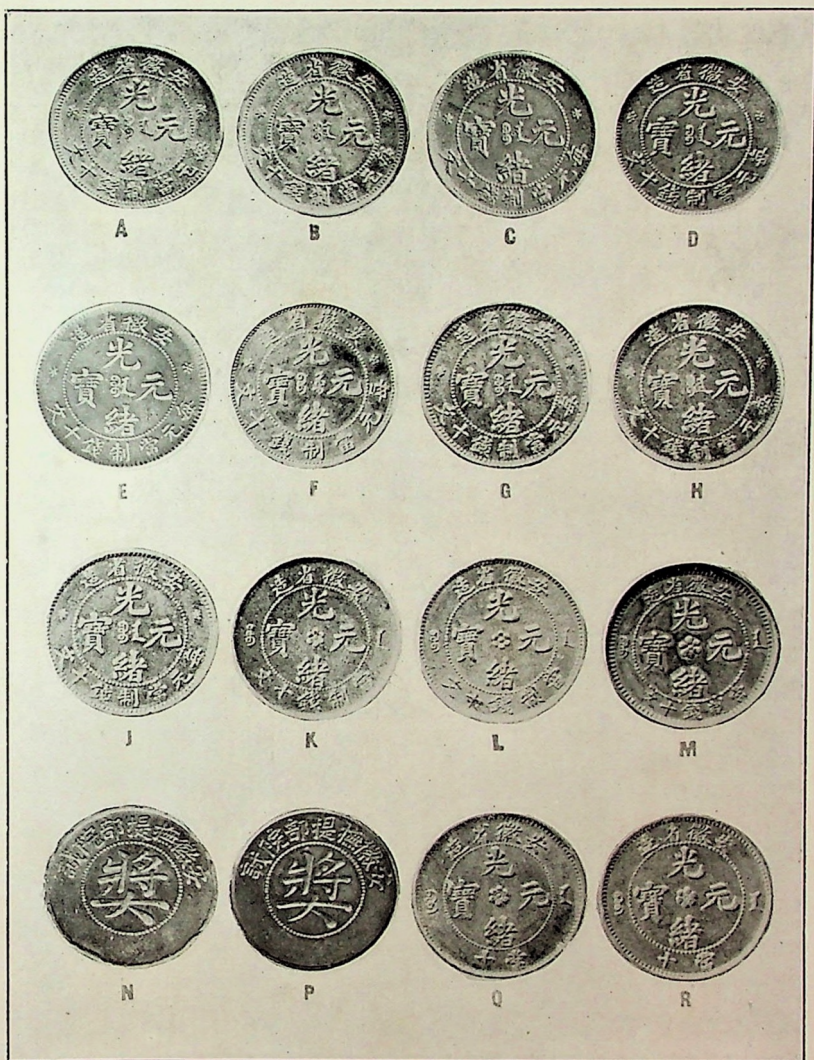
OVERSE E.—All the Chinese ideographs again in another hand, and the Manchu characters are nearly touching each other. Circle of 98 dots.

* In the 1902-11 Maritime Customs Decennial Reports for Wuhu, Vol. I, p.382, we read: "It is a curious fact that Anhwei cents are very scarce in this town, nearly all those in circulation bearing the names of other provinces and Mints. The explanation appears to be that gambling in exchange rates between different localities tends to the shipment of local coins to other provinces, and *vice versa*."

† The production of ten-cash coppers was so enormous during A.D. 1922, that the exchange market of coppers per dollar in Shanghai fell from 138 to 188. This led the Chinese Maritime Customs at that port to prohibit for a time the importation of copper ten-cash pieces from Anking, and the further production of these coins thereupon ceased.

‡ It is true that in numismatics as well as in philately, a retouch creates a distinctly collectible variety, but I would prefer to err on the conservative side, at least in Chinese numismatics, and differentiate only in glaring alterations.

§ The Emperor Kuan Hsü reigned for a period of thirty four years, from 1875 to 1908.



Anhui Province, Types of Obverses.

NOTES ON THE MINTED COINS OF CHINA

- OBVERSE F.—The spacing between the seven Chinese characters at the bottom of the coin is wider than heretofore, and the Manchu scripts are also quite altered. The beaded circle is composed of 88 dots.
- OBVERSE G.—The four central characters 寶光元 are thick and heavy; the lower left hand side stroke of the character 寶 starts at the top from a different position; 91 dots constitute the circle.
- OBVERSE H.—In the style of G, but in very much thinner characters, and the same left hand side lower stroke begins from another position. The circle is made of 96 dots.
- OBVERSE J.—This obverse greatly resembles G, even the dots in the circle consisting of 91 points, but the bottom stroke of the character 寶 already referred to is different, likewise several of the seven ideographs of the bottom inscription; there is also a dot between the Manchu characters. It is a distinctly different die to G.
- OBVERSE K.—We here reach the 'central rosette, Manchu at side' design. There are now only five Chinese characters in the bottom inscription. Circle consists of 104 dots.
- OBVERSE L.—In general style similar to K. Two bottom strokes of the character 寶 are quite different, as well as the ideograph 光; 93 dots in the circle.
- OBVERSE M.—Same as the preceeding two in general appearance, but the rosette is larger, and the five characters at the bottom are smaller and closer to one another.
- OBVERSE N.—This bears at the top of the design, the legend: 安徽撫提部院誠 (An-hui Wu Dih Buh Yuen Chien) meaning; 'Token (of the) An-hui Military Bureau.* In the centre we find the large single character 獎 (Cheang), which signifies 'Recompense' or 'Reward.' Beaded ring of 81 dots. These pieces were struck to serve as a mark of reward to Imperial troops of this province for faithful and or meritorious service.
- OBVERSE P.—In general the same type as N, and also employed for the same purpose, but a different die; it is readily recognized by the big difference in the first character at the left hand side. The circle consists of 84 dots.
- OBVERSE Q.—The type of engraving is again radically different. There now appears at the bottom of the design only the two characters: 當十 (Dan Shih) 'Value Ten.' The principal mode of recognition of this die is the circle of 13 dots around the middle spot of the centre rosette. There are 107 dots in the large circle.
- OBVERSE R.—Generally in the same design as Q, but the main distinction is the centre of the rosette which has no small dots around the

* Although this piece is marked "10 Cash," the nature of its use permits us to classify it as a medallion, but despite this, all local numismatists include it in their ten-cash coin collections.

middle spot, which, in turn, has a hole in the centre. The remaining characters are also in a different hand. The circle consists of 84 dots.

OBVERSE S.—On a similar basis in design to Q and R, but the centre is just a plain rosette.

OBVERSE T.—In the general style of S, but the characters are in a dissimilar calligraphy, especially the character 光; they are also of a heavier type. Circle of 84 dots.

OBVERSE V.—This is a glaringly different design from those just described, the principal point of identification of which, is the very small centre rosette. Ninety eight dots to the circle.

OBVERSE W.—Somewhat similar to V, but rosette larger, and the bottom tail to the Manchu character at the right hand side is very much diagonal, whilst the one at the left hand side is much larger. There are only 91 beads to the usual dotted circle.

OBVERSE X.—Of a generally similar design to the last six types, but rosette small, right hand side Manchu character thin, and bottom tail horizontal. Beaded circle of 88 dots.

OBVERSE Y.—Same die as X, save that the character 省 (shan) at the top has been retouched.

OBVERSE Z.—Same die as X, but the character 省 (shan) has once again been retouched, and so has the character 緒 (Hsu) in the middle of the design.

OBVERSE AB.—From here onwards comprise the design of the Tai Ch'ing Ti Kuo series. The five lower characters now read: 當制錢十文 (Dan Chi Chen Shih Wen), 'Equivalent (to) ten cash,' whilst the two characters 戶部 (Hu Poo) or 'Treasury,' appear at the sides; the Manchu script at the top is the equivalent of *Tah Ch'ing Tung Bien*, and the date of 丙午 (Ping Wu), or 1906, is shown. Circle of 91* beads. The character 皖 (Huan)† in the centre, is lightly incused within a small raised disc.

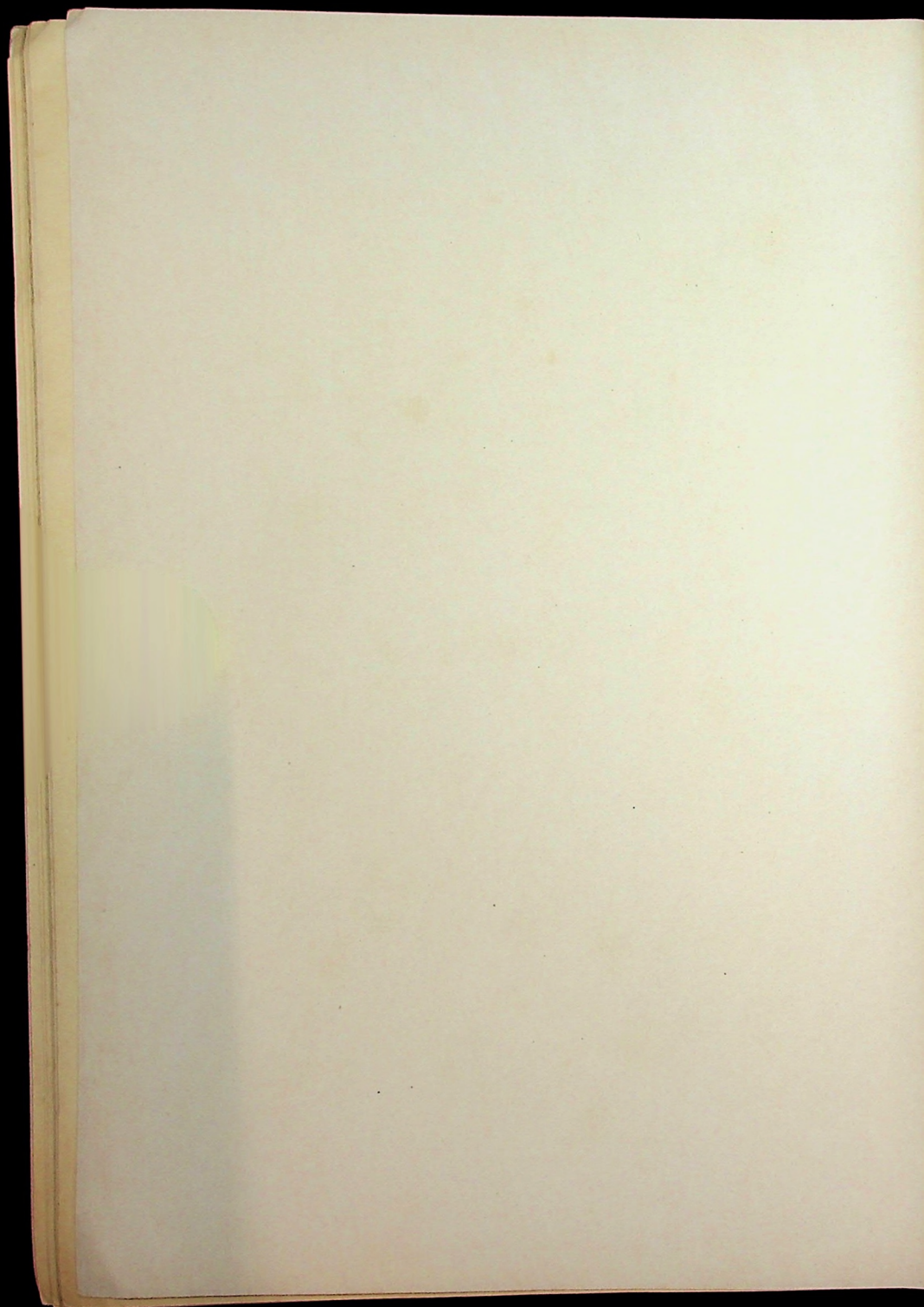
OBVERSE AC.—In general similar to AB, but Manchu lettering and the Chinese lexicography are in quite a different hand; dated 丙午

* It is remarkable that in all this Series II pieces, the uniformity of 91 dots to the beaded circle is found without deviation; it was apparently with a deliberate intention and a meticulous care that the workmen engraved these coins.

† This character 皖 (Huan) has been employed in these An-hui coins in various forms from a lightly incused to a very heavily cut type, and many more types besides those mentioned in the present article are encountered still, as it is prudent to err on the side of moderation, I have avoided slight differences. It has been suggested that possibly this character was inserted by a second operation after the coins had been produced from the original dies,—a most improbable theory in the light of the mint's general incompleteness and their factory profit-taking principles. Besides, in such a case, an abnormal position of that character in relation to the surrounding characters would have been produced, even in inverted positions, but not a single specimen out of symmetry has yet been discovered.



Anhui Province, Types of Obverses.



NOTES ON THE MINTED COINS OF CHINA

(1906). Beaded circle of 91 dots. The character 皖 in the centre, is lightly incused within a small raised disc.

OBVERSE AD.—Same as AB, in general, the Manchu characters, however, are in very large letters; dated 丙午 (1906). Circle of 91 spots. The character 皖 is heavily incused within a small raised disc.

OBVERSE AE.—Very closely resembles AC, excepting that the character 銅 (tung) is not the same, and the centre character 皖 is heavily incused. Dated 丙午 (1906), and the beaded circle is also of 91 dots.

OBVERSE AF.—Practically of identical design and lettering with AB, but the centre character 皖, instead of being lightly incused, is very heavily so. This obverse was probably the same original die as AB, with a re-engraved centre character: there are many considerations and facts that would lead to such a conclusion.

OBVERSE AG.—Although in general resemblance to the several pieces just described, this obverse is an entirely new die, the Manchu and Chinese scripts being in a different hand. Centre character is lightly incused within a small raised disc. Dated 丙午 (1906). Beaded circle of 91 dots.

OBVERSE AH.—The remarks against obverse AG apply to this coin. All the Chinese characters are heavily engraved, especially the four in the centre; the Manchu letters are very thinly engraved in relief, and the centre ideograph 皖 is very lightly incused. Dated 丙午 (1906). Circle of 91 dots.

OBVERSE AJ.—seems to be obverse AF, with the centre character 皖 still further re-engraved to a point which gives that ideograph the appearance of a conglomeration of deep recesses on the raised disc.

OBVERSE AK.—Complete change of design. The two characters 戶部 are eliminated, being replaced by the sexagenary cycle year date of 己酉 (Chee Yu) representing 1909. Manchu characters at top more spaced, and middle ideograph 皖 lightly incused in a raised disc. Beaded circle of also 91 dots.

The principal reverses issued by An-hui province can be identified by the following description:—

REVERSE 1.—Small dragon within a beaded ring; A of the word An-hwei is inverted; value at the bottom inscribed as "ONE SEN," revealing a somewhat Japanese monetary influence.

REVERSE 2.—This reverse is not from a new master die, but is die 1 retouched by rectifying the position of the letter A already referred to; this now reads correctly AN-HWEI.

REVERSE 3.—Similarly to reverse 2, this one is also a retouched die, being a second retouch of the original reverse 1; in the present instance the alteration is in the letter S at the bottom, which has now

been converted into a C, the intention ostensibly being to make the value read in the European denomination of 'cent,' but which, due to the original mis-spelling of the word as *SEN*, now makes it read somewhat absurdly, *CEN*. The middle tentacle of the dragon's tail is long and undulatory.

REVERSE 4.—This die is reverse 3 retouched again. The middle tentacle of the dragon's tail referred to in reverse 3 is now knotty at the second wave before the tip of that tentacle.

REVERSE 5.—A further retouch of the original master die at the same middle tentacle of the dragon's tail, which is now very wavy in its two last curves.*

REVERSE 6.—This design is the replica in general of the foregoing five reverses, but in the present case the denomination of value reads "TEN CASH." There are 101 dots in the beaded circle around the dragon.

REVERSE 7.—An entirely new die, the main characteristics of which consist in the inverted N in the word 'TEN' at the bottom, and also in the word AN-HWEI at the top. The beaded circle has 111 dots.

REVERSE 8.—A new die, which, although resembling reverse 6, now has the dragon as well as the lettering much larger.

REVERSE 9.—A large dragon, and easily recognised by the wider spacing than heretofore between the three stars at each side. The Flame in the middle of the design is a large round ball. Beaded circle consists of 112 spots.

REVERSE 10.—Similar to die 9 in the spacing of the stars, but is readily recognized by the forehead of the dragon, which bears a schismatic cross; this coin is the only one showing this peculiarity. Ninety nine dots to the beaded circle around the dragon.

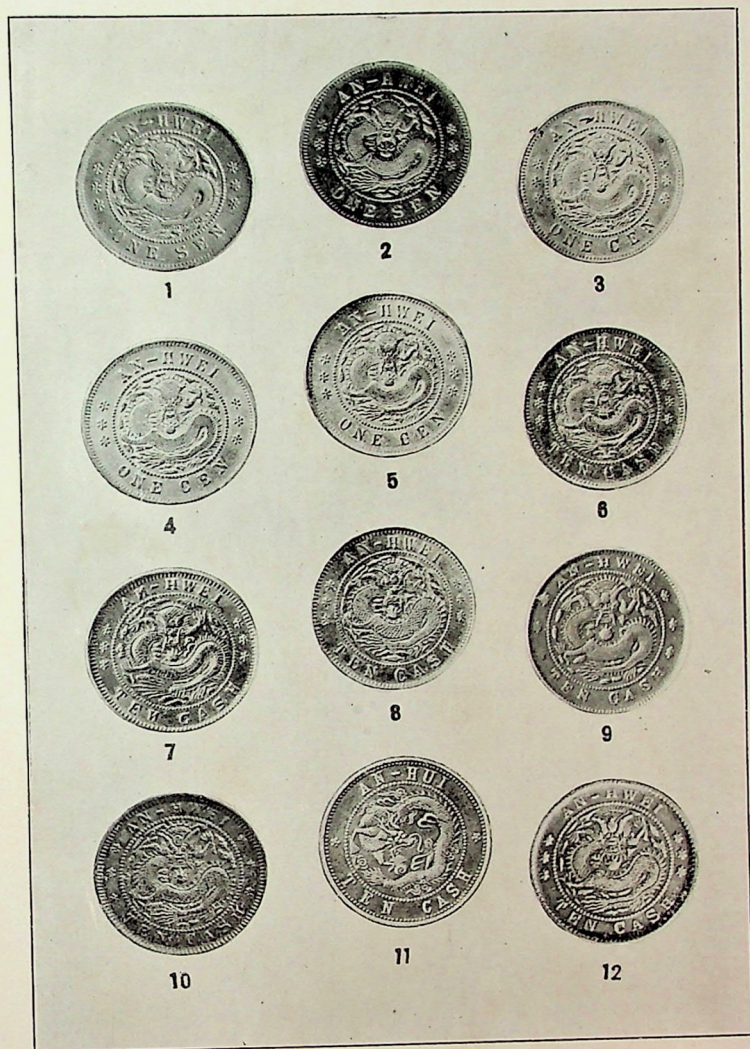
REVERSE 11.—A very fine coin in general, but, from its extreme rarity, was evidently not minted in any appreciable quantity. Easily recognized by the spelling of the name of the province; it is the only coin where the spelling is AN-HUI, and which is also milled.

REVERSE 12.—The main feature of this new die is the close spacing of the three stars at the sides.

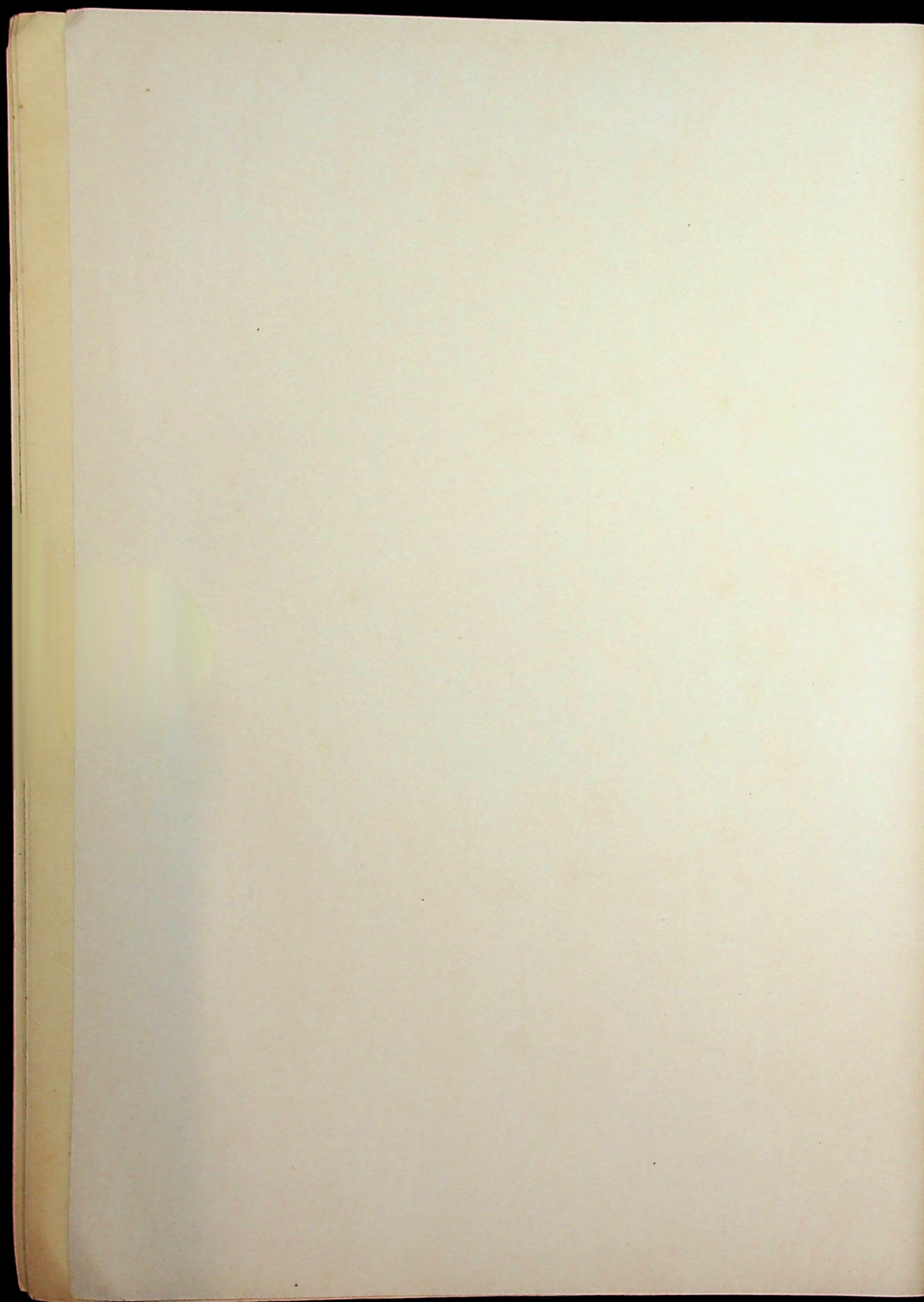
REVERSE 13.—With this die, a new series begins, characterized by the absence of the value lettering underneath the dragon. This reverse has been employed in combination with a large number of different obverses. The tip of the tail of the dragon consists of seven tentacles. Circle has 98 dots.

REVERSE 14.—Represents a corpulent dragon in bold relief, and having nine tentacles in its tail. Beaded circle consists of 92 spots.

* It is thus apparent that the master die of this series has been retouched at least four times, if not more.



Anhui Province, Types of Reverses.



NOTES ON THE MINTED COINS OF CHINA

- REVERSE 15.—Immediately identified by the numerous and prominent scales on the body of the dragon. The circle consists of 118 beads compactly placed close to each other. Eight tentacles in the tail of the dragon.
- REVERSE 16.—Similar dragon to the preceeding reverses, but seven tentacles in its tail, and with but 95 dots in the beaded circle around the dragon; large letters for AN-HWEI.
- REVERSE 17.—A dragon generally similar to the preceeding reverses, but with large clouds at the upper right hand space between the dragon's head and body. Centre flame round. One hundred and eleven dots in the circle around the dragon.
- REVERSE 18.—Very similar to die 17, but the centre flame is different as also are the clouds around the dragon. It lies within the bounds of possibility that this reverse may be die 17 in a retouched state.
- REVERSE 19.—An excessive rarity; the dragon is now upstanding, and the lettering in very small type. Every piece so far found is in an exceedingly poor condition, which will be apparent from the illustrations. There seem to be several types of this design, the principal differences between them consisting of the clouds at the bottom of the dragon; they all bear the name AN-HWEI in very small letters. The beaded circle is absent. There is another variety of a similar piece which cannot be illustrated due to its considerably worn state, it might temporarily be classified as 19A. It is probable that these pieces were only pattern coins.
- REVERSE 20.—Very similar to reverse 19 with small AN-HWEI lettering, but a different die, distinguishable by the differences in the clouds.
- REVERSE 21.—This pattern probably superseded reverses 19 and 20, and was adopted; the dragon is larger, and there are two stars at each side of the coin.
- REVERSE 22.—In general appearance similar to reverse 21, but with the legend "TOENCASH" at the bottom.
- REVERSE 23.—We now reach coins forming Section II, the "Tai Ch'ing Ti Kuo Copper Coin" legend, with the characters 光緒年造 (Kuang Hsü Nien Tsao) at the top. This type of dragon is quickly identified by a symbol resembling the numeral 3 which is situated just over the left hand side waves underneath the dragon.
- REVERSE 24.—Similar to reverse 23, but the symbol identifying it, instead of a 3, now resembles the letter C, it is in the same position.
- REVERSE 25.—Also similar in general appearance to reverses 23 and 24, but the identifying symbol in the same position now consists of a continual double line circle, something like @.
- REVERSE 26.—Quite a different dragon from that of the three preceeding reverses, and with legend: 宣統年造 (Hsüan Tung Nien Tsao), 'Made Hsüan Tung Era.'

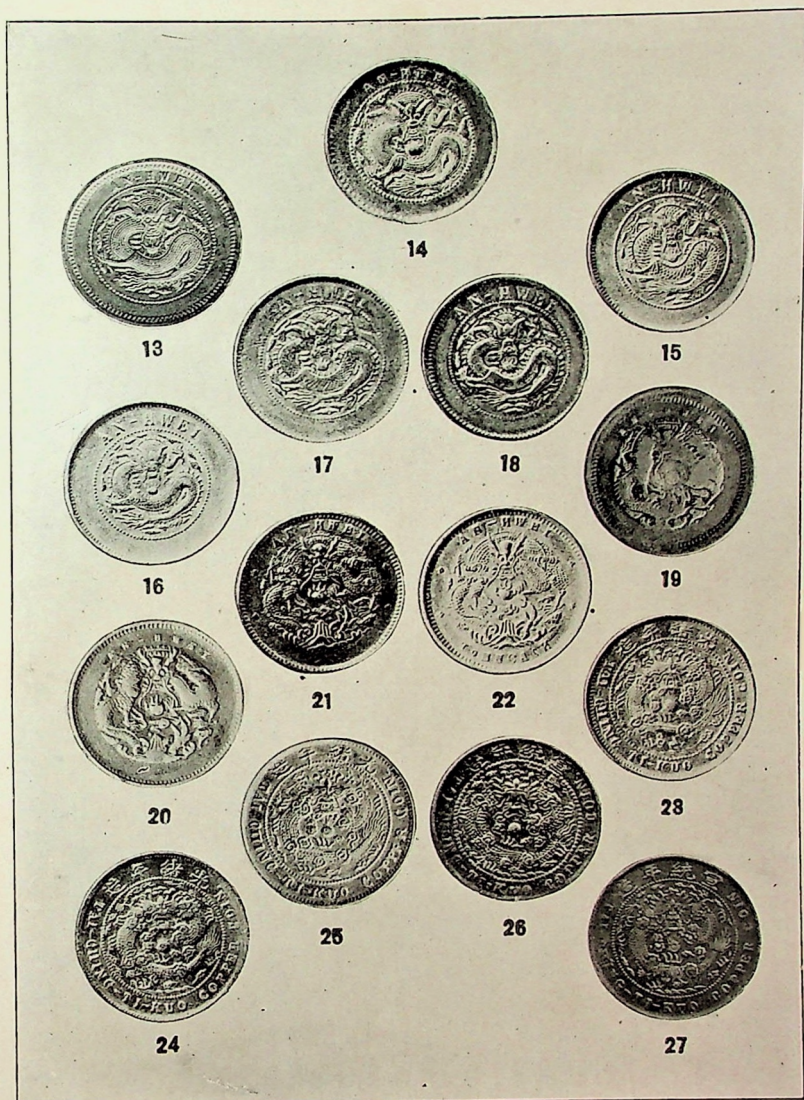
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REVERSE 27.—Somewhat resembling reverse 24, but the inscription reads: 宣統年造, in like manner to reverse 26.

It must be observed, that apart from the general differences above explained, all the pieces have minor distinguishing features. The following schedule shows the known combinations of obverses and reverses that have been minted, viz:—

No.	Obverse.	Reverse.	Size, m.m.	Average weight, grains.	Metal.	Comparative rarity.
1	A	with	1	28	Copper	S.
2	A	"	3	28	"	S.
3	A	"	4	28	"	S.
4	A	"	5	28	"	R.
5	A	"	6	28	"	C.
6	B	"	1	28	"	S.
7	B	"	2	28	"	E.R.
8	B	"	3	28	"	S.
9	B	"	4	28	"	R.
10	B	"	5	28	"	S.
11	B	"	6	28	"	C.
12	B	"	7	28	"	S.
13	B	"	8	28.25	"	C.
14	C	"	6	28	"	C.
15	C	"	7	28	"	E.R.
16	C	"	8	28	"	C.
17	D	"	9	28	"	E.R.
18	E	"	10	28.50	"	R.R.
19	F	"	11	28	"	E.R.
20	G	"	7	28	"	R.R.
21	G	"	8	28	"	C.
22	G	"	10	28.25	"	C.
23	G	"	12	28	"	C.
24	G	"	13	28.50	"	R.
25	H	"	8	28	"	C.
26	J	"	12	28	"	S.
27	K	"	13	28	"	C.
28	K	"	13	28	Pewter	R.
29	K	"	14	28	Copper	S.
30	K	"	15	28.25	"	S.
31	K	"	16	28.50	"	S.
32	K	"	17	28.50	"	R.R.
33	K	"	18	28	"	R.R.
34	K	"	19	29	"	U.
35	K	"	19A	29	"	U.
36	K	"	21	28.50	"	C.
37	K	"	22	28.50	"	C.
38	K	"	24	28.75	"	E.R.
39	L	"	13	28	"	C.
40	L	"	14	28.50	"	C.
41	L	"	15	28	"	R.R.
42	L	"	20	28.25	"	U.*
43	M	"	10	28	"	E.R.
44	M	"	13	28	"	C.
45	N	"	8	28	"	E.R.
46	N	"	10	28	"	E.R.

* In the collection of Mr. Peter C. Chen.



Anhui Province, Types of Reverses.

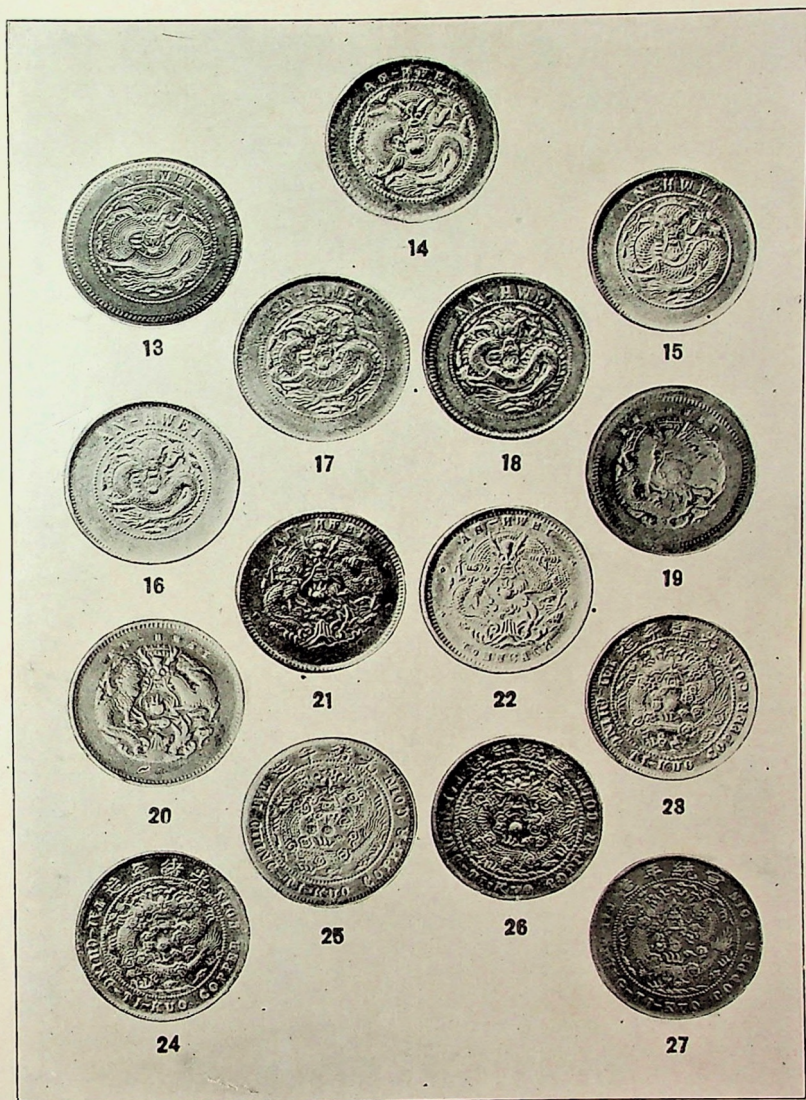
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REVERSE 27.—Somewhat resembling reverse 24, but the inscription reads: 宣統年造, in like manner to reverse 26.

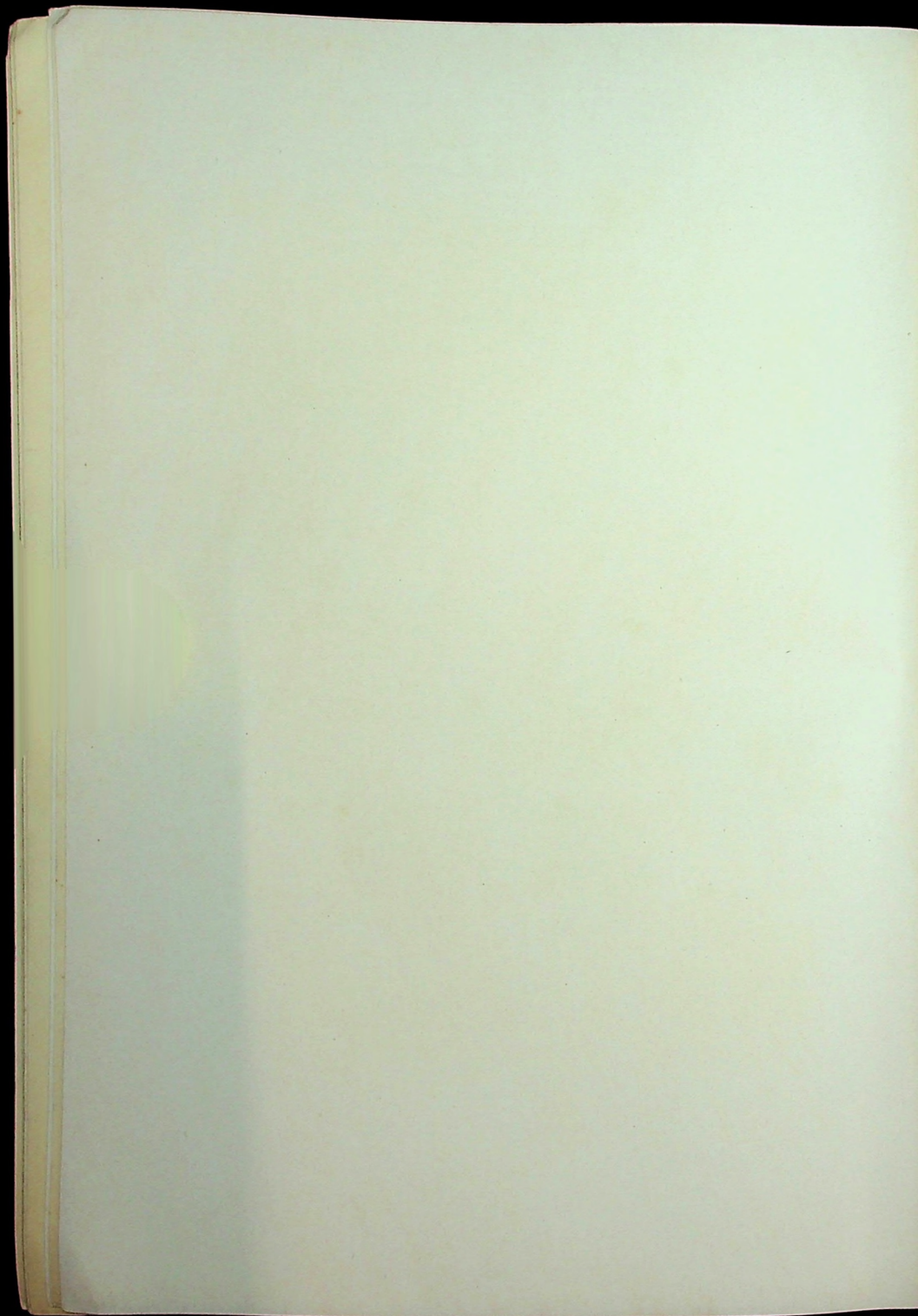
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4	A	"	5	28		R.
5	A	"	6	28		C.
6	B	"	1	28		S.
7	B	"	2	28		E.R.
8	B	"	3	28		R.
9	B	"	4	28		S.
10	B	"	5	28		R.
11	B	"	6	28		S.
12	B	"	7	28		C.
13	B	"	8	28.25		S.
14	C	"	6	28		C.
15	C	"	7	28		C.
16	C	"	8	28		E.R.
17	D	"	9	28		C.
18	E	"	10	28.50	Pewter Copper	E.R.
19	F	"	11	28		R.R.
20	G	"	7	28		R.R.
21	G	"	8	28		C.
22	G	"	10	28.25		C.
23	G	"	12	28		C.
24	G	"	13	28.50		R.
25	H	"	8	28		C.
26	J	"	12	28		S.
27	K	"	13	28		C.
28	K	"	13	28		R.
29	K	"	14	28		S.
30	K	"	15	28.25		S.
31	K	"	16	28.50		S.
32	K	"	17	28.50		R.R.
33	K	"	18	28		R.R.
34	K	"	19	29		U.
35	K	"	19A	29		U.
36	K	"	21	28.50		C.
37	K	"	22	28.50		C.
38	K	"	24	28.75		E.R.
39	L	"	13	28	Copper	C.
40	L	"	14	28.50		C.
41	L	"	15	28		R.R.
42	L	"	20	28.25		U.*
43	M	"	10	28		E.R.
44	M	"	13	28		C.
45	N	"	8	28		E.R.
46	N	"	10	28		E.R.

* In the collection of Mr. Peter C. Chen.



Anhui Province, Types of Reverses.



NOTES ON THE MINTED COINS OF CHINA

No.	Obverse.	Reverse.	Size, m.m.	Average weight, grains.	Metal.	Comparative rarity.
47	P	with	13	28	112.50	Copper
48	Q	"	13	28	115.50	"
49	Q	"	14	28.25	111.50	"
50	Q	"	21	28.50	109.50	"
51	Q	"	22	28.50	112.50	"
52	R	"	13	28.50	112.25	"
53	R	"	22	28.50	115.00	"
54	S	"	13	28.50	117.00	"
55	S	"	14	28.25	115.00	"
56	S	"	22	28.50	113.50	"
57	T	"	13	28.50	114.25	"
58	T	"	21	28.25	113.25	"
59	T	"	22	28.25	115.00	"
60	V	"	13	28.50	111.75	"
61	W	"	13	28	112.50	"
62	X	"	13	28	115.25	"
63	Y	"	13	28	116.50	"
64	Z	"	13	28	114.50	"
65	AB	"	23	28.75	114.50	"
66	AB	"	24	28.75	108.50	"
67	AB	"	25	28.75	116.75	"
68	AC	"	22	28.75	76.00*	"
69	AC	"	23	29	111.50	"
70	AC	"	24	28.75	111.50	"
71	AC	"	25	28.50	107.00	"
72	AD	"	23	28.75	114.25	"
73	AD	"	24	28.75	111.50	"
74	AD	"	25	28.75	110.00	"
75	AE	"	23	28.75	109.75	"
76	AE	"	24	28.75	114.50	"
77	AF	"	23	28.75	114.00	"
78	AF	"	24	28.50	112.75	"
79	AF	"	25	28.75	110.00	"
80	AF	"	26	28.50	112.00	"
81	AG	"	23	28.75	113.00	"
82	AG	"	24	28.75	119.75	"
83	AH	"	25	29	111.00	"
84	AJ	"	25	28.50	108.00	"
85	AK	"	26	28.50	111.00	"
86	AK	"	27	28.50	109.75	"
87	3	"	6	28	113.50	"
88	13	"	13	28	110.00	"
89	13	"	22	28.50	97.00	"

As will be observed, the weights are very irregular. Numbers 1 to 4 and 6 to 10 may possibly be classified all under one group as having an affinity of characteristics.

Numbers 17 and 19 are found only in one obverse with one reverse: both sides are not found in combination with any other obverses or reverses; whilst numbers 18, 25, 26, 47, 60, 61, 62, 63, 64 and 84 have only one reverse to each obverse.

* This weight of 76 grains is truly represented; this is due to the extreme thinness of the piece. So far two pieces have been discovered, and they are both much the same in thinness, light impression, and generally of a poor finish.

Number 19 is the only copper coin that is milled, and the name of the province is spelt AN-HUI, the Manchu character on the obverse being now altered to "Hui" where formerly it was "An." Numbers 19, 34, 35, 38, 42 and 68 were undoubtedly struck as trial coins.

Reverse No. 13 has been employed in conjunction with the biggest variety of obverses, to wit: G, K, L, M, P, Q, R, S, T, V, W, X, Y and Z. Numbers 87, 88 and 89, whilst admitted to be excessively rare varieties, can, nevertheless, be placed at the door of 'mint sport.'

A few pieces of No. 28 are found made in pewter that has been dipped into a liquid, which, when dry, gives the impression of the colour of copper, thus leading us to presume that a latent inclination to deceive the public was prevalent.

(To be continued)

THE FEAST

Five big bowls on a big round table,
Steaming odours rising in a cloud.
Chop sticks clicking as the guests reach forward,
Plucking at the duck,
Wishing better luck
When a bone gets stuck.
Coughing as they turn round to spit upon the floor.
Watching lines of cooks bring new dishes in the door.

Birds nest soup and chicken in a stew,
Mushrooms, shell fish, sharks fins, shrimps.
Meat balls, toasted rice, sea slugs, eels.
Bamboo tips,
Watermelon pips
Cracking in the lips,
Garlic, kidneys, pigeon eggs fresh,
Walnuts in a sweet sauce, ham and water-cress.

Fill up the wine cups, empty them again.
Suck down the hot soup, making lots of noise,
Juicy bites dripping as they dip into the sauce.
Voices in a shout
As they call the numbers out.
In a finger guessing bout.
The lucky loser pays the forfeit, draining down his glass,
While one hour, two hours, three hours pass.

J. K. Shryock.

EDITORIAL COMMENTS

DESTRUCTION OF BOOKS

According to the regulations of the Ch'ing dynasty, all rescripts were copied out in carefully written Chinese characters, written in red ink, by the Hanlin and members of the Transcription Bureau (批本處) of the Cabinet (內閣) from informal drafts, and these copies were dispatched to the Six Boards. Such copies were called Hung Pên (紅本). The origin of this Transcription Bureau is interesting. During the Ming dynasty the Imperial rescripts in reply to memorials were written down by one of the Palace eunuchs, but this gave rise to many abuses. The Ch'ing dynasty in its early years established the Transcription Bureau, which was composed of Manchu Hanlins and other secretaries, who were charged with the duty of making careful official copies of all imperial rescripts and of transmitting them to the proper Board. These copies (hung pên) contain much valuable information which is being investigated and tabulated by a special Committee.

This Committee has in charge the preparation of documents relating to the fall of the Ming and the rise of the Ch'ing dynasty. It has recently discovered among the Hung Pên of the Imperial House a curious document relating to orders for the destruction of various books and manuscripts. These recently discovered documents show that in the 48th year of the reign of Ch'ien Lung, A.D. 1783, many books were destroyed which were supposed to be unfriendly to the reigning Ch'ing dynasty. It has been commonly supposed that the Ch'ien Lung period was one in which literature and art were specially patronized, but it will come as a surprise to most Western scholars to learn that the controlling influences of the literary class at the time were so prejudiced that they were willing to destroy historical documents in order to curry Imperial favour. The list of books to be destroyed was a long one and in it were many important documents. Mr. Wang Kuang-wei (王光燾) has written an interesting article in the Bulletin de l'Institut de Sinologie de l'Université Nationale de Pekin, Vol. II, No. 17, p. 105, in which he gives a list of the books whose destruction was ordered. He shows that this work was carried on for a period of more than twenty years during which time about two thousand volumes of various kinds were destroyed. Mr. Wang compares the list of such books with that prepared by Chih Chin Chai (咫進齋) a generation ago and finds some similarities but also many discrepancies, from which he concludes that those referred to by Chih Chin Chai are in addition to those mentioned in the Hung Pên. Mr. Wang calls this destruction a revival of the holocaust perpetrated by the First Emperor—Ch'in Shih Huang (秦始皇). From the list of destroyed books given by Mr. Wang it would seem that they contained passages in which (a) the Ming dynasty regulations amended later by the Ch'ing were highly praised, and (b) the frontier tribes, of which the Manchus were one, were severely denounced. At any rate there occurred a wanton destruction of books which were considered unfriendly to the reigning House, and it is reasonable to suppose that these must have contained much information which would be valuable to the present generation of students of the history of the closing years of the Ming dynasty.

REVIEWS

THE FOREIGN TRADE OF CHINA, by C. H. Remer, Ph.D.: The Commercial Press, Ltd., Shanghai, 1926. Price \$4.00.

This book is the result of many years' study on the part of the author of the foreign trade of China. Dr. Remer, filling the chair of economics in St. John's University in Shanghai, was given the opportunity of studying his subject to the best possible advantage, and the result is a treatise on Chinese foreign trade, which must prove valuable alike to the student of economics in this country and the merchant who wishes to understand some of the anomalies that confront him.

In the early days of China's commercial intercourse with the Western world, a unique situation developed and had to be met. China did not want European goods, but Europe did want certain Chinese products, chief amongst which was tea. The result was there was practically no import business into China to offset the export business, and this in turn meant that foreign merchants trading with China had to devise means to pay in silver for the commodities they exported from that country. This, naturally, constituted difficult conditions of trade, and every effort was made to encourage a demand for European goods. The East India Company, for instance, for many years registered an annual loss in importing British woollen goods into China in the hope of establishing a better trade balance; but all to little or no effect. China was economically self-sufficient. It was not till the demand for Indian opium assumed large proportions that the flow of silver into China ceased. Later, as the opium trade continued to grow, the current of silver set in the opposite direction, and began to flow out of China to India. The loss to China, at this period was offset, however, by a steady flow of silver into China through the trade with America. The indebtedness of Europe to America was met presumably by the importation into Europe of American goods; thus bringing about a state of trade balance. This state was only made possible in the first place by the development of the opium trade between India and China. Now, of course, things are different, and, in normal times imports and exports in China more or less offset each other, with a steadily increasing balance in favour of imports.

The author traces the steady increase of trade between China and foreign countries, giving details of the various commodities and products that have entered into it. Always the traffic in opium has played an important part, however, in Chinese trade, and we wonder whether, if the facts and figures of the extensive smuggling of this and related drugs into China that is known to be going on to-day, albeit vigorously denied by the authorities, could be got at, we would not find that opium forms almost as important a factor in China's foreign trade as it did in the early days of the East India Company. We do not wish to imply that the author suggests anything of this nature: it is a thought that has occurred to us in reading his treatment of the subject.

In dealing with his subject the author divides the history of the foreign trade of China into six periods, devoting a chapter to each. He does not neglect the development of foreign relations, generally, during these six periods, which, of course, were intimately connected with trade developments, so that the book is practically a history of China from the beginning of the 17th Century to the present time viewed from the angle of trade. In Chapter VII, trade balances are discussed and various anomalies explained. For instance, during the period since 1870, there has been a steady development of an excess of imports over exports, yet the same period does not show a corresponding increase of the export of silver over imports, as might be expected. This is accounted for by the steady remittance of silver by Chinese living abroad to their relatives in China.

In the concluding chapter, the author summarizes his findings, the most important points of which are that China's foreign trade as a whole, and bearing in mind the size of her population, is remarkably small; and that this is mainly due to the passive resistance of the Chinese to the penetration of foreign trade, which is due to the "hampering and confining influence that flows from the very nature of Chinese civilization."

The lesson for the foreign trader to learn is that China as a field of commerce has hardly as yet been touched and offers enormous possibilities of expansion.

CHUANG TZŪ, MYSTIC, MORALIST, AND SOCIAL REFORMER, translated from the Chinese by Herbert A. Giles, Lt.D. (Second Edition): Kelly & Walsh, Ltd., Shanghai, 1926. Price \$8.50.

Forty years after it was first issued appears the second edition of Professor Giles' translation of Chuang Tzŭ, the remarkable thing being that the author himself has attended to what revisions and corrections were necessary, although now having turned 80 years of age. Such a circumstance must be unique, or almost so, in the history of book writing.

Chuang Tzū, or, as he is also known, Chou, "Chou of the Autumn Floods," may be considered one of the minor sages of China, although his book, the translation of which is here discussed, by reason of its high literary standard and inimitable style, is one of the most famous in Chinese literature. He was the great protagonist of Lao Tzū, who lived seven centuries before Christ, and who was the great prophet of his age. Chuang Tzū came after Confucius, and, according to the historian Ssü-ma Chien, was a native of Meng (in Anhui), holding a petty official post at Ch'i-yuan. His chief doctrines were based upon the sayings of Lao Tzū, and his books were written with a view to refuting the teachings of Confucius. "His teachings were like an overwhelming flood, which spreads at its own sweet will. Consequently, from rulers and ministers downwards, none could apply them to any definite use." He was offered the position of Prime Minister by Prince Wei of the Ch'u State, but he refused to accept this responsibility, saying that he would rather follow his own inclinations than be slave to the ruler of a State.

He followed the idealistic teachings of Lao Tzū, and used them to oppose the "hard and worldly utterances" of Confucius, trying to "stem the tide of materialism in which men were being fast rolled to perdition." Lao Tzū's idealism and doctrine of "Inaction" appealed to him far more than the common sense practicality of Confucius, and to that which had been passed down from the earlier sage, he added much of his own. What the Apostle Paul was to Christ, Chuang Tzū appears to have been to Lao Tzū, the originator of the doctrine of the Tao. All this and more is explained in the introduction, which is followed by a "Note on the Philosophy of Chapters I-VII" by the Rev. Aubrey Moore. In this a comparison is drawn between the thought and reasoning of East and West. The rest of the book is devoted to the thirty-three extant books of Chuang Tzū, which are all that are left of the original fifty-three. As pointed out by the translator, much of the material contained in these books is not the genuine work of Chuang Tzū, but much is genuine and is remarkable for its beauty and style. Chuang Tzū wrote in parables, and many of his characters were "unsubstantial figments of his imagination", but "his literary and dialectic skill was such that the best scholars of the age proved unable to refute his destructive criticism of the Confucian and Mihist schools." His writings are full of charming imagery and wit, while the Western idealist and mystic will find much in them that will appeal.

It is well that this book has once more been brought within the reach of all, since it will go far to help the West to understand China and the Chinese.

A. DE C. S.

CORRESPONDENCE

THE CHINESE PEONY: We shall be glad if any of our readers can throw light upon the matter mentioned in the following letter.

DEAR SIR,—As I am deeply interested in Chinese literature I would take the liberty of asking you if you can give me any information regarding the species of peony called by the Chinese 一百五 and referred to in 歐陽修洛陽牡丹記. The explanation given by a modern Chinese dictionary reads as follows 牡丹之一種多葉白花洛陽以雙兩為開候而此花常至一百五日開最先. I am a reader of your most interesting China Journal of Science and Arts, but will be obliged if I might have any reply you are able to give direct for which I enclose addressed envelope.

Thanking you in anticipation,

I am, dear Sir,

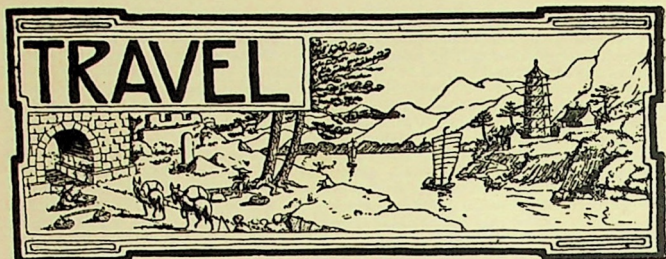
CREDIT FONCIER D'EXTREME ORIENT,

Yours truly,

7 The Bund,

MAURICE ROY.

18th June, 1926.



THE FUKIEN SCIENTIFIC EXPEDITION

BY

FLOYD TANGIER SMITH

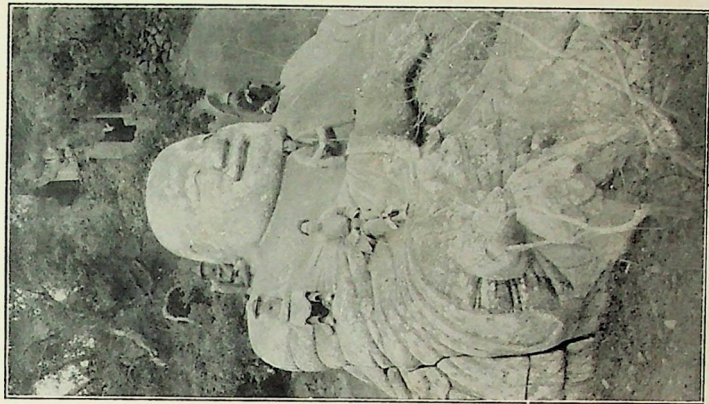
The Fukien Scientific Expedition of the China Society of Science and Arts returned to Shanghai on June 24th, almost exactly six months after sailing from this port. During that time work was carried on both in the south-eastern section of the province, made famous as the hunting grounds of Mr. Harry Caldwell, and the home of the blue tiger, and also in the mountainous regions near the Kiangsi border on the upper reaches of the Min River, in the famous zoological type locality of Kuatun.

Sixteen days were required to get the preliminary 1,300 feet of motion picture film in Foochow, and it was not until January 7th, that our party started by motor-launch for the Futsing district, to the south of Foochow, where some notable specimens were secured and some of the best of the motion pictures were taken. Mr. Clifford H. Pope, of the Third Asiatic Expedition of the American Museum of Natural History, was already at work in that district, and was able to give the new arrivals much valuable information as to the sort of fauna to be obtained, not only in the district then covered, but also in the upper Min territory, which he had visited the year before. We spent nineteen days in Mr. Pope's camp, after which, being earnestly urged by missionaries in Futsing to leave that bandit-ridden country, we returned to Futsing City. A few days later Mr. Pope himself left the district for Foochow. This was the first occasion that our party found it necessary to abandon good shooting grounds on account of the bandit menace, but later in the trip we were time and again obliged to shift quarters into new territory on account of the activity of armed robbers in the immediate vicinity, and this proved to be one of the greatest handicaps under which we had to carry on our work.

Some twenty *li* from Futsing City is the little fishing village of Haikow, and here our party repaired to take pictures of the fishing

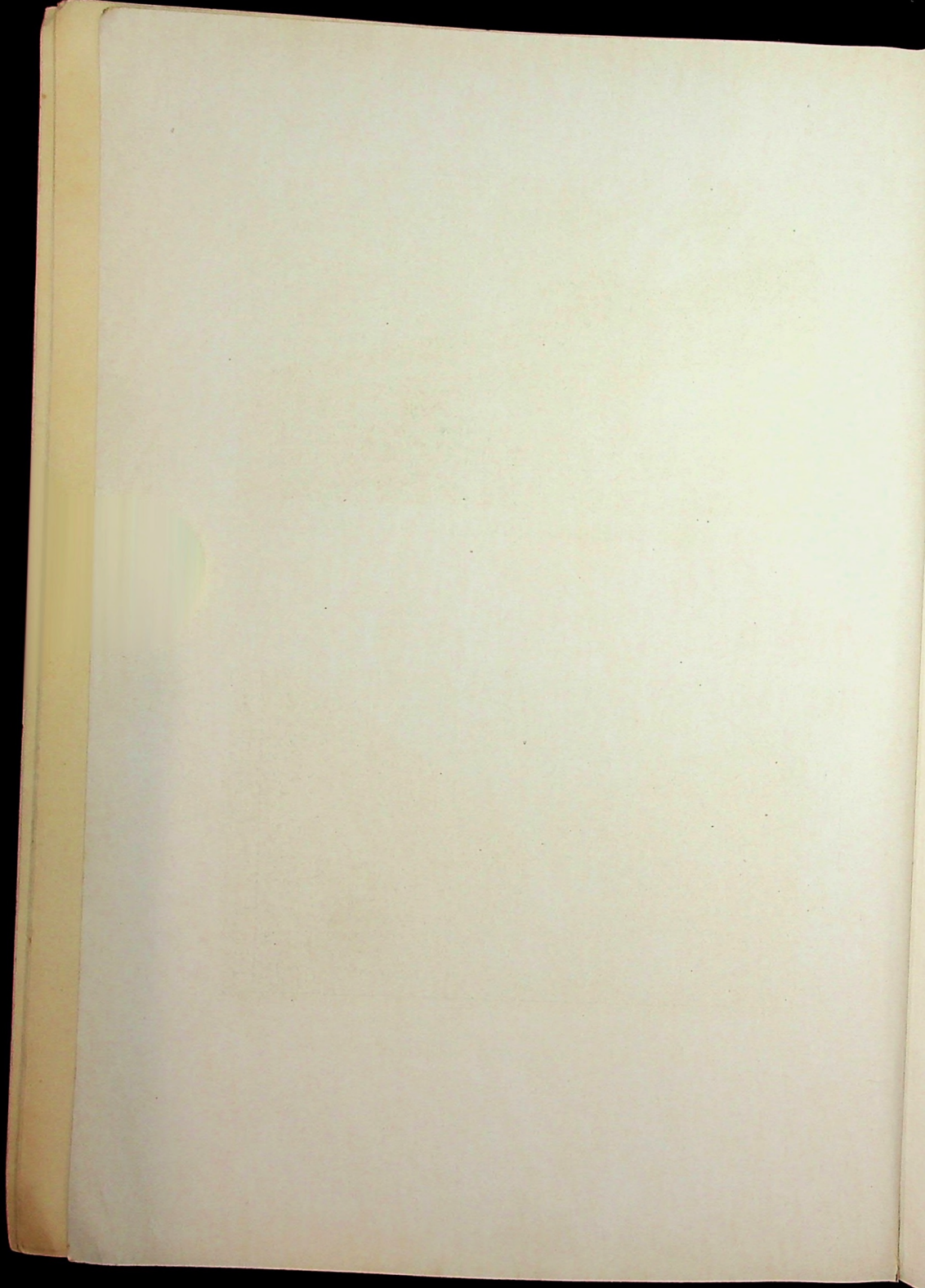


Mr. G. Krainukov, the Motion Picture
Camera Operator.



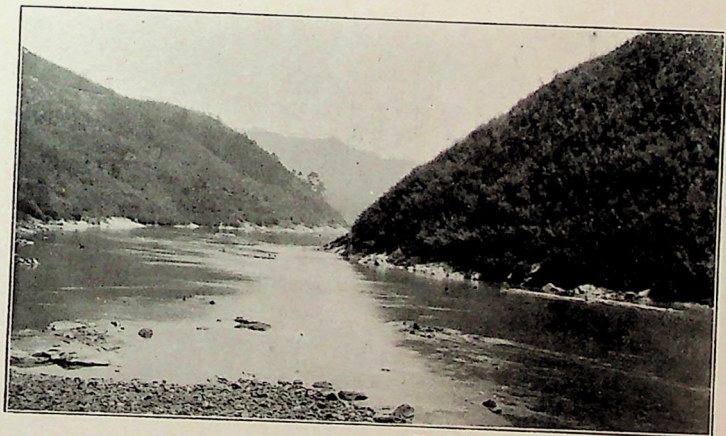
Photos by Fukien Scientific Expedition.

The Colossal Laughing Buddha near
the Sea in the Futsing District. It is
said to date from the T'ang Dynasty.



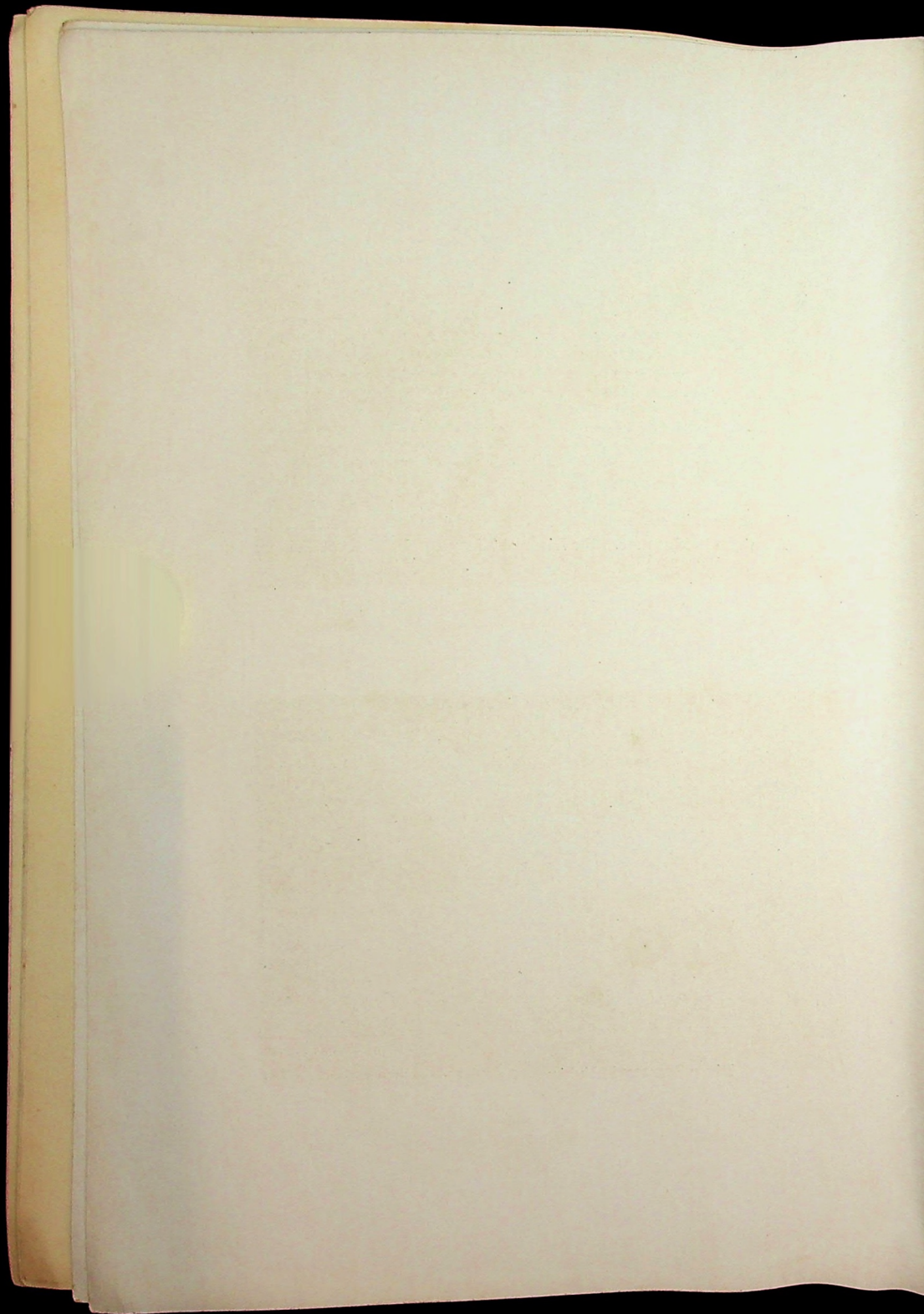


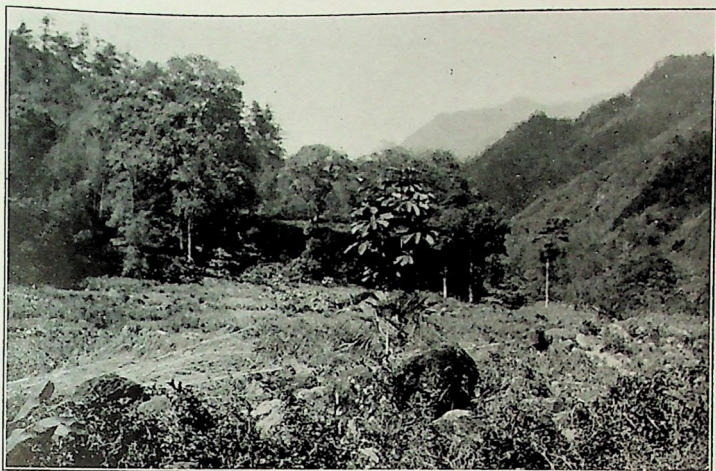
A unique Bridge across the River at Kienyang, North-west Fukien.



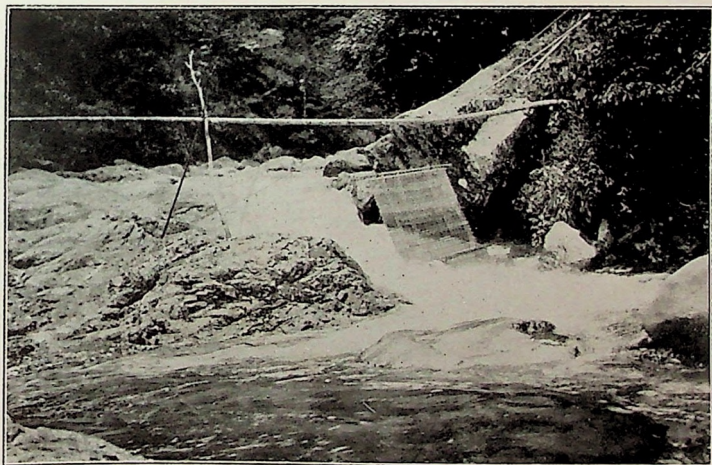
Photos by Fukien Scientific Expedition.

River Scenery in Fukien. On the Upper Min Reaches.



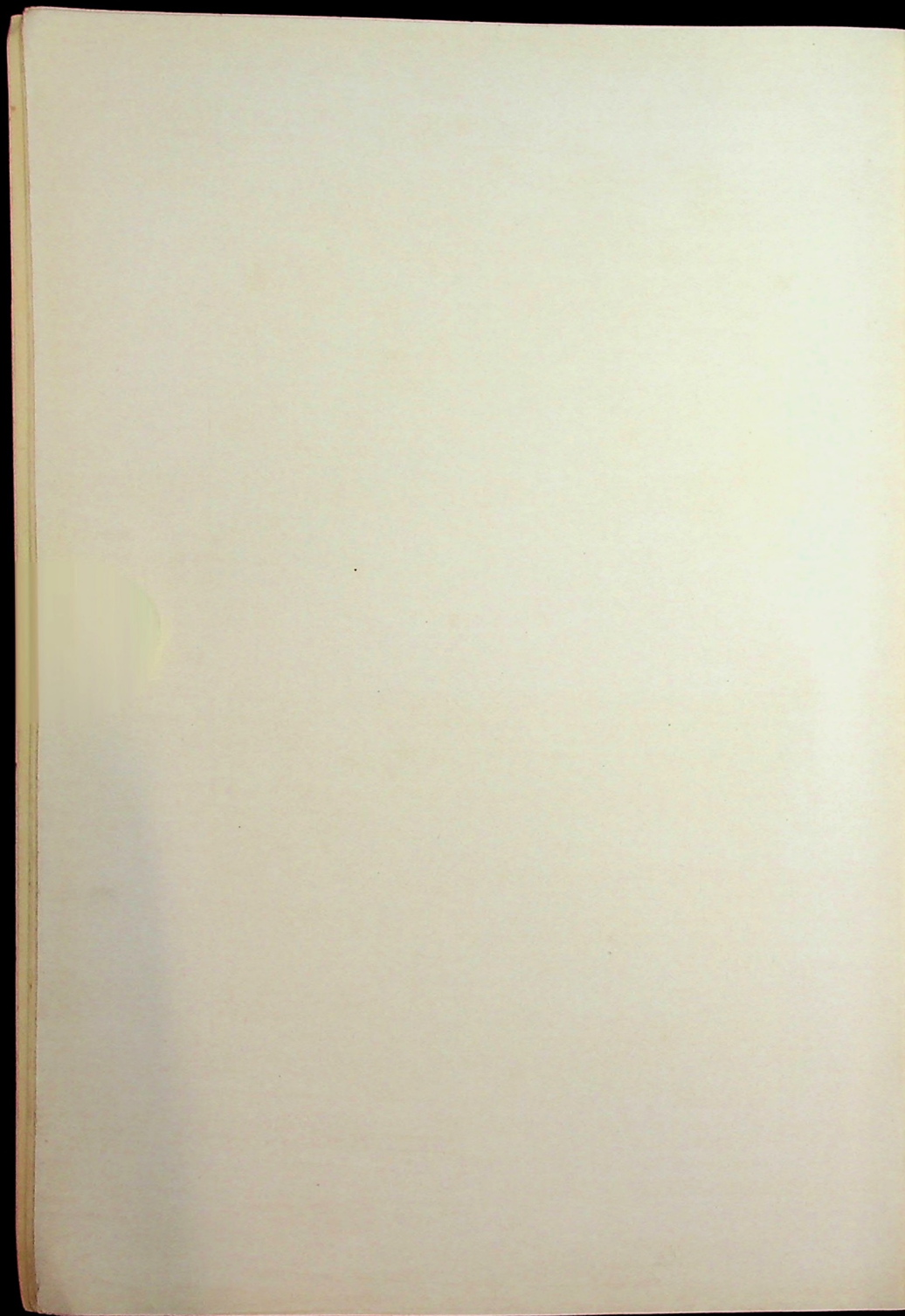


A Scene in Central Fukien. A Valley in the Yenping District, where Vegetation is luxurious and varied and Animal Life abundant.



Photos by Fukien Scientific Expedition.

An ingenious Fish-trap. The Fish, ascending the Rapids, strike against a Wicker Shield and fall into a Net.



THE FUKIEN SCIENTIFIC EXPEDITION

industry and also of the famous stone Buddha in a nearby monastery. This Buddha is carved out of a single granite boulder on the mountain side, measures some thirty feet in height, and is so finely executed that even the finger nails may be clearly seen in the photographs that were taken, although the great figure has stood the ravages of the elements for something like a thousand years. It is supposed to have been first carved out of the living rock in the T'ang Dynasty.

At Haikow was secured a specimen of the South China otter, which is one of the most interesting things brought back. It is said that the Chinese capture these animals with fish hooks and sell the skins for eight or nine dollars to the fur buyers, who regularly visit the district. But, although I made urgent enquiry and offered higher sums for a live specimen, I could learn nothing from the natives, and it seems probable that this animal is in reality exceedingly scarce, even in the districts where most are found.

From Haikow the island of Haitan is reached by Chinese sailing junks. We were told that on this island were to be found wild fowl in such profusion that they blotted out the very sunshine, and thither we repaired hoping to take photographs of this unusual sight. In this we were unsuccessful, as we were unable to find the birds, but later learned that we had explored the wrong region, and that, had we crossed the island to the further coast line, we would indeed have come upon myriads of ducks, geese and other migratory water fowl. The approach of Chinese New Year made it necessary to hasten back to Foochow to take pictures of the New Year festivities in that place, so that we were unable to continue our search for the birds; but it is to be hoped that some future expedition may take in this part of Fukien and bring back a good pictorial record of the clouds of birds that are said to turn daylight into night.

The second sojourn in Foochow turned out to be a great disappointment, for, although we remained there throughout the New Year season, persistent rain and heavy clouds precluded any possibility of photography, and we were finally obliged to give it up and continue on our way up the Min River without securing a single picture of the most interesting celebrations that are carried out at that time of year. On this trip we came into actual contact with bandits for the first time. Our boat was heavily fusilladed from the left bank, and, had the robbers known anything of marksmanship, it is probable that a number of lives would have been lost. As it was we were obliged to beach the boat, when one of the crew went ashore to negotiate, and, in the end, we were allowed to continue on our course leaving behind two hundred dollars with the bandits. Considering, however, that we had on board two hundred thousand silver dollars, we were really exceedingly lucky to get off as lightly as we did. It does not seem very likely that any of the bandit chiefs are subscribers to *The China Journal of Science and Arts*, but had I the address of any of these gentry (they usually do not leave forwarding addresses) I would gladly forward a free copy that they might learn of what they did not get on this occasion.

There is now a fast motor-launch service between Foochow and Yenping, so that the journey which formerly required two weeks can now be made in as many days, and, on February 23rd, we arrived at the last named city where we received a hearty welcome from the considerable colony of American Methodist missionaries who have their headquarters there. Near to Yenping is a most wonderful gorge, not only interesting in itself, but because it contains a cave of considerable extent that at all times is crowded with bats of many varieties. Within the recesses of the gorge are also to be found two villages of aboriginal mountaineers. We left for this place within a few days of our arrival in Yenping, and took up our quarters in an ancient monastery that is literally perched atop of a perpendicular rock, but we were not to be permitted to rest peacefully even in this remote retreat, and on the following day were packing posthaste back to Yenping. We had started our picture-taking operations at the foot of the rock on which stood the monastery, and were just filming the wonderful bridge that crosses the gorge at that point, when the work was interrupted by an incursion of refugees from up the gorge, who reported that bandits were sacking the village three *li* away in that direction. Our cameraman, with the cook as carrier, started immediately for the village of the aborigines lower down, while I returned to the monastery to pack up the rest of our effects, and by five o'clock that evening I was comfortably housed in the village of the aborigines, while the camera operator was safely within the walls of Yenping. It was my intention to return to the gorge and continue the work of photography as soon as the bandits had returned to their mountain retreats, but that was not to be, for the next day I went down with a most malignant form of malarial fever and for eight weary weeks hovered uncomfortably near the brink of the hereafter.

Before I had entirely recovered and before I should have left my bed, we started up the river in a vain attempt to reach the Bohea Hills, and photograph that wonderful country before the time should be up when the cameraman and the photographic outfit would have to return to Shanghai. But the weather was all against us, and the constant rains and the rising river held us back until, on reaching Kienyang, I was obliged to send the photographic department back to Shanghai and myself continue to struggle up the river, hoping to reach the mountains on the borders of Kiangsi in the far famed hunting district of Kuatun. I got as far as Chungan, where I found a home with the American Fathers of the Catholic Mission, but there my condition became so critical that I was obliged to return down river where I spent another weary month in the hospitals, first at Kienning and later at Yenping. At the end of that time my illness left me as mysteriously as it had come on, and I again turned my face up stream, and, after a ten days struggle with the current and the mountain passes, at length, on May 16th., reached Sankan in the very heart of the mountains that form the water shed between the river systems of Fukien and Kiangsi. Here I again found Clifford Pope, who had passed up river as I lay in the hospital at Kienning, and who had already been hunting in this

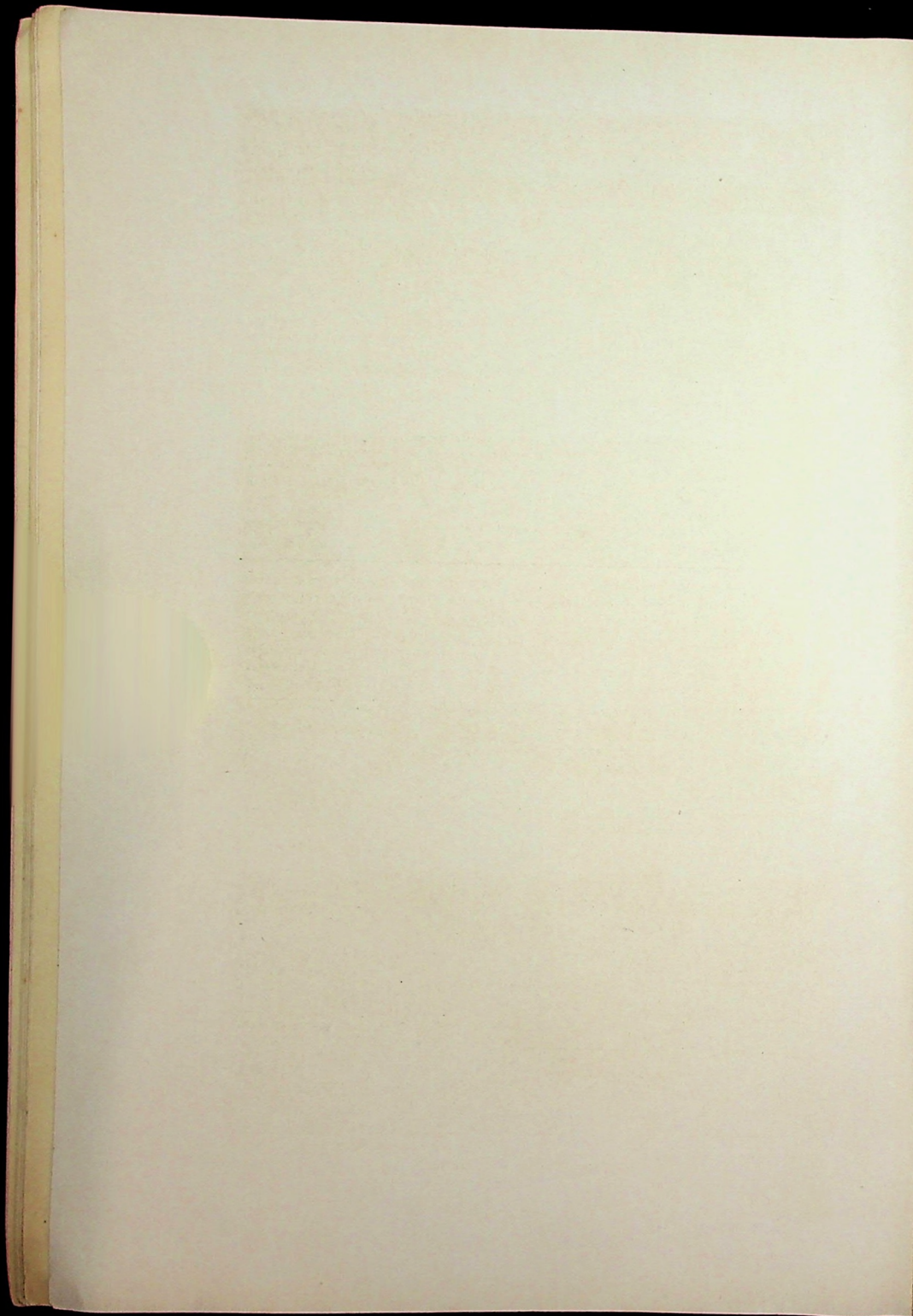


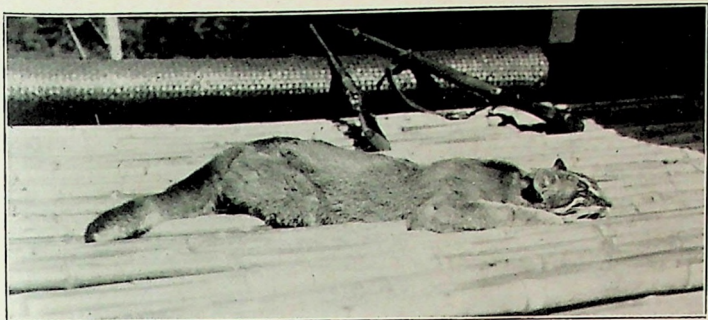
A Foochow Woman wearing the remarkable Silver Daggers Head-dress, around which are woven many quaint Legends. The weight and size of the Daggers are an indication of the Prosperity of the Wearer.



Photos by Fukien Scientific Expedition.

Camped in a Temple in the Futsing District South of Foochow. The Naturalists and their Chinese Helpers at work upon their Sepecimens.





A beautiful specimen of the rare La Touche's Cat
(*Felis dominicanorum*).

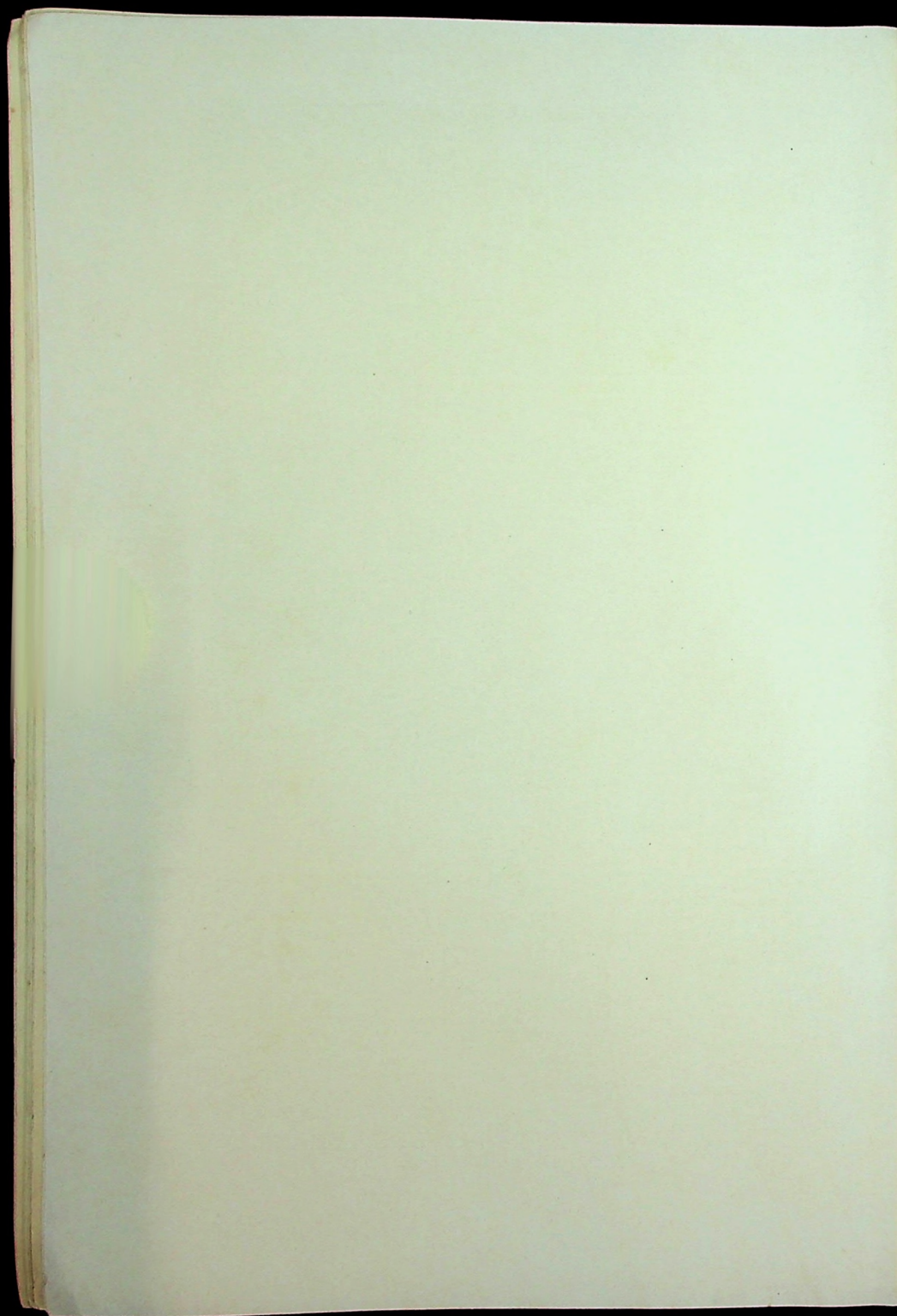


Two Native Hunters and their bag of a Wild Cat and a Badger.



Photos by Fukien Scientific Expedition.

A fine Hog-nosed Badger.



THE FUKIEN SCIENTIFIC EXPEDITION

region for nearly a month. He was able to give me a lot of valuable information as to the animals that were to be found in those parts and the local methods of capturing them, and, after remaining with him for a few days, I climbed further up with my taxidermist and two local hunters to the village of Kuatun. Here we were very near the summit of the range with the clouds not only above but beneath and all around us. It rained every day and the thunder rolled in the valleys below us as often as overhead. The wet weather did much to curtail our activities in the matter of securing specimens, but my two hunters were hardy fellows and day by day our collection grew, until, after a month's work, we had secured some 280 mammals, birds, reptiles and amphibians and between five and six hundred beetles. Kuatun is one of the most famous type localities in China, and our specimen boxes reflected the fact, being filled with numbers of specimens of which we could secure no duplicates. Altogether, some eighty per cent. of all that we got showed variety of species.

Nearly every man in Kuatun possesses a gun, primitive though some of them may be, and also knows how to use it, and during the winter months, after the tea season is finished, they put in a good part of their time shooting. They sell the furs to the fur traders who canvas the district yearly. We were most unfortunate in arriving there at the very worst time of the year, when every man, woman and child is busily occupied with the tea crop, and no one is willing to do any shooting. Also, except in the winter months, the growth on the mountains is very dense, and, although there is ample evidence that game abounds, it is very difficult to get a shot. September, October and November are the best months for hunting, and anyone able to collect in that district at that time should be able to secure several hundred specimens, some of which might probably be entirely new to science. At some later time I hope that I may myself spend a winter in Kuatun, and, in the spring, carry out what was planned for this trip, namely, to cross over the mountains and return to Shanghai down the Chien Tang River by way of Hangchow. Such a trip should yield rich results both in photographs and specimens.

Amongst the specimens of particular interest secured at Kuatun were two huge hog-nosed badgers, two large monkeys and one small one, Milne-Edward's and La Touche's rats, the giants of the rat world, bamboo rats, tragopans, silver pheasants and other uncommon birds, and some very rare snakes, lizards, frogs and toads. Mr. Pope's men got a specimen of the rare La Touche's cat, *Felis dominicanorum*, and also a large spotted cat. Muntjac deer were quite common.

The people everywhere were friendly, except, of course, the bandits, who, as already stated, were a constant menace.

TRAVEL AND EXPLORATION NOTES

DR. J. G. ANDERSSON RETURNING TO CHINA: A brief report dated July 6 from Stockholm and appearing in the local press, states that Professor Gunnar Anderson, the eminent archaeologist, expected to start in August on another expedition to China, with a view to acquiring material to supplement the collections made on his previous expeditions.

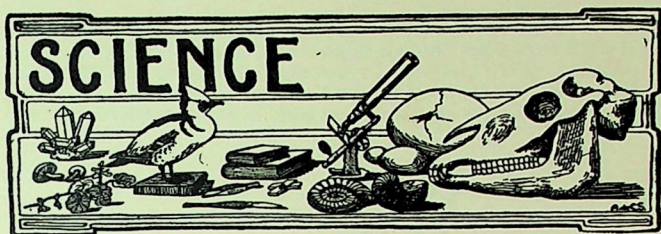
The scientist referred to is evidently Dr. J. G. Andersson, formerly connected with the Geological Survey of China and the Geological Museum in Peking, and mining advisor to the Chinese Government. Dr. Andersson returned to Sweden about a year ago, after having carried out extensive expeditions in Central Kansu and the Kokonor, where he found some extremely interesting archaeological remains of considerable antiquity. The greater part of his discoveries consisted of pottery of a pre-Chinese type, though some very interesting pre-Chinese skeletons were discovered. Previous to this he had carried out highly valuable investigations upon two apparently Neolithic sites, one in Honan and one in Manchuria. The collections he made on his last expedition went to the Swedish Museum at Stockholm, where the specimens were to be examined and described, after which half were to be returned to China to the Geological Museum, Peking. It is doubtless to carry out further investigations in connection with this extremely interesting study of the prehistoric human inhabitants of this country that he is returning to China.

The report went on to say that it was understood that the Swedish Crown Prince would accompany him in order to indulge in his well known archaeological interests.

RUSSIAN EXPLORATION OF WESTERN MONGOLIA: According to a message from Moscow dated June 23, Professor Rachkovsky had left that city for Mongolia with the object of exploring geologically the Uliasutai, Ulagan and Kobdo districts. This is the second of these expeditions into Western Mongolia, the first having been carried out last year. It is planned to make the third next year. The personnel of the present expedition must be very large, for it is stated that when it reached Kobdo it will divide up into seven independent parties. The results of this expedition should prove of great interest in view of the discoveries made of late years by the Third Asiatic Expedition of the American Museum of Natural History in the Altai and other regions of Western Mongolia.

GEOLOGICAL EXPLORER BEATEN AND ROBBED IN NORTH-EASTERN CHINA: In our last issue we gave details of Dr. George B. Cressey's proposed geological reconnaissance in the upper Luan River area of North-eastern Chihli. He left Shanghai on June 24th., and, after paying a visit to Peking, left Luanchou, at the junction of the Luan River and the Peking-Mukden Railway, travelling up that river by boat. His special objects of search were river terraces and material relating to recent climatic changes, and he had found some promising looking situations and was getting to work, when one night he was attacked by a band of natives, led by a man in something of a soldier's uniform and armed with a revolver, the others being armed with sword, bayonet and sticks. Dr. Cressey and his companions as well as the boatmen were badly beaten up and made to go ashore where they were guarded while the boat was ransacked. Unable at first to find any money the robbers threatened to shoot Dr. Cressey, who finally told them where his store of ready money was. After going thoroughly through everything on the boat, and further threatening their victims, the ruffians made off with practically everything belonging to the party. Such instruments as they had no use for they broke.

Dr. Cressey, though so badly beaten up that he had to go into hospital on his return to civilization, reported the matter to the officials at Luanchou, who had previously received ample notification of his intended expedition. He also had the necessary passport to travel in the area visited, which calls for protection on the part of the local officials. A full account of the affair appeared in the *Peking Leader* of July 21st. We make no further comment on this incident than to point out that it reflects well the disgraceful state into which China, a supposedly civilized country, and at the moment clamouring to be allowed to take equal rank in all matters with other civilized nations, has fallen.



RUS IN URBE
FURTHER NOTES ON SOME OF THE BIRDS SEEN IN
SHANGHAI

BY
E. S. WILKINSON

My first article under this heading was merely an attempt to arouse interest in others with a view to encouraging the study and protection of wild birds in Shanghai: but the Editor has asked for more; and I find myself so interested in the subject which has been neglected since my bird-nesting days, that I am again attempting a few notes on birds which I have observed since the trees, now fully-leaved, have encouraged other feathered strangers into my vicinity.

My garden, being new, has no tall trees, but with the aid of a pair of glasses it is easy to observe birds in one's neighbours' gardens, and I strongly recommend the use of glasses to those who may be interested. Incidentally, a treeless garden gives a wider field of vision and may thus prove an advantage. With the addition of an early morning walk or ride in the Western district one may see all the birds mentioned in these notes.

Of all the birds which visit us the kingfishers and the orioles are the most spectacular. I used to think that the kingfishers were winter visitors only, but, as I have recently watched one of my special friends fishing as late as the first week in June, I am beginning to change my ideas. As to the orioles, I said before that I had seen only one on this side of the Avenue Haig, and so have come to the conclusion that my blindness was that of him who will not see.

To study the oriole, one should get up early, and has only to walk to a few tall leafy trees to hear his call and then wait to see him. He has two different (and both very distinctive) calls, by which one may know him. The more frequent is a harsh yet almost musical cry with a distinctly cat-like quality in it: it is not so harsh as a jay's call and not quite so clear as a cat's "meow." Once one has heard it, one

will never forget it. The other call is a deep melodious whistle which might come from a flute or that popular instrument of the butcher-boy, an occarina. The notes may be described (by an unmusical writer) as "up-down, up-down, glide note." Having found a tree with either or both of these sounds coming from it, stand quietly below and



The Masked Hawfinch, or Large-billed Gros-Beak. (*Eophona personata magnirostra*, Hartert), the largest of the Chinese Gros-beaks.*

* The drawings illustrating this article originally appeared in the *China Illustrated Weekly*, and are here reproduced by courtesy of The Tientsin Press, Ltd.

soon will be seen the glorious golden-yellow body, with the dark-bordered wings and tail, flitting from branch to branch in the higher levels. I have often seen as many as seven of these birds chasing one another among the branches of one tree. I know one tall ash tree where the oriole has built a nest (in company with a blackbird and gros-beak). The nest is narrow and deep, apparently built of leaves and grasses bound together with some kind of wool, for long strands of the latter can be seen hanging below. When I stand below the tree, and am observed, the female oriole shows her displeasure by changing her more musical call to a harsh chatter almost as unmusical as that of the blue magpie.



The Chinese Long-tailed Grey Shrike (*Lanius sphenocercus sphenocercus*. Cabanis). This Bird is common in North China, but has been recorded from the Yangtze Valley. A smaller species is the Siberian Grey Shrike (*Lanius excubitor mollis*, Eversmann), also recorded from the Lower Yangtze Valley.

I have been very interested in the shrikes recently (May and June), and find that there are at least three varieties to be seen in Shanghai. The equivalent of the English common shrike, or butcher-bird, is the best-known here and is generally called the red-backed shrike. His black cap and wings with ruddy back and breast are the distinguishing marks, together with his long tail of brown-black. The two varieties of grey shrike have puzzled me and I will try to describe them.

The larger of these two is an imposing looking bird with a hawk-like head. Pearly grey all over, he has black markings on the shoulders and a narrow black stripe on his thin pendulous tail. Above all you will know him by a long black moustache or whisker which runs right across his face. The late humorous novelist, Frank Richardson, who could never keep "whiskers" out of his books, would have described this facial decoration as a "cheater" because of the deceitful merging of moustache into face-whisker: he states that the "cheater" is worn by "murderers, robbers, forgers and bigamists," and if only he were alive to-day I would like to point out to him how truly his classification could be applied to the grey shrike, for I am certain that he is a bad character. If you hear the bulbuls chattering angrily and see the sparrows beating a hasty retreat from their perches, you may look for a shrike, and, as often as not, will find him in the vicinity.

Sitting on the branches of a dead tree near my garden are a pair of smaller grey shrikes, marked and carrying the "cheater" like their bigger brother, but washed with a distinctly ruddy-fawn colour on the back, shoulders and breast. Quietly they sit and watch for their food, the body erect with the head set forward and the long tail swinging below.

I have seen no green woodpeckers since the early spring, but a large black woodpecker with yellow or white underparts came into my garden and attracted my attention by beating loudly on a small willow tree in search of a "borer." After a few minutes work he located his quarry and disappeared swiftly over the fence. I examined his bill-work and found a neat round hole, half an inch deep in the rotten wood, as cleanly bored as if it had been done with a steel tool.

My special wryneck departed early in May, but I often thought I heard his insistent "*peep-peep-peep*" until I found I was being beguiled by a species of frog, which gives a very colourable imitation of his cry. But the real wryneck, whom I had often watched in his daily hunt for ants, proved a true prophet of the coming of the cuckoo, who was calling all over the country-side before he left.

I often wish we had the English cuckoo here, but I must confess there is a special fascination in the call of the Indian cuckoo (or Chinese cuckoo as we call it), which stays here to foist its eggs on unsuspecting little birds, as does his English cousin. I believe that many scientists often argue as to whether the cuckoo calls at night, and many claim that he only does so after the break of dawn. I can definitely contradict the latter theory so far as our Shanghai birds are concerned, for I have heard the familiar cry at all hours of the night from

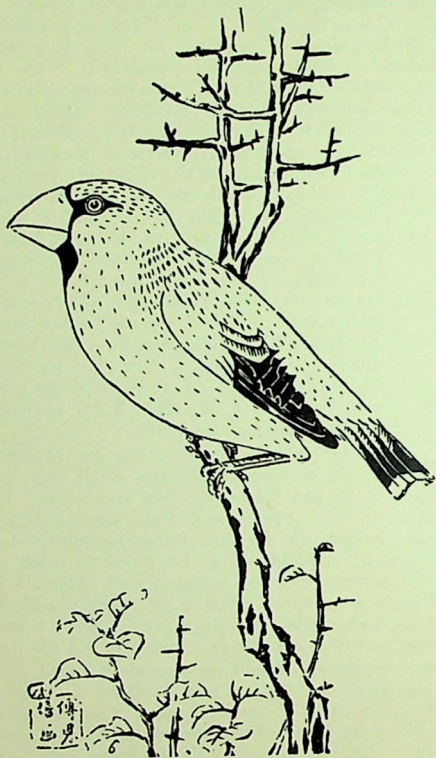
10.30 p.m. to 3.30 a.m., but perhaps this is merely another example of the evil influence of human environment, and is peculiar to the birds of Shanghai!

The meaning of the cry of the Indian cuckoo is the subject of much speculation among the Chinese, and I often wonder what to make of it myself. Those who hear it as "*kwei-kwei-kuo-kuo*" take it to mean "Quick, quick reap wheat" or "Quick, quick plant rice." Others of a more bibulous tendency translate it "one more bottle." A Ningpo man once told me that the cuckoo contained the spirit of a widow, and that she was continually calling "Quick find husband." Students of Chinese will note that the translation of *kwei* into "Quick" credits the cuckoo with speaking Northern or Mandarin Chinese, and perhaps this explains why some of the Shanghai Chinese change the first two syllables to *sau-sau*, which may be the *sau* of *au-sau*! Best of all I like the explanation of my old Chinese teacher, who many years ago told me the tale of why the cuckoo (to his ear at least) always cries *sau-sau-mei-ho*. Sau-Sau was a little slave girl who was badly treated by her mistress, finally killed and thrown down a well. To explain her crime the mistress brought all sorts of charges against Sau-Sau's character, which were sufficient excuse for her dreadful punishment. Now, the cuckoo knows better, and he comes here every spring to tell the world that "Sau-Sau was a very good girl," thus bringing retribution and punishment to the descendants of the wicked mistress. These are all the explanations I can offer, but I am sure there must be many more if one will only look for them.

The long-tailed or paradise flycatcher is one of the most beautiful and curious of our smaller birds. His small body is deep reddish-brown, his head black and his breast grey and white. He carries two long tail feathers, nearly a foot long, deep brown-red in colour, which fly straight out behind him like two fluttering baby-ribbons blown out by a fan. When he suddenly stays his flight to catch an insect, you will see the tail-feathers swirling beneath and around him like a deep red cloud. I have been much puzzled by seeing exactly the same bird with the tail-feathers white, and have now learned that he is like his human admirers in turning white as a result of old age!

Until a few weeks ago I had no idea that a bird so rarely seen as a water-rail was nesting within a few yards of my garden fence. Attracted by the quarreling of some magpies, who rose at my approach, I went to examine the cause of the trouble, and found an egg, about the size of a pigeon's, slightly broken by the magpies' beaks. It was beautifully marked with brown and reddish splashes, and was later described by my scientific friend as that of a blue-breasted banded rail. He also gave it some other names which I will not attempt to repeat, but you and I will call it a water-rail, first cousin to a corn-crake. Somewhat larger than a snipe, he is such a shy little lurker in the reeds that we never see him with his spotted back, gray-blue breast and banded flanks and underparts. He nests in the water among the reeds, and how the magpies came into possession of his egg I do not know. I can only surmise that the tragedy was started by the kerosine-spraying of the

creek, and, if the nest was deserted as a result of this, it is highly probable that the magpies pulled the egg, which was quite fresh, out of the nest with a view to eating it.



The Eastern Hawfinch (*Coccothraustes coccothraustes japonica* T. & S.).
This Bird is of a general Brownish Colour, as Opposed to the Grey of
the Gros-beaks.

There are so many small birds to identify, or at least to describe
by colour and shape, that I must leave them for another season.

Finches and tits are small and quick on the wing, and the leafy trees soon hide them.

I may conclude by giving a few dates on which I have *first* seen certain birds in the neighbourhood this spring, as I believe such observations are of special interest to those who make a scientific study of their movements :—

April	8th	Swallows.
„	15th	Black Woodpecker (see notes above)
„	16th	A Couple of Snipe.
„	22nd	White Herons (in large numbers).
„	30th	Golden Oriole.
May	4th	Cuckoo.
„	5th	Large Grey Shrike.
„	7th	Woodcock.
„	8th	A Pair of Pond Herons.
„	13th	Smaller Yellow-Grey Shrike.
„	22nd	Paradise Fly-Catcher.
„	27th	A Pair of Hawfinches.
„	28th	Water-Rail (found egg).
„	31st	Large Grey Heron.

Writing early in June, I have seen no new birds for the past ten days, so I presume that all the birds are settled in their various haunts for the nesting season.

WHO ARE WE?
A REVIEW OF CURRENT IDEAS ON HEREDITY*

BY

W. M. PORTERFIELD.

Imagine yourselves for a moment in the place of the anxious young husband who is looking forward to seeing his first born. Consider his shock, however, when the nurse brings him in, to find that the young one is web-footed. It does not worry the father so much that his duck-footed heir shows possible leanings toward a watery habitat, as it does that he cannot find an explanation of the oddity. Is it a chance abnormality brought on through some prenatal disturbance, or is there a defect that lies deeper, of which till now he has been ignorant? Problems such as this have been investigated of recent years, and it has been found that a great many more similar oddities than were at first supposed to exist have crept into the human heritage. We wish not to attempt to explain their origin, but rather to give an intelligent idea of how they crop up from time to time. Heredity is a popular subject, but it is a difficult one, and, if one goes at it right, one that requires some previous knowledge of biology. Since the time is limited we shall not dwell on those elementary biological phenomena which may readily be looked up in any modern text-book, but get on with the subject. By way of preliminary remarks, however, it will be well if we can consider first the early conceptions of heredity and how they took shape and then proceed with the principles established by Galton, Mendel and others with whom we are more nearly concerned.

As early as the sixth century B.C., we have statements from the Greek literature which indicate a fine perception of the force of heredity. To quote from the poet Theognis of Magara: "We look for rams and asses and stallions of good stock and one believes that good will come from good; yet a good man minds not to wed an evil daughter of an evil sire if he but give her much wealth." Plato a century later advocated state intervention to insure that the best mated with the best, suggesting, furthermore, that the children from such matings should be as numerous as possible, and, so as not to become too great a burden on the individual families, that they be reared by the government. Aristotle, though he developed the idea chiefly along political lines and was, therefore, interested only in the economic phases of the question, nevertheless held firmly to the idea that the state should feel free to intervene in the interests of reproductive selection.

In mediaeval times there were vague speculations regarding the nature of inheritance and nothing of any permanent value appeared until the seventeenth century when the microscope was perfected and applied to biological investigation. Malpighi, the Italian microscopist,

* Read before the China Society of Science and Arts on February 26, 1926.

carried forward the first extensive investigations on development and thereby brought into being the science of Embryology. Because he was able to detect signs of organization in the unincubated egg, he believed that the embryo pre-existed in the hen's egg. By an analogy drawn from the butterfly chrysalis on which can be detected the wings in miniature, the legs and the antennae of the future butterfly, Swammerdam, a Dutch investigator, concurred with and added weight to this idea. In its enunciated form as the doctrine of preformation it received its greatest development in the works of Bonnet, Haller, and Leibnitz.

John Ray, the English systematist, about the same time that Malpighi wrote, made the first attempt to define species. He said that species were individuals derived from similar parents. The doctrine of preformation came to hand, therefore, as a convenient as well as possible explanation of the inheritance and development of special characters: and by it the diagnostic characters that identify an individual with the similar parents from which it is derived could be assured, because at reproduction the miniature of the adult, already present and residing in the egg, simply expanded. It was really an attempt to supply a causal process that explained the similarity of the derived offspring to its two parents.

When Leeuwenhoek discovered the fertilizing filaments of the egg, however, the embryologist camp was thrown into confusion, for some now held that the miniature lived in the sperm and that the egg was merely a kind of nest in which the sperm developed. These were the so-called animalculists, whereas the opposing school, the ovulists, still held to the old idea which contended that the sperm was only a stimulus which goaded the egg into growth. Though the preformationists were finally forced to give way before the masterly demonstrations of Wolff in 1768, which showed that an animal body is developed through the gradual building up of its parts, there still remained some survivals of the old idea. Our modern conviction that there is in the germinal elements an inherited organization seems like a return to the doctrine of preformation, but it is founded on far different bases. Inherited organization, though implied no doubt in the theory of preformation, is founded on the idea of germinal continuity which did not come to expression until late in the nineteenth century.

Linnaeus, before whom Ray is considered but a forerunner, was a preformationist, but his concern was with another phase of this question. Linnaeus believed in special creation. According to him a pair of every kind of animal that now exists was originally created and from them all present forms descended *without change*. This attitude of Linnaeus was a logical outcome of the preformation idea when coupled with the doctrine of special creation. Since in every created species there is supposed to exist, according to the preformation theory, the miniatures of the adults of all succeeding generations encased one within the other, it is easy to see how the dogma of the fixity of species arose. Linnaeus did not acknowledge the existence of variations, and it was just this attitude which, though more the concern of the evolutionists, blocked the progress of science for a century and prevented any advance toward a fuller knowledge of the origin of characteristics. Accumulating evidence of

variability in animals and plants, however, later forced Linnaeus to withdraw from his earlier position, and when in 1858 the first abstract of Darwin's theory of Natural Selection appeared, the rout was complete. Variations, though not yet explained, were now taken for granted and considered as forming a regular category of natural phenomena.

Darwin's theory of organic evolution as well as those of his predecessors, Lamarck, Dr. Erasmus Darwin, and Buffon, rested on the primary thesis of the heritability of acquired modifications. It became necessary, therefore, in order to put the theory on a truly logical and natural basis to supply a mechanism for the transmission of those changes incurred during the life of the individual. Consequently Darwin invented his pangens which were invisible particles given off from the cells of the body. In this theory every body cell is supposed to discharge into the blood stream a gemmule which together with its fellows flows toward the germinal elements. There they are packed into the prospective egg or sperm which thus really represents a composite of substances derived from the cells, tissues, and organs of the parents that will eventually determine the new organism. It is easy to see how heredity could operate under such a system and how modifications could be inherited. A changed part of the body involves changed cells. These will, therefore, produce modified gemmules with altered potency, which, after crossing the hereditary bridge, will direct the building of the new individual with special reference to the part to be modified; and lo, the new character has been acquired.

Owing, however, to the fact that the knowledge of cell structure had been advancing rapidly under the ministrations of such men as Schleiden, Schwann, Virchow, Gegenbauer, von Mohl, Hertwig, Strasburger, and many others, men were becoming somewhat skeptical of the entire adequacy of pangensis as a satisfactory theory of heredity. No egg could marshal within itself in orderly array the millions of particles that must necessarily collect if all parts of the body are to be represented. Much less is the body able to guarantee safe conduction of the said particles to the germ-cells. As the doubt became more general, naturally more interest became attached to the ultimate solution of the problem. As a result new fields of investigation were opened up and developed, and new lines of attack were organized and co-ordinated. The relations of growth and reproduction were more intimately studied. These facts, together with those furnished from other fields of investigation, in the hands of keen men led to the formulation of certain very fundamental conceptions. The closer examination of the germ-cells and their behaviour before and after fertilization paved the way to still more illuminating conclusions. But in the end it was the experimental studies together with the inauguration of the statistical method that gave the first tangible clue to the real manner of inheritance.

August Weismann gave a deeper significance to John Ray's definition of species and supplemented it furthermore when he said we are like our parents because we are made of the same stuff. It is admitted that some hereditary substance passes from parent to offspring—this we know to be the fertilized egg—and that into the building of the body of the new organism goes some of the actual substance of both parents,

i.e. the egg of the female and the sperm of the male. Offsprings are the results of the continued growth and reproduction of a composite parental protoplasm; in other words, offspring are really elaborated bits of their parents. This bit of living substance is the only connecting link between one generation and another, and therefore must bear the hereditary qualities. The parents in the same way can also be demonstrated to be the physical continuation of the grandparents—and consequently the receiver also of their combined characteristics—and they in turn of previous generations. How far back does this line of unbroken continuity go, and how many shufflings and reshufflings of the ancestral cards does one's heredity represent? Thus reasoned Weismann, and the outcome was the doctrine of germinal continuity on which all present ideas of heredity are based. It is interesting to note that the actual biological foundations of this doctrine were laid nearly fifty years previously in the classical work of Virchow on Cellular Pathology, published in 1858, in which he set forth, in a phrase long since become famous, the theory of cell succession. "*Omnis cellulae cellula*"* practically gives expression to a growing conception that the living protoplasm is immortal.

So clearly did Weismann differentiate between the immortal hereditary stuff which he called germplasm and the body, that temporary shelter of the germplasm which he termed the soma, that biologists were compelled to take sides on certain widely discussed topics as the inheritance of acquired characteristics. It is interesting to note that here again we have a superstructure reared on the solid foundations of verified biological fact, for, as far back as 1849, Owen observed differences between germ-cells and body-cells. But the most significant result for the knowledge of heredity which came out of this clarification of ideas was the preliminary solution of the question as to the location of the bearers of the hereditary qualities.

Is the germplasm homogeneous and is it equally endowed in all parts with a mixture of hereditary qualities? Inquirers had only to look for the answer in the findings of Fol, Koelliker, and Hertwig in 1875, which indicate that the determiners for inherited characteristics are probably located within the nucleus of the cell, and to the further significant discovery by van Beneden and Boveri in 1883 of the rod-shaped bodies in the nucleus called *chromosomes* that take their characteristic forms only during cell-division. Now, more certainly than before, statements could be made not only with regard to the probable location of the hereditary determiners within the germplasm, but even as to their physical substance. Of this phase of the advance toward a fuller understanding of heredity we shall have more to say later.

Those biologists who were in entire agreement with Weismann's ideas were quick to see that, unless some means were provided whereby modifications of the soma or body could be incorporated with the germplasm, the only possible stand left to take was that *against* the inheritance of acquired body modifications. Moreover the facts as they came to light seemed to bear out this side of the argument. Weismann himself

*Every cell [comes] from a [preëxisting] cell.

cut off the tails of breeding mice for twenty-two generations, but the young continued to have tails nevertheless. The Chinese mother with bound feet does not find that her daughters have been *born* with similarly mutilated feet. And certainly it is true that parents whose skins have been darkened by continued exposure to the tropical sun do not usually have brown babies. Furthermore, pro-Weismannian evolutionists did not consider that it was necessary to hold to the belief in the inheritance of acquired characteristics since the doctrine of germinal continuity was sufficient to account for the facts of heredity. Yet, like Darwin, Weismann in his attempt to provide a mechanism for the transmission of body modifications and to furnish a means of bringing about satisfactorily not only those variations commonly observed among the numerous offspring of one set of parents, but also such phenomena as regeneration and reversion, ventured a theory, which, though very carefully worked out and more elaborate as to detail than Darwin's theory of pangenesis, was nevertheless largely speculation.

Though he was the first to give such clear expression to ideas relating to germinal continuity and its bearing on phylogeny, Weismann was not by any means the first to doubt the heritability of acquired characteristics. Francis Galton, a contemporary of Weismann and a half-cousin of Darwin, was the first to become outspokenly skeptical, and led the reaction against this belief. Indeed, before the publication of the *Germplasm* in 1893, Galton, in his book on *Natural Inheritance*, which came out in 1889, so emphasized and focussed attention upon certain well-defined hereditary characteristics that one was led unmistakably to the conclusion that individuals are different because of the different combinations and mixtures of those ancestral traits already present in the germplasm and *not* through chance impressions made upon the body by external factors or through adaptive changes that might become permanent. Galton's method of attack was through statistics, a method heretofore unknown; and as a result of it the accumulating mass of conflicting observations on heredity and variation was reduced to a system and certain principles were established. By many, therefore, he is considered the real founder of the scientific study of heredity. In his researches he picked out separate characters for study in their heritable capacity, which was a departure from the old method of considering hereditary traits in their entirety, and made a point of special consideration the characteristics of genius or marked intellectual capacity, artistic talent, stature, eye colour and disease. Out of these studies arose his Law of Ancestral Inheritance which he stated as follows:

"The two parents contribute between them on the average one-half of each inherited faculty, each one of them contributing one-quarter of it. The four grandparents contribute between them one-quarter, or each of them one-sixteenth; and so on, the sum of the series $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \dots$ being equal to 1, as it should be. It is the property of this infinite series that each term is equal to the sum of all those that follow: thus $\frac{1}{2} = \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \dots$, $\frac{1}{4} = \frac{1}{8} + \frac{1}{16} + \dots$, and so on. The prepotencies of particular ancestors in any given pedigree are eliminated by a law which deals only with

average contributions, and the prepotencies of sex with respect to different qualities are also presumably eliminated."

Galton's second principle, embodied in the Law of Filial Regression, resulted from a comparison he made of 204 English parents with their 928 adult offsprings with respect to stature, a character not likely to be complicated by environmental influences. This law may be stated as follows :

"Average parents tend to produce average children ; minus parents tend to produce minus children ; plus parents tend to produce plus children ; but the progeny of extreme parents, whether plus or minus, inherit the parental peculiarities in a less marked degree than the latter were manifested in the parents themselves."

The observations and statistics of Galton and his successor Karl Pearson did a great deal toward making intelligible the phenomena of resemblance between ancestors and their descendants, but helped little toward discovering the laws of heredity. Very often along with the hereditary traits they let slip into their calculations environmental characters, and furthermore they drew their material from mixed populations, i.e. from different lines and families not genetically related, so that their results only indicated rather than settled the problem. Since heritable differences as well as non-heritable fluctuations were now admitted, it was very easy, without adequate means of testing, to mix the two. Nor were the facts of inheritance all covered by the laws stated above. In the words of Conklin, "There were many peculiar and apparently irregular or lawless phenomena which could not be predicted before they occurred nor explained afterward." For example, among Darwin's breeds of pigeons were to be found sometimes individuals with blue colouring and the markings of the ancestral wild rock pigeon when there had been no indication of blue in the plumage of the parents. "Reversions" had long been spoken of and so, too, had been the phenomenon of "prepotency," or the capacity of certain characters of one parent to prevail in the offspring over the corresponding characters of the other parent, but there was as yet no satisfactory explanation. Cases such as these were not covered by either of Galton's laws. It remained for Gregor Mendel, the Augustinian monk, to give to the world the secret of heredity behaviour. With Mendel came the long needed tests which would forever differentiate purely hereditary traits from environmental characters and settle the question of whether or not ancestral traits were altered or changed by co-mingling of the corresponding characters of mating parents. Was blending inheritance a fact, or was it to receive a new interpretation in the light of Mendel's discovery?

But before we undertake to answer that question or take up his experiments let us first consider the unusual circumstances that surrounded the publication of this monk's work. For eight years Mendel carried on his breeding experiments with garden peas in the cloister gardens of the Königskloster in Brünn, Moravia. And when after he had recorded his results and written up his conclusions, he sent them to an old teacher, Karl Nägeli, instead of the notice that he might have expected under the circumstances, he continued to live out his days until

his death in 1884 in comparative obscurity. Nägeli unfortunately was so busy with his own affairs at the time that Mendel's paper came to him that he could do little more than glance at it and, of course, failed utterly to see the significance of his results. By adding to this the circumstance that all the world was busy discussing Darwin's new theory of evolution, one can readily see why it was that Mendel, although a contemporary of Darwin, remained a non-entity until 1900. The results of Mendel's experiments were published in 1866 in the *Transactions of the Natural History Society of Brinn* under the title "Experiments in Plant Hybridization," but it was not until de Vries of Holland, von Tschermak of Austria, and Correns of Germany, all of whom had been carrying on independent researches leading to conclusions similar to his own, began to look for anticipations of their results that these findings were exhumed from the dusty archives and made public. Hybridization experiments had been undertaken before Mendel, but none of them had been carried out so extensively and with such keen analytical ability—and all this before anything was known of cell behaviour, at a time when neither the chromosome theory nor the germplasm theory had been formulated.

We shall not take the time to describe all of his experiments, but shall discuss the principles of inheritance as embodied in Mendel's law, so-called, with suitable illustrations drawn from the experiments of Mendel himself and others to show its general application. To begin with there are three cardinal principles at the bottom of this law: (1) the conception that the individual is a bundle of unit characters; (2) the observation that these unit characters, although intimately associated in the individual, act independently and separate upon crossing; and (3) the principle of dominance* which implies the quality in a unit character of one parent that renders it prepotent in the offspring over the corresponding character in the other parent. Thus we arrive at the conclusion that these unit characters must be present in the progeny in pairs, one member of each pair being derived from one of the parents. This is an important conception to keep in mind when we discuss the physical basis of heredity, for it will help us to understand the peculiar behaviour of the chromosomes during reproduction. Let us now state Mendel's law:

"When parents which are unlike with respect to any character are crossed, the progeny of the first generation will apparently be like one of the parents with respect to the character in question. The parent which impresses its character upon the offspring in this manner is called the dominant. When, however, the hybrid offsprings of this first generation are in turn crossed with each other, they will produce a mixed progeny, 25 per cent. of which will be like the dominant grandparent, 25 per cent. like the other grandparent, and 50 per cent. like the parents resembling the dominant grandparent."

From the seven different characters of peas with which Mendel worked, let us select one for illustration. Tallness and dwarfness were found to be hereditary traits that characterize two varieties of peas. Mendel found upon crossing the tall variety with the dwarf, no matter

* Dominance is the least important of the three.

which one of the parents was tall, that *all* of the offspring were tall. Tallness, therefore seemed to be dominant. Upon intercrossing these hybrids, however, two kinds of plants resulted in about the proportion of three tall to one dwarf. Upon further breeding it was found that dwarf plants produced only dwarf which meant that they must be pure, but that the tall plants sometimes produced tall offspring and sometimes a mixed progeny of three tall to one dwarf. The facts indicated that the tall must have been of two kinds, pure tall and hybrid tall, the pure tall giving only tall offspring and the hybrids repeating again in their progeny the ratio of three to one. The proportion of pure tall among the tall population was found to be about one third, while the mixed-talls were two thirds thus giving us in detail the proportional division of the three types of plants in the progeny of the hybrid parents. Apparently there were only two kinds of plants but genetically it was discovered that there were three kinds in the following proportions, one tall : two mixed-tall : one dwarf; or in other words 25 per cent. were like the dominant grandparent, 25 per cent. like the recessive grandparent, and 50 per cent. like the hybrid parents that resembled the dominant grandparent.

The better to understand the phenomenon of segregation, let us consider for a moment before taking up other examples, the cellular basis of inheritance. In the banana fly, *Drosophila*, are many characters which have been tested out and found to act like tallness in the pea. Dr. Morgan of Columbia University and his students have worked out a very large number of crosses, as a result of which new facts have come to light that have necessitated the addition of some new principles to those already laid down by Mendel. Among the large colonies of banana flies maintained in the laboratories, there have appeared from time to time new characters which have never before been observed. These have originated by "mutation," a phenomenon first observed by de Vries in the Evening Primrose, *Oenothera lamarckiana*. They are now quite generally recognized as the outward manifestation of some inward qualitative change. Among the hereditary units of the germplasm, or more definitely, in the nuclear substance of the germcells where reside the bearers of hereditary qualities, some alteration or reorganization of the determiners, doubtless of a complex chemical nature, is assumed to have taken place. We should like to state in passing that mutation by thus demonstrating the origin of unit characters helps us further toward an enlightened conception of the origin of species and suggests a revised theory of evolution in modern terms. The vestigial-winged variety of *Drosophila* is an example of such a mutation. Breeding showed that this character is constant and that vestigial-wing produces nothing but vestigial-wing. Furthermore it acts as a recessive to the normal long-winged individuals. From the cellular standpoint, however, if an egg containing the long-wing determiner, or gene, as we shall call it, is fertilized by a sperm bearing the gene for vestigial wing, the fertilized egg will contain the genes for both characters, but the offspring is long-winged showing that the gene for long wing prevails over the gene for vestigial wing. What will the germ cells of this hybrid individual contain? Will it produce eggs in possession of both the genes and will a similarly constituted

male of the same generation produce sperm containing both the genes, and will the mating of these two individuals result in a fertilized egg with four genes for wing character? This doubling of the germinal determiners with every generation is obviously a physical absurdity. Some means must be provided whereby the number of genes for a particular species of animal or plant can be maintained at a constant level and the germcells produced in every generation kept quantitatively similar in content.

(To be continued)

GEOLOGY OF SHANGHAI

BY

HERBERT CHATLEY, D. Sc.

A recent paper to the Engineering Society of China by Mr. F. G. C. Walker, F.I.C., Ph.C., of the Health Department of the Municipal Council, gives analyses of the water from 62 deep wells driven in the neighbourhood of Shanghai, which will be of great interest to local residents. Particulars are also given of the strata encountered in seven of the wells which may be compared with those given in the Whangpoo Conservancy Board Report, No. 7, Section 1 (Shanghai Harbour Investigation, Series 1, 1921) by Mr. E. C. Stocker. The deepest and most interesting is No. 39, driven by the China Deep Well Boring Co., just east of the Hungjao Golf Links. This reached a depth of 900 ft. In all the borings recorded in the Shanghai area alluvial deposits of mud, sand and clay are found down to 200 ft. Even within this depth there is perplexing variation in the material, the arrangement differing in practically every bore hole. From 200 to 600 ft. loose sedimentary deposits still occur, but occasional patches of gravel and shell beds occur which indicate marine rather than riverine deposits. The deepest bore shows the following harder materials separated by layers of sand or clay.

724-ft.—735-ft. sand-stone or cemented sand

751-ft.—754-ft. —do—

798-ft.—802-ft. hard sand-stone

837-ft.—855-ft. sandstone fairly hard

872-ft.—877-ft. hard conglomerate

877-ft.—893-ft. hard conglomerate with thin layers of yellow clay with limestone predominating

893-ft.—902-ft. —do—

It appears certain that this bore has nearly or quite reached a rock bottom. The fact that the materials found are not porphyritic shows that the "Shanghai Hills," which are porphyritic, have been pushed

up through pre-existing aqueous deposits. This agrees with the conditions around Soochow, where limestone, etc., are found surrounding igneous (Granite) cores. (See Chatley, Eng., Soc., China, Vol. XIX, page 82 and plate IV).

As to the variations in the alluvial deposits between the surface and the rocky bottom, the upper ones (down to say 200-ft.) seem explicable by the wandering of the currents outside the estuary during the formation of the delta. From historical data it is known that the coast line was in the neighbourhood of Shanghai about 3,000 years ago. Dr. V. K. Ting (W. C. B. report on "The Geology of the Yangtze Valley below Wuhu") is of opinion that the coast is sinking, a state of things which might arise merely from the weight of the sediment deposited, but which is probably also due to crustal movements. If so the changes from clay to sand, etc., may be simply records of old river beds in the delta. Silt and sand alternate in the bottom of the Yangtze now, owing probably to differences of current velocity.

The gravels, coarse sands, etc., found at greater depths must be relics of the time when the sea actually reached the rocky islands and coast which is now so far inland. It is also possible that the flanks of the various volcanic hills (The Shanghai Hills, Chin Shan, Cha Shan, etc.,) may have had a cover of softer aqueous rocks which were entirely eroded before the delta enveloped them.

The details of this deep boring will doubtless receive much study from geologists, but, until many others have been made, all deductions will be rather speculative. It is to be hoped that a conchologist will identify the shells found at 200 ft., in Bore No. 39 and in Bore No. 46 at 280 ft. Shells were found in the old Bubbling Well Road bore at 320 ft., 365 ft., 395 ft., and 418 ft. If any of these are definitely *fresh* water species, this will be evidence of subsidence.

SCIENTIFIC NOTES AND REVIEWS

BIOLOGY

BIRDS OF EASTERN CHINA: Part III of Mr. J. D. D. La Touche's "Hand-book of the Birds of Eastern China" has made its appearance. It deals with the families *Pericrocotidae* or minivets, *Artamidae* or swallow-shrikes, *Dicruridae* or drongos, *Sylviidae* or warblers, *Regulidae* or goldcrests, *Oriolidae* or orioles, *Eulabetidae* or grackles, and *Sturnidae* or starlings. A map of China is given, showing the eastern provinces in two colours according to their position in relation to the Palearctic and Oriental avi-faunal zones. This work may be considered the last word upon the ornithology of the region under discussion and students of the subject will greatly appreciate having the most up-to-date names and latest classification of the many subspecies of Chinese birds now recognized by authorities in Europe and America. One of the chief difficulties experienced by ornithologists in China is to keep *au courant* with the ever changing nomenclature in regard to the birds of this country,

and Mr. La Touche appreciates this, he himself having suffered from it. As an example of the difficulties that may be experienced by the naturalist who is out of touch with the libraries and big museums of Europe and America the following may be taken. The Chinese bush-warbler, a well enough known bird, is given by Mr. La Touche in this his latest work under the scientific name of *Horornis canturiens canturiens* (Swinhoe). In 1860 it was originally described by Swinhoe under the generic name *Arundinax*. In David and Oustalet's "Les Oiseaux de Chine" it is given under the generic name of *Homochlanys*, while the specific name is given as *canturiens*. La Touche in 1895 gives it as *Cettia cantans minuta*, 1898 as *Cettia canturiens* and in 1923 as *Horornis canturiens*. This continual changing of names is the result of the adopted rules of nomenclature, and as each investigator delves into the past literature of his subject he ever discovers reasons why this or that name of a given species is not the correct one, and changes it accordingly. Later comes another worker who finds that he in turn is wrong, and so it goes on. Before this present work of Mr. La Touche began to make its appearance Dr. Hartert's "Vögel Palearctic Fauna" could have been taken as the authoritative work on the subject, and other writers on birds might have considered themselves safe in using the names given by him. Now Mr. La Touche changes some of his names, as, for instance, that of the Manchurian bush warbler, *Horornis canturiens borealis* (Campbell), which Hartert placed in the genus *Horcites*. Whether Mr. La Touche is responsible for this change or is following some other authority is not clear, but it is a pity that he does not give his reasons for making the change if the former be the case, or, if the latter, does not quote his authority. Another question we would like to ask is why the trinomial system is used in some cases and only the binomial in others? For instance, why *Herbivocula schwarzi* on the one hand, and *Oreopneuste fuscata fuscata* on the other? But this is only a minor point and makes but little difference one way or the other. The giving of an authority or reason for a change of names is far more important, and the absence of such details leaves the student of Chinese ornithology in China rather "up in the air."

The most valuable parts of Mr. La Touche's handbook are those dealing with the distribution of the various birds listed, and we know of no one more competent to discuss this phase of the subject than he is. During his long term of service with the Chinese Customs, throughout the whole of which he was an ardent student and collector of birds, he was stationed at different times at Chin-wang Tao, a most strategic point for bird observation on the border of China and Manchuria, right in the path of an enormous bird migration route; at Shanghai, another very strategic point; at Foochow in Fukien, one of the richest avi-faunal regions in the whole of China; at Changsha on the Middle Yangtze, which gave him a fine opportunity of studying the birds of Central China; and at Tung-yueh on the Yunnan-Indo China border, in the extreme south-west. Wherever he was he always employed Chinese collectors, whom he carefully trained, to visit the neighbouring regions, he himself making daily observations and notes upon the movements of birds in his immediate vicinity. He also made trips himself to good collecting grounds and observation posts, and his long series of papers which have appeared from time to time in the *Ibis* and other publications testify to his industry and zeal. In the last few years, since he has retired, he has had three excellent collections of Chinese birds at his disposal, namely, his own, that at Tring Museum, and best of all that in the British Museum, South Kensington. He has named numerous new species and subspecies from China, mostly in the *Bulletin of the Ornithological Union*. His book, when completed, will be the most valuable work of modern times on Chinese ornithology, and we can only repeat what we have said before, it is altogether to be regretted that while he is about it he does not embrace the whole of China and not merely the eight eastern provinces. Of course, we appreciate the fact that the work involved would be terrific, but it would be well worth it. We hope that Mr. La Touche is at least contemplating publishing a handbook on the birds of Central China, and another on those of South-west China. This would leave only the birds of the north-west to be dealt with in a similar manner. But, unfortunately, we know of no one now living who has studied the avi-fauna of this region the way La Touche has studied the bird life of the eastern, central, southern and south-western parts of China. Here, at any rate, is a splendid field for research on the part of some budding ornithologist in this country.

SCIENTIFIC NOTES AND REVIEWS

One new bird is described in the present section of Mr. La Touche's handbook, namely Courtois' fan-tail warbler, under the name *Cisticola exilis courtoisi* (page 237). This subspecies of *Cisticola exilis* is described as "in every way darker than *Cisticola e. volitans*, and the dull-coloured head separates it from its nearest southern ally (*C. e. tyleri*). Its distribution is given as Anhwei, Kiangsi, Fukien and Yunnan.

NEW CHINESE FRESH-WATER BLUE-GREEN ALGÆ: In volume 28 (January, 1926) of *Rhodora*, Mr. N. L. Gardner deals with a collection of fresh water Myxophyceæ sent to the Farlow Herbarium by Professor H. H. Chung of Amoy University from Amoy, describing the following new species and varieties:

Phormidium orientale var. *breviarticulata*

Phormidium bigranulatum

Anabæna macrospora distorta

Calothrix linearis

Tolypothrix Chungii

Tolypothrix tenella

The species *quadripunctulata* is transferred from the genus *Oscillatoria* to *Phormidium*. Altogether some twenty eight species and varieties are dealt with, some, being in the sterile immature stage, being specifically unidentifiable.

THE WAR ON THE JAPANESE BEETLE: By now it must be more or less common knowledge that the so-called Japanese beetle, or, to give it its scientific name, *Popillia japonica*, Newman, has managed to establish itself in a certain section of the United States of America, where it is doing untold damage to numerous economic plants. So serious have its ravages become that the U. S. Department of Agriculture has had to send experts to Japan and China in search of parasitical insects with which to combat the scourge. Two or three years ago Professor J. F. Illingworth visited Japan for this purpose, where he found a minute fly that lived parasitically upon the beetle, and which he introduced into the United States. He also visited China to see if *Popillia japonica* or a near ally was to be found here, and, if so, whether any other parasite might be found that could be used in the war upon the pest in America. He was successful in finding *Popillia japonica* or a very closely related form, which is prevalent in the Nanking area; and, in 1924, the U. S. Department of Agriculture sent Mr. H. A. Jaynes to China to find parasites of the beetle and ship them to America. This entomologist has discovered a minute digger wasp, whose larva feeds upon the larva of the Japanese beetle; and during his stay in China has shipped 7,500 cocoons and 10,000 adults of this wasp to the United States, as well as 5,000 cocoons of a related species. Sufficient time has not yet elapsed to indicate whether or not these have been successfully established in their new environment and are able to carry out the work expected of them. The Japanese beetle originally made its appearance in the United States in 1916, having been introduced, it is believed, in a consignment of iris roots from Japan. It has now spread over an area of 6,000 square miles in Pennsylvania and neighbouring states, having already done incalculable damage. Illustrations of this beetle were given in the January 1925 issue of this Journal. A closely similar species is prevalent in the Shanghai district, and we strongly suspect that the damage to the greens on local golf courses is caused by this species, whose grubs live amongst the roots of grass, upon which they feed.

A. DE C. S.

PHYSICS AND CHEMISTRY

PHYSICAL SCIENCE AND ECONOMICS: Prof. Soddy, the Nobel laureate and expert on radioactivity, has been devoting himself to a study of wealth and debt in relation to physical science and the great increases in production which are producible by its practical application. His results are almost entirely contrary to accepted economic principles and will probably cause much acrimonious controversy.

ORIGIN OF RADIATION: Astrophysical investigation continues to confirm the notion of the conversion of mass into energy by the mutual annihilation of protons and electrons in the stars, but there is considerable uncertainty as to whether this process is induced by extraordinary temperature or pressure conditions. The prospect of exploiting interatomic energy on these lines seems increasingly remote.

CHEMICAL THEORY: *A propos* last month's note on affinity tables as a basis for chemical analysis, it should be remarked that a complete solution along these lines requires that affinities (measured in volts, or, perhaps, thermodynamically) need to be expressed in reference to nascent (i.e. ionized) atoms, the present empirical affinities being difference effects, which do not take into account the energetics of the process by which the molecules are broken up before recombination.

Thus hydrogen and oxygen in their usual molecular state must be split into atoms before the water molecules can be formed, and the usual notion of the chemical affinity of hydrogen and oxygen is really the difference between the gross affinity of nascent hydrogen and oxygen for their own kinds and the gross affinity of nascent hydrogen for nascent oxygen.

H. C.

MEDICINE

MILK COMPOSITION: In the study of the results of analysis of 676 samples of milk from cows of various herds throughout Scotland recently made by Dr. J. F. Tocher, his results being published in book form by His Majesty's Stationery Office, it was found that the milk of individual cows varies widely in content of butter fat and non-fatty solids. In the butter fat content the variation ranges from 1.7 per cent. to 7.5 per cent., while in the non-fatty solids content it varies from 6.9 per cent. to 10.6 per cent. There was a further variation in solids and butter fat content in the case of samples of milk from herds in which the milk of the individuals was mixed, the variation being greater in milk from different small herds than in milk from different large herds, though the variation in the milk from the small herds was less marked than in that from single cows. In the case of large herds only a very few samples of milk fell below the standard. This is only one further proof of the theory that composite milk from large or reasonably large herds of cows is better for human consumption than milk from individual cows. Its bearing on the milk question in China is obvious. The consumer of milk should either draw his supply from dairies containing herds of cows numbering some twenty or more individuals whose milk is mixed before being sent out, or should use some good and reliable brand of preserved milk. This may be hard on the small dairy farmer, but public health and welfare are more important than the profits of a single individual.

SEROLOGICAL ANALYSIS OF LEPERS' SERA: Under this heading Otto Schöbl and Jose Ramirez publish in *The Philippine Journal of Science*, Vol. 29, No. 3, March 1926, the results of a series of investigations upon the sera of lepers with a view to checking up on various "contradictory or deficient statements in the serological literature on leprosy." A comparison was made of the serological properties of leper sera with sera of normal individuals. It has been stated that lepers' sera, like those of late syphilitics (paralytic stage), lack complement, while the erythrocytes of lepers, unlike those of syphilitics, show normal susceptibility to hemolysis. It is pointed out that, "if true, these findings may help to work out a combination of nonspecific reaction that might be useful in serodiagnosis of leprosy." As a matter of fact the results of the experiments showed that they are not true, as no distinct quantitative difference as to natural hemolysins and complement were found between the sera of lepers and those of normal persons, while the amount of hemolytic complement in lepers' sera was found to be the same as that in the sera of non-lepers, in both cases being subject to individual variation.

SCIENTIFIC NOTES AND REVIEWS

The keeping quality of the hæmolytic complement in lepers' sera was also studied, and it was found that, in proportion to the original titer, the complement decreased practically at the same rate in the sera of lepers and normal individuals. Ninety-two lepers were examined.

SEVERE CHOLERA EPIDEMIC IN SHANGHAI: The cholera epidemic with which Shanghai and neighbouring districts have been visited this summer is the worst on record in these parts for a number of years, and at the time of writing is still raging unabated. Breaking out early in the latter half of June (the first case was reported on June 19th), by the end of July 1,399 cases had been reported, many of which were fatal, and all through August further cases by the hundred have been reported. Sixty-five per cent. of the cases in the hospitals, which have been full to overflowing, have come from Chinese territory, while the epidemic has been reported to be bad in such out-lying districts as Woosung. It has also been reported from Wusih and other districts considerable distances from Shanghai. The total death roll up to date does not appear to have been made out, but it is believed to be high. The origin of the outbreak has not been traced definitely, but local native-controlled water supplies have been proved to be strongly contaminated with cholera germs, and have undoubtedly been largely responsible for the spread of the disease.

In the French Concession the Health Department of the Municipal Council has used the prophylactic treatment, Anti-choleric Bilivaccin, with good results. We hope to give fuller details of this in a later issue of these notes. Meanwhile great credit is due to the members of the medical profession, hospital staffs and the health officers of the whole district for the way in which the epidemic has been handled, in spite of the great heat which has undoubtedly greatly aggravated the outbreak.

METEOROLOGY

HEAT WAVE STRIKES SHANGHAI: As if Shanghai has not had enough troubles with the cholera epidemic this summer, she has suffered as well from a heat wave which has been the worst for fifty years. Commencing in the early part of July, when on the 13th, the maximum temperature reached 94.6 degrees in the shade, the heat continued for over a month without let up night or day. Only once during that period did the thermometer register less than 90 degrees maximum, and never once less than 83 degrees minimum; while towards the end of July and during the first half of August it ran over 100 degrees maximum. These temperatures in a place with a climate as humid as is that of Shanghai are well nigh unendurable, and great suffering has resulted, with numerous deaths. The cause appears to be the singular lack of typhoons, which in normal years cool things off periodically along the China coast. Whatever the cause, the fact remains that Shanghai has been through a period of heat, that, for intensity, continuity and duration, eclipses anything that has been experienced in these parts for several decades, not even excluding the summer of 1914, which itself was a record.

A. de C. S.

SHOOTING AND FISHING NOTES

SHOOTING

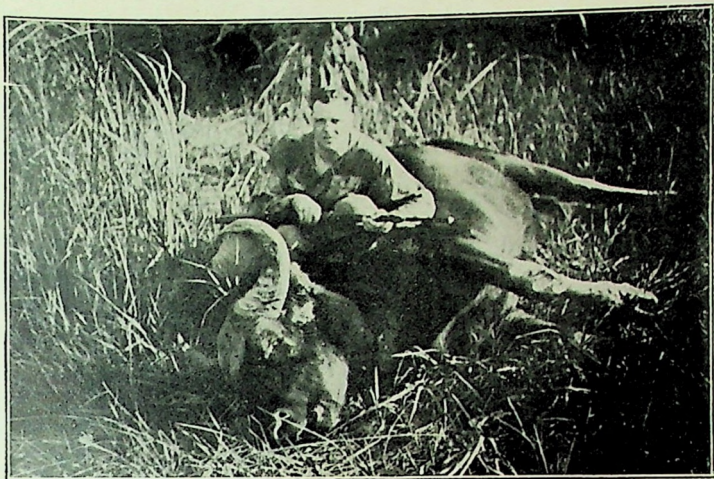
BIG GAME HUNTING IN ABYSSINIA AND SOUTHERN ASIA: In our last issue we mentioned the fact that two big game hunters, Mr. Harold A. White and Mr. G. Mark, passed through Shanghai on their way back to the United States of America, after having hunted in Africa and Indo China, the former on behalf of the American Museum of Natural History and the latter on his own. We then promised to give further details of the work of Mr. White, or "Babe" White, as he is popularly called, being a young giant of 6-ft. 6-in. in his socks and weighing 260 and some odd pounds. The following details have been gathered at first hand from the hunters, and they will serve to give an idea of what big game hunting for a museum means.

It seems that it is Mr. White's special task to fill in the gaps in the collections of mammals of the American Museum of Natural History, New York, of whose staff he is a member. The particular spheres allotted to him are Abyssinia and Southern Asia. He has an arrangement with the Third Asiatic Expedition of the American Museum of Natural History to work the latter area while Roy Chapman Andrews and his companions work Northern and Central Asia.

It is becoming increasingly evident to museum authorities the world over that if a record, in the form of actual specimens, of present day big game is to be secured and preserved, it must be done at once. Present day civilization is such that wherever it goes it threatens the larger and many of the smaller animals with extinction. Even where such animals are not exterminated, they become almost impossible to secure, owing to the excessive increase in the cost of expeditions to go after them. Transport, the cost of living—everything becomes prohibitive. It is for this reason that special efforts are being made to collect specimens all over the world.

Mr. White left America in 1924, first visiting Indo China, where he secured many fine specimens. Thence he proceeded to Jibuti, a French colony on the Red Sea. From there he went to Addisababa, making a round trip through Abyssinia, touching at Ogeden, Lake Rudolph, Gori, Gamella and Khartoum. He spent most of the year 1925 on this expedition, finally returning to the United States after visiting all the important museums in Europe. On this trip he secured many magnificent specimens of big game, getting amongst other things the record mountain bush buck. He also discovered a remarkable new species of giant hunting dog; which stands over four feet at the shoulder and weighs something in the region of 450 lbs. This was discovered on the Arusi Mountains of Abyssinia, at an altitude of over 10,000 ft. He and his companion were treed for several hours by a pack of these brutes; while a Spanish priest and his servants, with whom Mr. White had stayed, were attacked and eaten in their quarters by a similar pack. This unique animal, which is called the *Yike* by the natives, had never before been heard of by scientists. It is black and white in colour. The so-called Arusi fox, which, while known, had never been described, was also secured. This is a long-haired, long-tailed member of the dog family about the size of a sheep dog. Part of Mr. White's collection was lost owing to the fact that while crossing a bad belt of country infected with the tse-tse fly he lost all his transport animals, and had to leave his whole outfit in the wilderness, barely getting out alive himself.

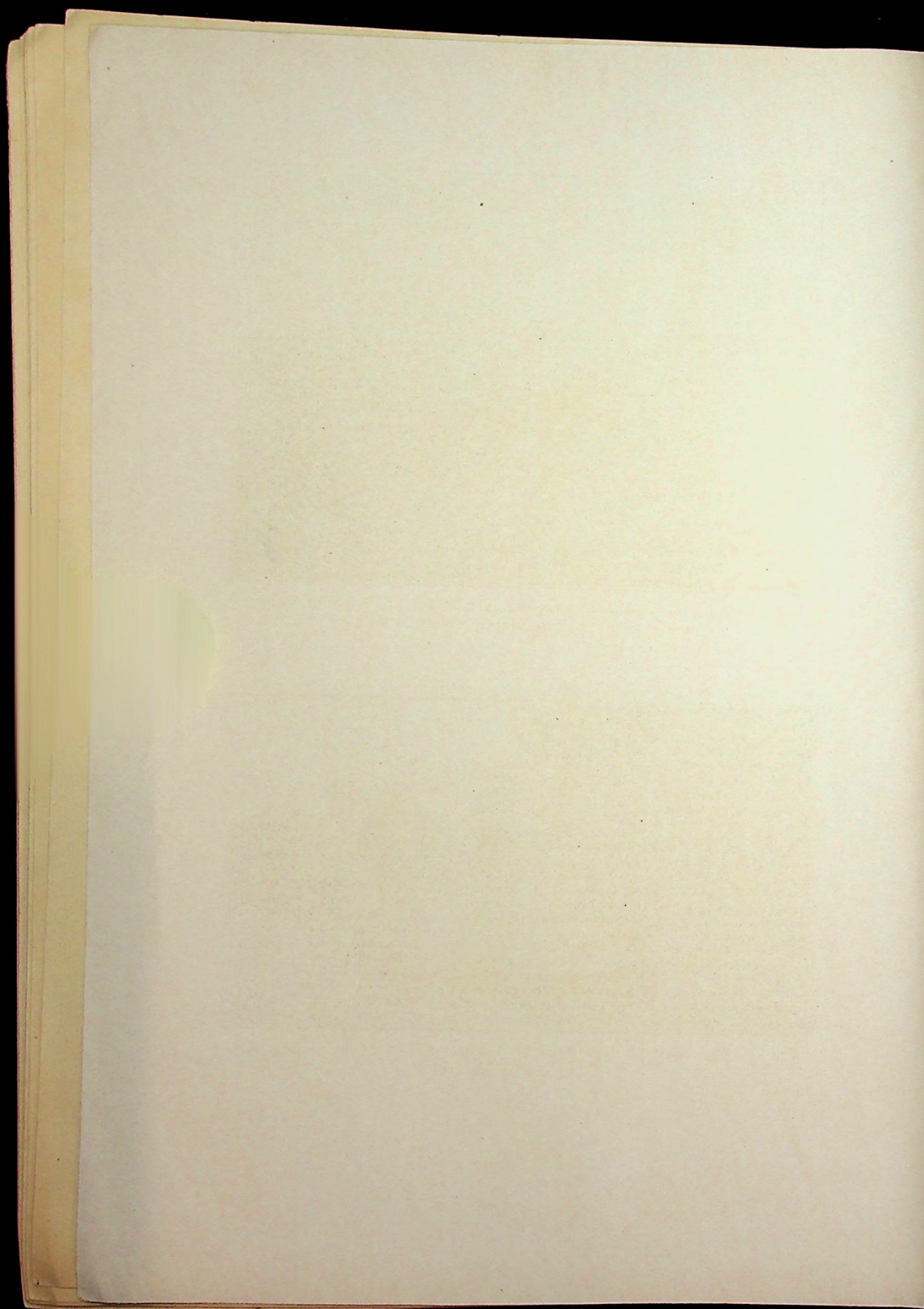
Early in the present year Mr. White visited India, where he did some collecting, subsequently going on to Annam, Indo China and Laos. Here he appears to have had extraordinarily good hunting, securing amongst other valuable trophies the world's record seladang or gaur (*Bos gaurus*), known in India also as the bison. His special object was to secure large solitary bulls. It seems that amongst the gaurs and the bantings, or tsains, old bulls leave the herds and carry on a solitary existence, when they reach a much larger size than the herd bulls. His record gaur stood 6-ft. 10½-in. at the shoulder and had a horn measurement of 47-in., as compared with 44-in., the previous record. He also secured some fine bantings, elephants, sambar deer, swamp deer, wild pig, wild water buffaloes and last, but not least, no fewer



The Record Solitary Seladang Bull shot by Mr. H. A. White in Loas.



A Seladang Herd-Bull, shot by Mr. H. A. White in Cochin China.

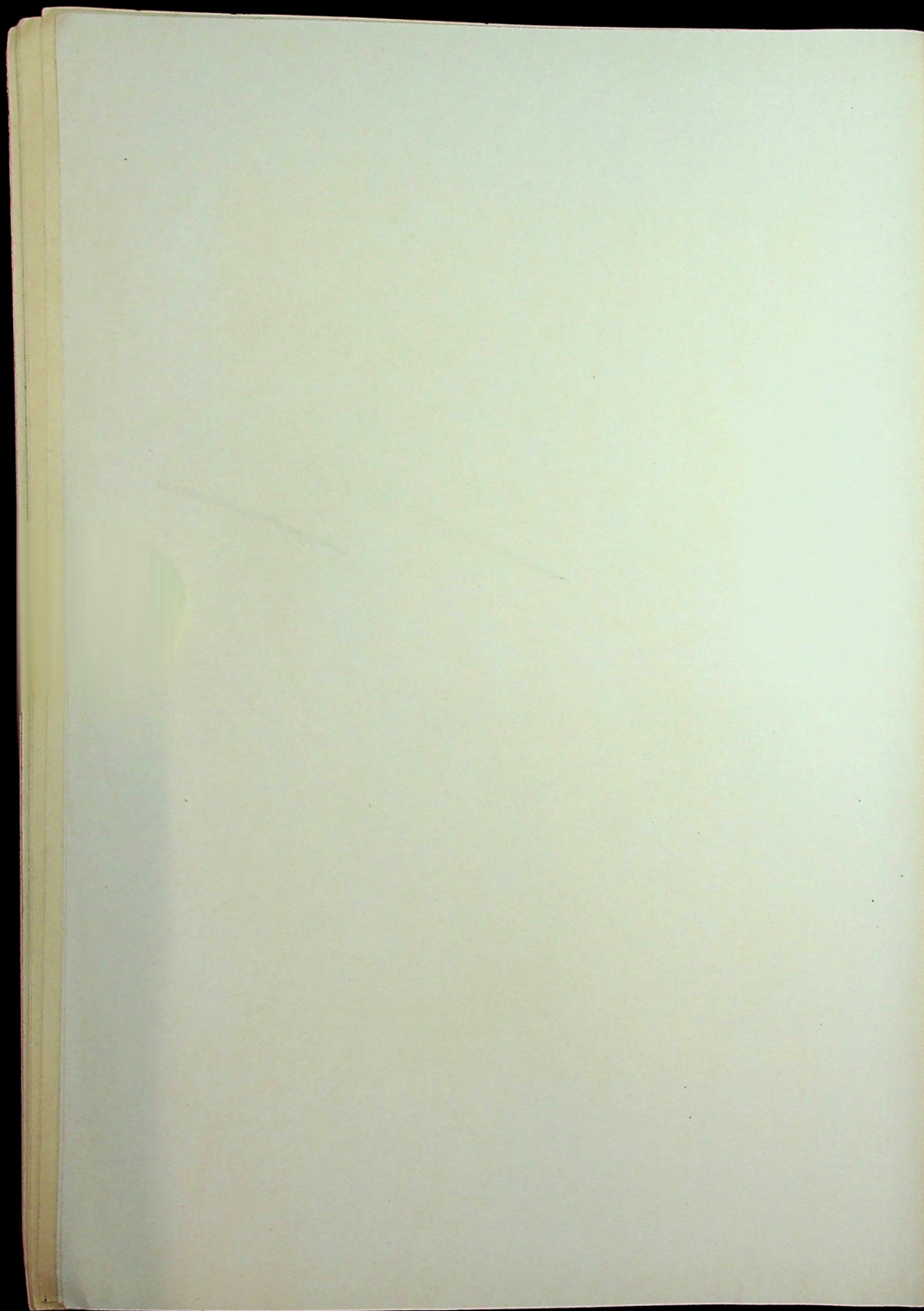




A Bull Water Buffalo photographed in the Act of charging, before being shot. Lanya Plains, Cochin China.



On the Lanya River, out of which District Seven Types of Capital Game can be secured.



SHOOTING AND FISHING NOTES

than eight tigers, the last shot in the space of one month, and all secured in the Djerin District of Indo China. A specimen of what is possibly the largest deer existing, certainly equalling if not beating the moose in weight, was secured. This is a species closely related to the sambur and known to the French as "*Cerf Cheval*." It is only known to occur in the Lyang Bian district of Annam.

Needless to say in all this hunting, Mr. White had many adventures, being charged by both seladang and water buffalo. At a dinner given in his honour by a group of big game hunters in Shanghai, he told some of his experiences. He expressed some very strong views upon the kind of rifle to use, stating that he now uses nothing else but a 45 Westly-Richards. In the case of any of the large bovines, from whom, he said, one could always expect a charge, he always loaded his rifle with a cartridge with a soft-nosed bullet for the first shot, followed by four with hard, pointed nosed bullets for the charge.

Mr. White has been forced to abandon his work for the present and return to America on account of a severe attack of malaria, but he expects to visit Abyssinia again soon to clear up what he left unfinished on his last visit.

THOROLD'S DEER: In the *Field* of May 27 appears a reproduction of what is claimed to be the first photograph ever taken of living specimens of the rare and little known Thorold's deer (*Cervus albirostris*, Przewalski), which was taken by Sir Charles Bell at a place called Re-ting, 64 miles north of Lhasa. A young male with horns in velvet and a fully grown female form the subjects of the photograph, and they display characters which render their identification beyond question. Thorold's deer was first discovered and described by the Russian explorer Przewalski in 1884. It was subsequently described and named *Cervus thoroldi* by Blandford in 1893 after Dr. G. W. Thorold, who first brought specimens to England. Przewalski's name, antedating that given by Blandford, takes precedence.

Thorold's deer is a large species, closely related to the red deer and wapiti group, but distinguished by the absence of the big tine in the antler, in having the muzzle white, and the tail short. The hair on the back is directed forward forming a sort of hump on the shoulders. This deer is purely a Tibetan species, occurring, apparently, to the northward of Lhasa. Southern and Eastern Tibet is occupied by the shao (*Cervus wallichii*), which is more closely allied to the red deer.

As pointed out by Mr. R. I. Pocock in his note accompanying the photograph, Thorold's deer, inhabiting, as it does, the treeless uplands of Central Tibet, diverges widely from deer in general in that its food must consist mainly of grass and the leaves of low bushes, in place of the leaves of trees and shrubs such as most deer mainly feed upon. Few if any specimens of this interesting species have been shot by European sportsmen. Rowland Ward's "Records of Big Game," gives the measurements of but five stags, two of which are in the British Museum, two in the Rothschild collection and one in the Indian Museum.

A. DE C. S.

FISHING

THE EEL'S BREEDING GROUND: The story of the common eel has become a classic, and the man who has done more than any other to make it so is Dr. Johannes Schmidt, a Danish ichthyologist of Copenhagen. For many years now Dr. Schmidt has been carrying out investigations upon the eel's breeding habits, larvæ and migrations. He has been dredging the Atlantic in his search for the actual spawning place of the eel, and year by year by catching successively younger and younger larval eels, called *leptocephali*, has reduced the area within which this occurs, till now it is reported that he has finally traced it down to the Sargossa Sea, at the bottom of which the adult eels lay their eggs. While it was certain that, given time, Dr. Schmidt would sooner or later find what he sought, this in no way lessens the wonder of the discovery that the eels of Europe were all born originally at the bottom of the Sargossa Sea on the other side of the Atlantic, and that all those that survive will ultimately return thither to breed. It takes the larval eel three years to cross the Atlantic Ocean, having accomplished which great

journey, they ascend rivers often to their very sources, and other inland stretches of water. Here they may live from four to nine years, when they commence the return journey to the Sargossa Sea. So much for the common eel of Europe. The closely allied common eel of China and Japan, *Anguilla japonica*, has not been studied in the same way, but it may be argued by analogy that its breeding ground is somewhere in the depths of the Pacific or Indian Oceans. This species is prevalent from South China northward as far as the Yalu River in Manchuria, but it is not found in any of the river systems whose waters flow into the sea to the east of Korea. This in itself requires explaining. It is possible that the cold currents coming south from the Okhotsk Sea prevent the larval eels getting into the Amur and Tumen Rivers.

A. DE C. S.

FISHING IN THE SHANGHAI DISTRICT: The following notes have been sent in by Mr. F. A. Sampson, Jr.—The heavy rains of June 25 and following days considerably altered the aspect of fishing in the pond frequented by Mr. Greenslade and myself. Whereas it was not unusual to catch carp of about $\frac{3}{4}$ -lb. with the water low, it became impossible to catch anything when the water rose three feet, with the exception of eels and knife-fish. Mr. Greenslade and a friend caught five of the former on June 27, and another angler took a similar number in another pond ten miles away (by the way, this latter pond is known to contain some sizeable fish). Then the water began to clear, and small carp and a $\frac{1}{4}$ -lb. culter were taken: we hope to catch bigger fish again shortly. The bait in use is still worms: an attempt with dough just after the rains proved a failure, though it should by now be suitable. Several fish were taken on dough in July and August of last year in this pond.

An interesting incident was observed yesterday evening in a pond adjacent to our usual pond. First of all a dark shadow moving under the water near the bank attracted attention: This rose slowly towards the surface and disclosed itself as a very agitated mass of very small tadpoles. Then appeared the cause of the agitation, two blackfish (serpenthead), lazily enjoying an evening meal of tadpoles: both the fish were at least two-pounders. We must therefore add tadpoles to the list of baits to be tried in this district.

It is said that a 9-lb. blackfish was taken in the Hongkew Park pond the other day, but no confirmation of this can be obtained: these fish apparently grow to well over 10-lbs., and there should be some large specimens in ponds around Shanghai.

Fly-fishing seems to make no progress: perhaps when some of us have made more observation of the habits of local fish, we may tackle it seriously. At present bottom fishing is engaging all our attention.

F.A.S.

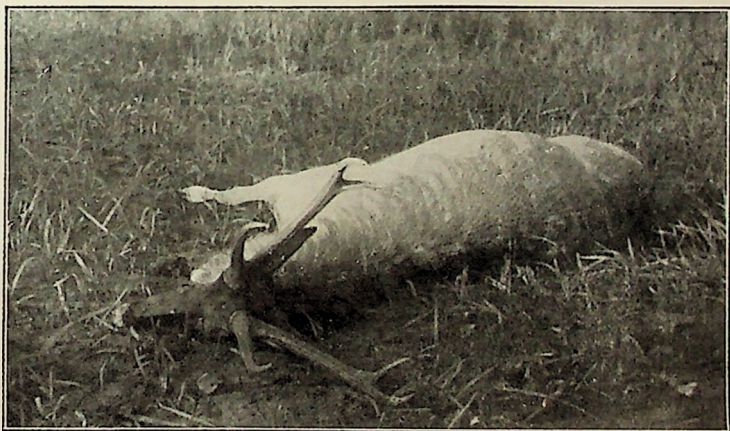
THE KENNEL

A PRIVATE PEKINESE SHOW: On July 16, a rather remarkable dog show was held in Shanghai. It had nothing to do with the China Kennel Club or any other organization of dog lovers or fanciers; but was held in connexion with the Great Wall Film Company, and was organized by Mr. T. K. Lee, manager of the studio. It is reported, in consequence of discord that had arisen amongst some of the film stars as to who had the best kennel of Pekinese. Mr. Ariel Vargas acted as judge, who gave first prize to Miss E. E. Dick's two entries, and third prize to Miss Wang Yue-yue's entry. We shall expect to see something of these prize-winners at the next show of the China Kennel Club.

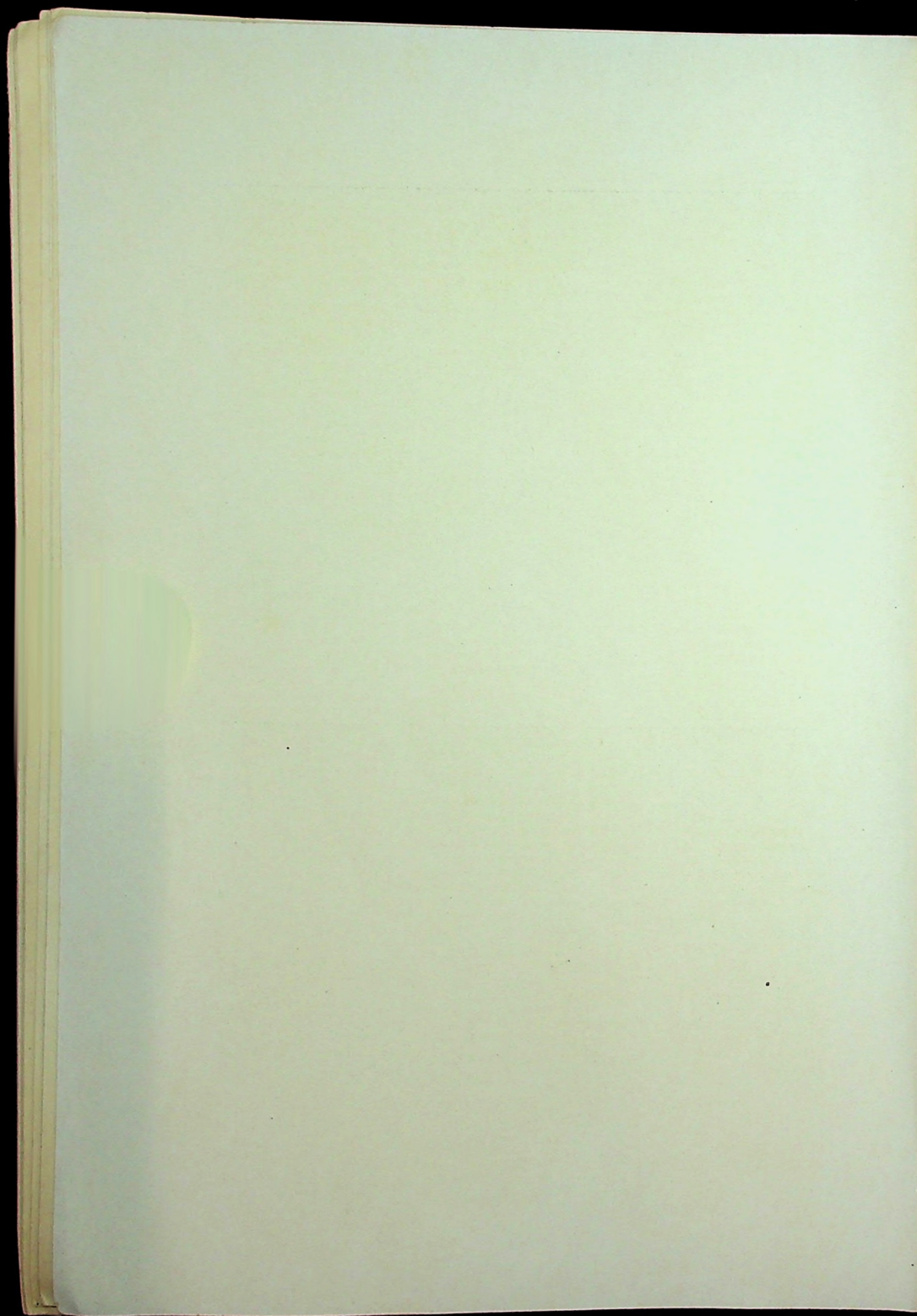
THE CHINA KENNEL CLUB: We have been informed by the Honorary Secretary of this Club that applications for membership are coming in slowly, although notices have been sent to all the exhibitors at the last dog show, as well as to others who are known to be interested in dogs. This is a pity since without a



The "Cerf Cheval," a large Member of the Sambur family, only found in the Mountains of Lyang Bian, Annam. They range in weight up to 1,000 lbs. and are about the largest of the Deer family, rivalling the Moose.



A Sambur Stag shot in the Lanya Country by Mr. H. A. White.



strong and representative organization of the kind it is futile to expect that matters of doggy interest in this settlement, and, indeed, in China generally, will progress very far or favourably. For the last four years a body of sportsmen have got together and organized a dog show each spring, taking the entire risk of financial failure upon themselves, and having no organization to back them. While there has always been room for improvement in these shows, they have, on the whole, been very successful, and numerous dog owners have had the opportunity of showing their dogs at a perfectly ridiculously low cost, at the same time competing for really nice prizes in the way of silver cups. The organizers of these shows, having formed themselves into a club, now invite the dog loving public to join on terms that have been considered advantageous to all. These were set out in the July issue of this Journal, and have also been sent to all dog owners known to the Honorary Secretary. Following each show there has appeared in the local press various controversies over the judging, and it seems to us that now is the time for those who have grievances, or who feel that things can be improved, to send in their names for membership in the Club, and so help to carry the load that has been borne up to the present by a mere half dozen public-spirited sportsmen.

PRECAUTIONS AGAINST RABIES AND THE SHOOTING OF STRAY DOGS: Meanwhile there are matters requiring the attention of all dog lovers and owners in Shanghai and other places in China, one of the most important of which is that of exterminating rabies. During the early part of the summer letters appeared in the local daily press upon the question as to whether the municipal police should or should not shoot stray dogs found within Settlement limits without muzzles. Here is a matter that would most certainly be taken up by a strong organization of dog owners, did such exist. Meanwhile a few points may be made here. In the first place it is the duty of the police to protect the public and to maintain the safety of individual citizens of any given locality. A dog, especially if it be suffering from rabies, is by no means an easy animal to capture without injury, nor is the process without rather serious risk of infection to the captor. Rabies is such a serious menace to public safety and death from it so horrible, that we feel that hardly any measure adopted for its elimination can be too severe, nor do we feel that it is just to ask the police, even though they are paid to look after public safety, to risk incurring such a horrible death in the execution of their duty if it can be avoided by the adoption of other means. This does not mean that we advocate the wholesale shooting of dogs found without muzzles, but that it shall be within the power of the police to shoot any dog so found if they deem it is necessary. It seems to us that it is up to owners to keep their dogs within their own compounds, and only to allow them out if properly muzzled. After all dog owners themselves should appreciate this, since the risk to their dogs of other dogs being about without muzzles when rabies is about is greater than it is even to the human population. As for the shooting of wonks, ownerless pariahs that they are for the most part, these should be kept out of the settlements at all costs and by any means. They are a menace to all, and are always an unmitigated nuisance even in times when rabies is not prevalent.

In our last issue, we called our readers' attention to the use of anti-rabies inoculation; and we wish to emphasize the point that, while this preventative measure has not yet been proved universally efficacious, yet it has been found sufficiently so to make it worth adopting when rabies is known to be about.

RESEARCH UPON CANINE DISEASES REQUIRED: There are many other diseases besides rabies to which our canine friends are subject, and one of the most urgently needed institutions in this connexion in China to-day is an experimental laboratory where experts could carry out researches upon the diseases common to dogs in this country with a view to discovering means of preventing and remedying them. Needless to say, a vigorous and financially strong Kennel Club would offer considerable support to such an institution if it did not actually organize one itself. Here is another very strong reason why dog owners should join the club that has been started in Shanghai.

A. de C. S.

THE GARDEN

THE HYDRANGEA: From a purely decorative point of view the next important June flowering plant to the Easter lily is *Hydrangea opuloides*. Like *Lilium longiflorum*, it is employed by the million for Easter decorations, forming a splendid foil to the lilies and being easy to grow and force into bloom. It is moreover a poor man's plant, as may be gathered by beholding the tens of thousands of plants exposed for sale on barrows by plant vendors even in the slums of London, where few houses or windows do not boast a plant or two of this species, generally known as "Hortensias." Few gardeners, professional or amateur, may recognise this species under the specific name given here, as few of them know descriptive botany. Production of the best in food and in flower for the benefit of humanity is their duty, leaving the vagaries of plant nomenclature to those whose profession is botany. The names this species has had illustrates how descriptive botanists, in their eagerness to describe a new species, are misled by evolution, varietal differences, cross-fertilization and also by working from dried, often uncomplete, herbarium specimens, gathered thousands of miles distant from the describer. This species was first described as *Hortensia opuloides*, by Lamarek in 1789. In 1791 it was described by Gmelin as *Hortensia Japonica*; as *Hydrangea hortensia* by Smith in 1792; in 1793 by Schneevogt as *Hortensia mutabilis*; in 1808 by Tozzetti as *Hortensia speciosa*; by Siebold in 1829 as *Hydrangea Hortensia*; and by Maximowich in 1867 as *Hydrangea hortensia* var. *hortensia*. Under the same name, it was described by Reicher in 1900, whilst in 1913 he again described it as *Hydrangea opuloides*, which is its name in botanical circles to-day. But to gardeners and laymen it is and has been recognised by the name given by Smith in 1792, namely, *Hydrangea hortensia*, and no doubt for many years to come will continue to be known by that name.

There are numerous natural varieties or sub-species existing which no doubt are in part responsible for the many specific names given to this plant. These varieties are arranged into three well defined groups—*japonica*, *hortensia* and *stellata*. In addition there are numerous garden varieties, the best being a pure white-flowered one, named "James Hogg." The hydrangea's so-called flowers are sterile. The true fertile flowers are small, being arranged in the centre of the flower-head, and are usually surrounded by an outer circle of sterile bract-like flowers. In colour they vary from pure white through shades of pink to deep blue. Blue coloured forms only are found where the soil contains oxide of iron. The blue colour may be artificially produced by adding to the soil rusty iron, alum, and Ferrous Sulphate. Blue flowered plants only are found on the Peak in Hongkong and pink flowered ones on the low land. Cuttings of the blue flowered ones taken from the Peak and grown on the low land will produce pink flowers.

For commercial purposes in Western lands, cuttings are taken in the early summer, and, when they have made about one foot of growth, the points of the shoots are pinched out, resulting in a plant with usually three flowers. Generally, however, cuttings are made from the points of ripened branches in the autumn, and, in the spring, introduced into a forcing house. Here they are fed with various stimulating manures, which produce plants 14 to 18 inches high in small pots, each with one head of flowers, over twelve inches across.

This is the type that may be purchased by the thousands in, say, London or New York in May. The three-flowered type, usually a rich pink coloured variety, is grown for the Easter trade.

Twenty-six well defined species of hydrangea are found in China; of them, however, two species, *H. opuloides* and *H. paniculata*, only, are grown in quantity in gardens.

D. MACGREGOR.

SOCIETIES AND INSTITUTIONS

THE CHINA SOCIETY OF SCIENCE AND ARTS

BALLOT FOR OFFICERS FOR 1927

In the present issue of this Journal will be found the usual ballot slips for the officers and committee of the Society for the year 1927. Members of the Society are asked to register their votes in the manner indicated on the slips and to return the latter to the office of this Journal at 8 Museum Road, Shanghai, not later than October 31.

THE COMING SEASON

No meetings have been held during the summer months, but it is expected that the coming season will be a particularly interesting one. Mr. Floyd Tangier Smith, who returned to Shanghai towards the end of June last from his six months' expedition into Fukien under the auspices of the Society, will lecture before the Society in Shanghai, while the highly interesting moving pictures he took will be shown to the members at an early date. Plans for an institution embodying a natural history museum, art exhibition hall, auditorium and library are slowly crystalizing; but funds and the active co-operation of all members are needed, if they are to be finally successful. It is hoped that members will unite in their efforts to promote the interests of the Society.

EDUCATIONAL NOTES AND INTELLIGENCE

NANKING UNIVERSITY COMMENCEMENT DAY

The sixteenth Commencement Day of the Nanking University was held on June 29, when forty-five students received Bachelor degrees, and 260 were given diplomas of graduation from various departments and classes. Of those that received degrees twenty-five received the Bachelor of Arts Degree, six the Bachelor of Arts degree for Theology, five the Bachelor of Science degree, and eight the Bachelor of Science degree for Agriculture. The exercises were held in Sage Chapel; the Rev. Chen Ching-yu, D.D., giving the baccalaureate sermon and Mr. Kiang Wen-yu, Commissioner of Education of Kiangsu Province, the commencement address. In spite of all the disturbances experienced in educational institutions since the agitations began last summer, the University reports a very successful year.

SOOCHOW UNIVERSITY MIDDLE SCHOOL CLOSING EXERCISES

On June 30, the Second Middle School of the Soochow University, which is situated in Shanghai, held its closing exercises after a very successful year. Twenty-two students of the Senior School received diplomas of graduation, and the same number in the Junior School received certificates. The graduates from the Senior School will enter Soochow University, Soochow, next term.

THE NEED OF SCIENCE EDUCATION IN CHINA

In an enlightening article upon this subject published in *The Peking Leader* some time back, Mr. Pao-Ao Chen makes a strong plea for the devotion of the British share of the Boxer indemnity, which it is proposed to return to China for educational purposes, to the establishment of a Science Institution. He points out with considerable truth that what China needs just now are such institutions as the British Museum, and the Royal Society. She is getting her science education, her educationists having realized its importance, but there is a great need for a central institution which shall supply the necessary inspiration and encouragement in the pursuit of scientific knowledge. We are entirely in accord with this view, and trust that when the report of the members of the commission who recently visited and toured China is made public, it will be found that ample provision is made for some such institution as suggested by Mr. Chen.

SHANTUNG CHRISTIAN UNIVERSITY

According to the *North-China Daily News* correspondent at Choutsun, Shantung, the above institution has had a record year, 392 students having enrolled during the year, the largest number it has yet had. Of the fifty-eight students who graduated, forty-two received degrees, while women have graduated this year for the first time. Dr. Harold Balme has been re-elected president for five years, and the Rev. H. R. Williamson of Tai-yuan Fu has been appointed head of the extension department to fill the place left by the late Rev. J. Whitewright. The Dean of the School of Medicine, Dr. Samuel Cochran has resigned, Dr. Randolph Shields having been appointed to the Deanship.

PUBLICATIONS RECEIVED

BOOKS:

Flowers of Peitaiho, by Dean R. Wickes: The Peking Leader Press, Peking.

PERIODICALS:

Extreme Asia—Discovery—The Philippine Journal of Science—The Chinese Economic Bulletin—The New Zealand Journal of Science and Technology—La Revue Economique—Natural History—The China Weekly Review—Asia—The Asiatic Motor—Chinese Social and Political Science Review—The Bulletin of the Geological Society of China—The China Medical Journal—The American Journal of Science—Psyche—The Lingnaam Agricultural Review—The New Orient—The Annals and Magazine of Natural History—Man—The Modern Review—Health—Ginling College Magazine—Chinese Students Monthly—The New Mandarin—Mid-Pacific Magazine—Far Eastern Review—The Chinese Recorder—The Bulletin of the Geological Survey of China—Palaeontologia Sinica—Bulletino del Laboratorio di Zoologia Generale Agraria.



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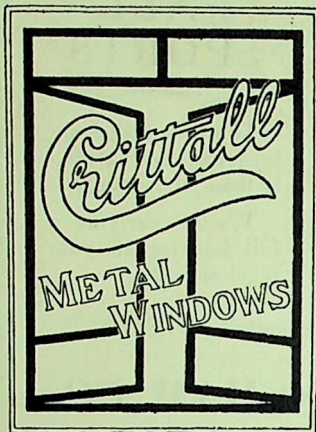
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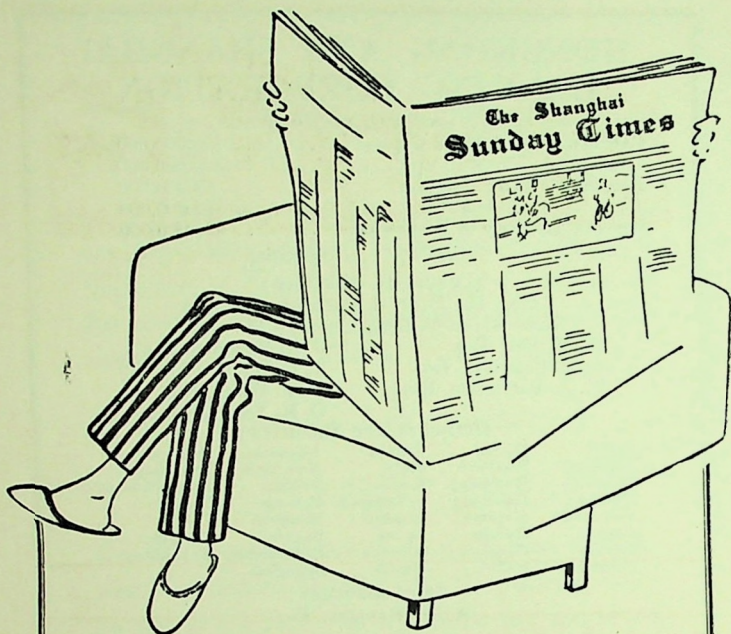
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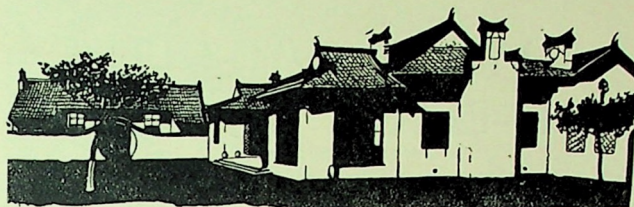
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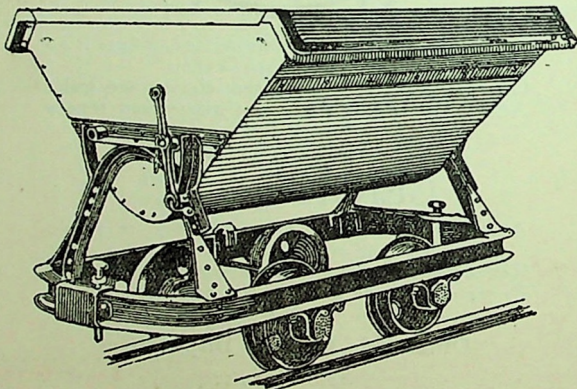
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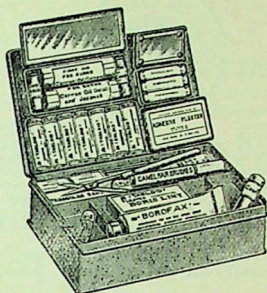
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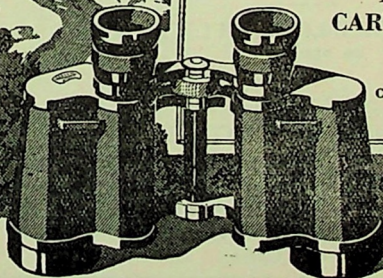
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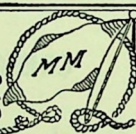
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